MagIC Net 2.4

Online help

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Documentation in additional languages can be found on *http://documents.metrohm.com*.

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1 Introduction

1.1 Welcome to MagIC Net

Introduction

Date:2012-07-05

MagIC Net

MagIC Net is the complete software solution for ion chromatography. It does not matter whether it is an ion chromatograph, dosing device or sample changer – all the required devices are automatically detected, monitored and addressed. The data produced is saved in a database, a reliable and retraceable procedure.

It's MagIC! MagIC Net is ready for any task – from "One-Button IC" in routine operation for one instrument to highly automated applications in FDA-regulated Client/Server environments. Appearance and available functions can always be adapted to the exact needs of the user.

With **MagIC Net**, Metrohm provides a uniform software product for all aspects of ion chromatography. Companies with international operations can use the same software platform in all sites around the globe to determine samples and exchange data and methods without loss.

Overview of the main program features

- *Program interface: easy to operate and configure*
- *Simple integration of devices and accessories*
- *Convenient method editor*
- *Database-based program with Client/Server functionality*
- *A wide range of import and export functions*
- *FDA-compatibility in accordance with 21 CFR Part 11*
- *Comprehensive online help*
- *Program versions*

1.2 Operation

Introduction

Introduction

The modern **user interface** makes it simple for the user to find his/her way around **MagIC Net**. All commands and control elements are located where you would expect. The bar on the left edge of the screen gives you access to the five basic elements of **MagIC Net**:

Workplace *Database* *Method* *Configuration* *Manual*

Depending on the access permissions, these buttons are either visible or invisible. The menu bar is in the upper part of the screen. It is also possible for the individual commands to be masked out, depending on the access permissions.

In the centre of the screen are the **information windows** with the settings, sample entry masks, live curves or results. This view can be set individually for each user with the aid of the new Layout Manager. This means that the users only see the windows or buttons needed for their work. This reduces the introductory period for routine users to a minimum; incorrect operation as a result of overcrowded screens are also a thing of the past.

MagIC Net provides a wide range of **method and calculation templates**. These tried and tested templates allow any user to create new methods fast and easily and to use them immediately.

1.3 Connecting devices

Introduction

Introduction

MagIC Net and the Professional IC devices are ideally matched to one another. Together with the iColumns and Dosinos, they form an intelligent system of components, that are automatically recognized by **MagIC Net**. Software and devices communicate with each other. The devices provide the software with all the necessary data, which is optimized, monitored and, if required, documented to FDA standards by **MagIC Net**.

You can also profit from the strengths of **MagIC Net** with earlier Metrohm IC generation devices. These devices are operated in the usual manner with IC Net. IC Net can easily be remote controlled via **MagIC Net** and the measuring signal is transmitted to **MagIC Net** via the 771 IC Interface.

Third-party devices can be controlled via a Remote Box and their signals also recorded with the 771 IC Interface.

Devices that can be controlled with MagIC Net

- **850 Professional IC**
- **881 Compact IC pro**
- **882 Compact IC plus**
- **883 Basic IC plus**
- **814 USB Sample Processor**
- **815 Robotic USB Sample Processor XL**
- **858 Professional Sample Processor**
- **863 Compact Autosampler**
- **889 IC Sample Center**
- **919 IC Autosampler plus**
- **886 Professional Thermostat / Reactor**
- **887 Professional UV/VIS Detector**
- **896 Professional Detector**
- **872 Extension Module**
- **771 IC Interface**
- **800 Dosino**
- **846 Dosing Interface**
- **920 Absorber Module**
- **Combustion Module**

- **Various**: 801 Magnetic Stirrer, 803 Ti Stand, 804 Ti Stand, Remote Box MSB, barcode readers, RS-232 devices, 891 Professional Analog Out, etc.

For a description of the devices supported by the different versions of MagIC Net 2.4, see *chap. 1.8 "Versions", p. 8*.

1.4 Method editor

Introduction

Introduction

The new **method editor** gets more out of your ion chromatography system. The method parameters are logically grouped in the **Devices**, **Time program** and **Evaluation** subwindows. Changes to the method can be visualized immediately in the fourth subwindow **Chromatograms** using the last chromatogram.

With the aid of the numerous templates, methods can be created quickly and easily. For routine and automated tasks, there are tried and tested methods available. Just a few clicks and they are adapted and ready to use.

The method has just one time program that controls all the devices involved, can request parallel or sequential sub programs, and can make logical decisions. Several chromatograms can be recorded and evaluated in different manners within one method: anions and cations from the same sample, for example, can be determined with one method – all the results of a sample are thus in one data set. Sample changers can be used in several methods at the same time. A sample can be prepared while the chromatogram of the previous sample is being recorded. This saves time and increases the sample throughput.

MagIC Net is flexible and adapts to your workflow and not vice versa.

Overview of functions

- Several chromatograms with one method.
- One time program for all devices.
- Method manager *(see Chapter 5.4.1, page 367)*.
- Separate management of access permissions for each method group *(see Chapter 5.5.2.3, page 379)*.
- Templates for method development *(see Chapter 5.2.1, page 354)*.
- Plausibility tests for methods *(see Chapter 5.2.5, page 357)*.
- Method-specific fixed values for sample data *(see Chapter 5.3.1, page 363)*.
- Comments and application notes *(see Chapter 5.3.3, page 364)* can be added to the methods *(see Chapter 5.3.4, page 364)*.
- Parallel runs *(see Chapter 5.7.4.2.2, page 402)*.

- Loop functions *(see Chapter 5.7.4.2.4, page 404)*.

1.5 Database

Introduction

MagIC Net is based on an **object-oriented database**, that has proven itself in practice. All program settings, the user administration, methods and templates are stored in the **configuration database** and the determination data is stored in the **determination databases** defined by the user. These databases can be installed locally on the computer reserved for measurements and make up a simple measurement system.
MagIC Net is however scalable and grows with operational requirements. As soon as data security and central data management make it necessary, **MagIC Net** is installed as a **Client/Server configuration**. The **MagIC Net** database is then installed on a server. All measurement and office computers work as clients. All results are stored centrally in this network and can be accessed and processed by all Client PCs. All clients also access the same pool of methods.

The new database has all the major tools necessary for management of, searching for and grouping of results. Quick filters allow the user to search through thousands of determinations within seconds and to display the result clearly. Chart plots give a fast overview of the sequence of results based on time.

All options for **reprocessing** are available to the user.

Overview of functions

- Object-oriented Client/Server database *(see Chapter 6.2.3.1, page 514)*.
- Layout manager for the database view *(see Chapter 3.1.7, page 113)*.
- Quick filter *(see Chapter 4.7.6.3, page 281)*.
- Efficient search functions *(see Chapter 4.7.4, page 276)*.
- Access permissions control for every database *(see Chapter 4.3.5.3, page 209)*.
- Automatic database backup *(see Chapter 4.3.5.4, page 210)*.
- Fast overview of results or specially designed control charts *(see Chapter 4.7.16, page 297)*.
- Curve overlay *(see Chapter 4.7.17, page 305)*.
- Reprocess determinations *(see Chapter 4.7.18, page 310)*.

1.6 Communication

Introduction

The decisive factor for the acceptance of PC-controlled analysis systems is being able to **integrate** it easily and economically in existing laboratory information systems, central databases and long-term archiving systems.

MagIC Net is communicative. **LIMS systems** can easily import work lists into the **MagIC Net** sample table and control them remotely, without extra modules. Data generated in **MagIC Net** can be exported in XML format. Connection to LIMS systems on the market is thus not difficult. Export to long-term archiving systems such as NuGenesis SDMS or Scientific Software Cyberlab is also supported.

The **Report generator** provides a simple and flexible solution for creating analysis reports. The report generator allows you to freely define the report templates. It is therefore possible at any time to display one or more determinations in a choice of PDF layouts or as a printout.

A special feature is that **MagIC Net** messages, error messages or results from the method run can be sent to the user by **e-mail**.

Overview of functions

- Import of sample data *(see Chapter 3.3.1.6, page 125)*.
- Various export formats, e.g. XML, CSV, SLK, CDF, measuring point list *(see Chapter 4.6.2.1, page 263)*.
- Automatic data export, e.g. to NuGenesis SDMS, Scientific Software CyberLAB, etc. *(see Chapter 5.8.6.3, page 441)*.
- Report designer *(see Chapter 4.4.4.1.1, page 217)*.
- E-mail functions for status messages, error messages or results *(see Chapter 2.7, page 106)*.
- Send determinations by e-mail *(see Chapter 4.7.8, page 292)*.
- Import of external determinations *(see Chapter 4.7.10, page 293)*.

1.7 Conformity

Introduction

MagIC Net also sets new standards with respect to the fulfilling of **GMP, GLP and FDA requirements**. The latest quality standards and validation procedures were implemented in developing and programming the software. MagIC Net has been designed to fulfill the **FDA directive 21 CFR Part 11** and the customer-specific interpretations. This is evidenced by a Certificate of Conformity. A centralized user administration defines the access permissions for program functions, methods and results, whereby any number of users with freely definable access profiles are possible. The system administrator can conveniently access the user administration from any MagIC Net client. Access to the software is password-protected and there is a choice of MagIC Net or Windows login.

The use of **digital signatures** makes it possible to sign methods and results. There are two signatures available with differing properties. With the first signature (Level 1, Review) the user confirms that he has programmed the method correctly or carried out the analysis correctly. With the second signature (Level 2, Release) the method or result is released and protected against further modifications. It is thus possible to mirror customized workflows in **MagIC Net**.

All data is organized according to the **version** and protected against unauthorized access, modification or deletion in the database. The database itself controls access to the data in network operation and provides archiving and restore functions.

The **"Audit Trail"** protocols all actions by the user and all major system processes.

Conformity relevant properties of MagIC Net

- Conformity is priority in development and validation.
- Centralized user administration *(see Chapter 6.2.1.1, page 494)*.
- Detailed access permissions *(see Chapter 6.2.1.2.2, page 496)*.
- Password protection under MagIC Net or Windows *(see Chapter 6.2.2.2, page 504)*.
- Digital signature on two levels *(see Chapter 2.3, page 25)*.
- One signature each for methods and results.
- Documentation of all method and result modifications *(see Chapter 4.7.14, page 296)*.
- Traceability thanks to detailed Audit Trail *(see Chapter 6.4.1.1, page 534)*.

1.8 Versions

Introduction

MagIC Net 2.4 is available in **four versions**, which differ regarding the scope of functions; MSB devices and barcode readers are supported by each version:

6.6059.243 MagIC Net multi

Client/Server version with all functions incl. 3 licenses.

Supported hardware:	***Ion chromatographs*** ▪ 850 Professional IC ▪ 883 Basic IC plus ▪ 882 Compact IC plus ▪ 881 Compact IC pro ▪ 771 IC Compact Interface ***Sample changers*** ▪ 919 IC Autosampler plus ▪ 889 IC Sample Center ▪ 863 Compact Autosampler ▪ 858 Professional Sample Processor ▪ 815 Robotic USB Sample Processor XL ▪ 814 USB Sample Processor ***Detectors*** ▪ 887 Professional UV/VIS Detector ▪ 850.911 IC Amperometric Detector ▪ 850.9010 Professional IC Detector (Conductivity) ***Other*** ▪ 896 Professional Detector ▪ 891 Professional Analog Out ▪ 886 Professional Thermostat / Reactor ▪ 872 Extension Module ▪ 846 Dosing Interface ▪ 804 Ti Stand ▪ 803 Ti Stand ▪ 801 Stirrer ▪ 800 Dosino ▪ Combustion Module ▪ 920 Absorber Module ▪ RS-232 device for TRANSFER command ▪ Remote Box MSB
Max. number of *ion chromatographs*:	unlimited

Max. number of *sample changers*:	unlimited
Max. number of *detectors*:	unlimited
Max. number of *Other*:	unlimited
Compatible withFDA 21 CFR Part 11:	✓
User administration:	✓
Security settings:	✓
Audit Trail:	✓
Client/Server support:	✓
Number of licenses:	3
Additional licenses as an option:	✓
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	

6.6059.242 MagIC Net professional

Local server version with all functions, except Client/Server functionality.

Supported hardware:	***Ion chromatographs*** ▪ 850 Professional IC ▪ 883 Basic IC plus ▪ 882 Compact IC plus ▪ 881 Compact IC pro ▪ 771 IC Compact Interface ***Sample changers*** ▪ 919 IC Autosampler plus ▪ 889 IC Sample Center ▪ 863 Compact Autosampler ▪ 858 Professional Sample Processor ▪ 815 Robotic USB Sample Processor XL ▪ 814 USB Sample Processor ***Detectors*** ▪ 887 Professional UV/VIS Detector ▪ 850.911 IC Amperometric Detector ▪ 850.9010 Professional IC Detector (Conductivity) ***Other*** ▪ 896 Professional Detector ▪ 891 Professional Analog Out ▪ 886 Professional Thermostat / Reactor ▪ 872 Extension Module ▪ 846 Dosing Interface ▪ 804 Ti Stand ▪ 803 Ti Stand ▪ 801 Stirrer ▪ 800 Dosino ▪ Combustion Module ▪ 920 Absorber Module ▪ RS-232 device for TRANSFER command ▪ Remote Box MSB
Max. number of *ion chromatographs*:	unlimited

Max. number of *sample changers*:	unlimited
Max. number of *detectors*:	unlimited
Max. number of *Other*:	unlimited
Compatible withFDA 21 CFR Part 11:	✓
User administration:	✓
Security settings:	✓
Audit Trail:	✓
Client/Server support:	
Number of licenses:	1
Additional licenses as an option:	
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	✓

6.6059.241 MagIC Net compact

Local server version with limited functionality and limited device support.

Supported hardware:	***Ion chromatographs*** ▪ 882 Compact IC plus ▪ 881 Compact IC pro ▪ 771 IC Compact Interface ***Sample changers*** ▪ 919 IC Autosampler plus ▪ 889 IC Sample Center ▪ 863 Compact Autosampler ▪ 858 Professional Sample Processor ▪ 815 Robotic USB Sample Processor XL ▪ 814 USB Sample Processor ***Detectors*** ▪ 887 Professional UV/VIS Detector ▪ 850.9110 IC Amperometric Detector [*] ▪ 850.9010 Professional IC Detector (Conductivity) [*] ***Other*** ▪ 896 Professional Detector [*] ▪ 891 Professional Analog Out ▪ 846 Dosing Interface ▪ 804 Ti Stand ▪ 803 Ti Stand ▪ 801 Stirrer ▪ 800 Dosino ▪ Combustion Module ▪ 920 Absorber Module ▪ RS-232 device for TRANSFER command ▪ Remote Box MSB [*] Depending on the variant, the 896 Professional Detector contains one or two detector modules. The detector modules which are connected are counted at the time that the **Max. number of detectors** is checked.

Max. number of *ion chromatographs*:	1
Max. number of *sample changers*:	1
Max. number of *detectors*:	1
Max. number of *Other*:	unlimited
Compatible withFDA 21 CFR Part 11:	✓
User administration:	✓
Security settings:	✓
Audit Trail:	✓
Client/Server support:	
Number of licenses:	1
Additional licenses as an option:	
Additional licenses as an option:	
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	✓

6.6059.240 MagIC Net basic

Local server version with limited functionality and limited device support.

Supported hardware:	***Ion chromatographs*:** 883 Basic IC plus ***Sample changers*:** 863 Compact Autosampler ***Detectors*:** 850.9010 Professional IC Detector (Conductivity)
Max. number of *ion chromatographs*:	1
Max. number of *sample changers*:	1
Max. number of *detectors*:	1

Compatible withFDA 21 CFR Part 11:	
User administration:	✓
Security settings:	
Audit Trail:	
Client/Server support:	
Number of licenses:	1
Additional licenses as an option:	
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	

1.9 Online help

Introduction

Calling up the help

MagIC Net has an extensive and detailed online help that can be accessed in two ways:

- **General call**

  With the menu item **Help ▸ MagIC Net**, or the symbol the online help with the topic *Welcome to MagIC Net* is opened. From there you can jump via **Contents**, **Index**, **Search** or personal **Favorites** to the desired topic.
- **Context-sensitive call**
  With the function key **[F1]** on the keyboard you can jump directly to the topic which will show information on the active element in **MagIC Net** (dialog window, tab).

Symbols and conventions

The following symbols and styles are used in this documentation:

Configuration	Link to another help topic in which information is shown for the marked term.
Database	**Dialog text** Designation for names of parameters, menu items, tabs and dialog windows in the software.
100	Designation for parameter values in input fields.

File ▸ New	Menu or menu item; Path needed to reach a certain point in the program.
[Next]	**Button**
	Formula editor Formulae can be entered in fields with this symbol, and the formula editor opens when you click on the symbol *(see Chapter 2.4, page 31)*.
1	**Instruction step** Carry out these steps in the sequence shown.
	Caution This symbol draws attention to a possible damage of instruments or instrument parts.
	Note This symbol marks additional information and tips.

1.10 What is new in MagIC Net 2.4?

Introduction

1.10.1 New features

New instruments

- **Combustion Module**
- **MMS 5000 (Autosampler)**
- **920.0010 Absorber Module**

New instrument firmware

New firmware version 5.850.0110 for 850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 883 Basic IC plus, 886 Professional Thermostat / Reactor and 896 Professional Detector.

Program part Method

- Time program command **Combust**. The command combusts solid and liquid samples and permits synchronization with subprograms.
- Time program command **Dosino gradient**. The command makes it possible to program a Dosino gradient.
- Time program command **Insert new line**. The command can be used, for example, to measure a check standard after every 10th injection, thus complying with an EPA standard.

Program part Database

- Not only **Fixed value**, but also **Mean value ± standard deviation**, **Mean value ± 2× standard deviation** and **Mean value ± 3× standard deviation** can be selected as warning and intervention limits on the control charts.

1.10.2 Improvements

Program part Method

- The unit µS/cm·min can be selected in the dialog window **Define result**.
- The peak parameter **Asymmetry** is calculated with a new formula in the Japanese and European Pharmacopoeia, as is the parameter **Theoretical plates** in the Japanese Pharmacopoeia.
- The time program variables are sorted in the formula editor in ascending sequence.

1.10.3 Fixed bugs and problems

Program part Workplace

- An exception error occurred if the evaluation parameters were opened and a component was deleted during an ongoing determination.

Program part Configuration

- MSB instruments (Dosino, stirrer and Remote Box) connected to the 886 Professional Thermostat / Reactor were not displayed on the tab **Connections** in the dialog window **Properties**.
- The partial initialization of dosing units was faulty under certain circumstances.

Program part Method

- Only nine instead of ten individual instructions sent by the **Transfer** command to an RS-232 instrument were able to be entered in the table.
- Occasionally one method came to a halt during the execution of the command **Transfer**.
- In rare cases, the common variables were not adopted with the command **Transfer**.
- MSB instruments (Dosino, stirrer and Remote Box) connected to the 886 Professional Thermostat / Reactor could not be allocated.
- If, when an analysis was being renamed, only upper-case or lower-case letters were changed and confirmed with **[OK]**, then both names (the old and the new) would appear in the drop-down list box of the subwindow **Evaluation**.
- Three-digit numbers of time program commands in the table of the time program were displayed incompletely in the method report.

- No flow gradient could be followed with the 883 Basic IC plus.
- If **Range** = **auto** and **Damping** = **on** were selected simultaneously with the amperometric detector in DC mode, artifacts in the chromatogram could arise during measurements. The combination **Range** = **auto** and **Damping** = **on** is no longer possible.

Program part Database

- A manual scaling of the y axis on the tab **Graphical settings** in the dialog window **Control chart - result properties** was not adopted.
- Isolated cases of exception errors occurred during the zooming of spectrums when the value **Relative** was selected for the graphics properties for **Scaling**, the option **Range** was selected for **Default view**, and fixed values were entered.

Program part Manual control

- An exception error could occur in rare cases during a method run or with manual operation when working with the 889 IC Sample Center.

Service functions

- The button **SCAN** was missing in the dialog window **Columns** with the service functions of the 886 Professional Thermostat / Reactor.

2 General program functions

2.1 Program parts

2.1.1 Program parts - Overview

General program functions

MagIC Net has five different program parts which can be opened by clicking on the corresponding symbol in the vertical bar on the left. The symbol for the opened program part is shown in color, the symbols for the other program parts in black and white. The menus, symbol bars and content of the main window depend on the program part currently opened.

Workplace program part

- Opening/closing workplaces
- Starting single determinations and determination series
- Sample tables

Database program part

- Opening/Closing databases
- Managing databases
- Reprocessing
- Creating report templates

Method program part

- Opening/closing existing methods
- Creating new methods
- Managing methods

Configuration program part

- Configuration of devices, eluents, columns, common variables, rack data and accessories
- Security settings
- User administration
- Program administration
- Audit Trail

Manual program part

- Manual control of devices

Note

Access to the individual program parts can be deactivated in the user administration. In this case, the corresponding symbols are hidden.

2.1.2 Workplace - Desktop

Program part: **Workplace**

Workplace symbol

Clicking on the workplace symbol in the vertical bar on the left opens the program part **Workplace** while, at the same time, the workplace symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of workplaces currently opened *(see Chapter 3.2.3.1, page 117)*.

Elements

The desktop of the program part **Workplace** comprises the following elements:

- Workplace-specific menu bar.
- Workplace-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

2.1.3 Database - Desktop

Program part: **Database**

Database symbol

Clicking on the database symbol in the vertical bar on the left opens the program part **Database** while, at the same time the database symbol is

shown in color. The upper left corner of the symbol contains a black field displaying the number of databases currently opened *(see Chapter 4.2.2, page 204)*.

Elements

The desktop of the program part **Database** comprises the following elements:

- Database-specific menu bar.
- Database-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

2.1.4 Method - Desktop

Program part: **Method**

Method symbol

Clicking on the method symbol in the vertical bar on the left opens the program part **Method** while, at the same time the method symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of methods currently opened *(see Chapter 5.2.3, page 356)*.

Elements

The desktop of the program part **Method** comprises the following elements:

- Method-specific menu bar.
- Method-specific toolbar.
- Main window in which up to four subwindows can be displayed at the same time.

2.1.5 Configuration - Desktop

Program part: **Configuration**

Configuration symbol

Clicking on the configuration symbol in the vertical bar at the left opens the program part **Configuration** while, at the same time the configuration symbol is shown in color.

Elements

The desktop of the program part **Configuration** comprises the following elements:

- Configuration-specific menu bar.
- Configuration-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

2.1.6 Manual control - Desktop

Program part: **Manual Control**

Manual Control symbol

If you click on the **Manual** symbol in the vertical bar on the left margin, the program part **Manual Control** will be opened in its own window, while the **Manual** symbol will be shown in color at the same time.

Elements

The desktop of the program part **Manual control** comprises the following elements:

- Selecting device
- Device window

2.2 Login/password protection

2.2.1 General information on Login/password protection

Program parts: **Workplace / Database / Method / Configuration**

Login into MagIC Net

MagIC Net can be configured so that all users have to log in with their **user name** and **password** and this data is automatically checked. This requires a **User administration** to be set up and the corresponding **Security settings** to be made. This data is saved in the configuration database. In the case of client/server systems, this is on the server and applies globally for all clients (central user administration).

FDA-compliant settings

If you are to be in compliance with the FDA, the settings on the **Login/ Password protection** tab in dialog window **Security settings** must be activated according to 21 CFR Part 11 by activating the check box **Settings according to 21 CFR Part 11**. The following conditions will then be complied with:

- A **login with user name and password** is required each time the program is started.
- **User names** must be **unique**. Users entered once cannot be deleted.
- **Passwords** must be **unique** per user. None of the expired passwords already used once by the user may be reused.
- Passwords must be changed according to a defined **validity period**.
- The **number of login attempts** is limited. If this number is exceeded, the user will automatically be set to the status **inactive**.

Actions

If the login is activated, the following actions can be performed:

- *Log in at program start*
- *Manual logout*
- *Automatic logout*
- *Change password*

2.2.2 Login

Program parts: **Workplace / Database / Method / Configuration**

If both the options **Enforce login with user name** and **Enforce login with password** are activated in the **Security settings**, the dialog window **Login** will appear every time the program is started and after each time the user logs out.

User

Entering a short name for the user.

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Note

Users who log in for the first time or users whose status has been reset from **disabled** or **removed** back to **enabled**, must log in with the **Start password** *(see Chapter 6.2.1.3.1, page 501)* specified by the administrator. Afterwards, the window **Change password** will automatically be opened, in which a new password has to be entered.

[Change password]

Opens the window **Change password**, in which the new password has to be entered and confirmed.

[Cancel]

The login is canceled, the program is terminated.

2.2.3 Manual logout

Menu item: **Workplace / Database / Method / Configuration ▸ File ▸ Logout**

A logged in user can logout at any time with the menu item **&File ▸ Log&out...**. The logout options defined in the **Security settings** apply. After the logout the **Login** appears, allowing a new user to log in.

2.2.4 Automatic logout

Program parts: **Configuration**

If the automatic logout is activated in the **Security settings**, the user will then automatically be logged out after a definite waiting time if he does not perform any operating functions via the keyboard or mouse. Afterwards the **Login** window opens, in which however only the same user or the members of the same user group can log in.

Note

Users with administrator rights can log in in each case, and an emergency stop is also possible.

2.2.5 Change password

Dialog window: **Login ▸ [Change password] ▸ Change password**

Note

In **MagIC Net**, the password can only be changed if the option **Password monitoring by MagIC Net** is set in the **Security settings**.

[Change password]

This button in the dialog window **Login** opens the window **Change password**, in which the new password has to be entered and confirmed.

Note

The password always has to be changed before the **Passwords expire every** of the password expires. For users who are logging in for the first time or users whose status has been reset from **disabled** or **removed**removed back to **enabled**, this window is automatically opened after logging in with the **Start password**. For **Old password** you also need to enter the **Start password** specified by the Administrator.

Old password

Entry of the previous password.

Entry	**24 characters**

New password

Entry of the new password. The password options are defined in the **Security settings** on the tab **Login/Password protection**.

Entry	**24 characters**

Confirm password

Confirmation of the new password.

Entry	**24 characters**

2.3 Electronic signatures

2.3.1 Rules for electronic signatures

Program parts: **Method / Database**

In MagIC Net, methods and determination can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**
  Methods and determinations can be signed at two levels (Signature Level 1 and Signature Level 2) by entering the user name and password.
- **Multiple signing**
  Methods and determinations can be signed several times at each level. All signatures are saved and documented in the Audit Trail.
- **Signing at Level 1**
  If Level 2 has been signed then no more signatures are possible at Level 1.

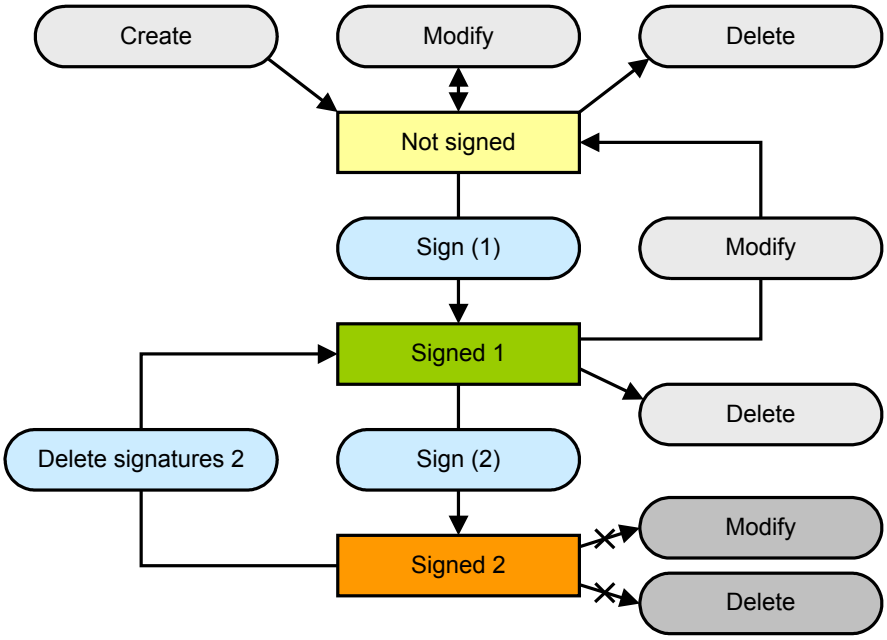
- **Signing at Level 2**
  Level 2 can only be signed if signatures already exist at Level 1.
- **Different users**
  The same user may only sign on either Level 1 or Level 2.
- **Reason and comment**
  Each signature must be accompanied by a reason selected from predefined default reasons. Additionally, a further comment can be entered.
- **Saved data**
  For each signature, signature date, user name, full name, reason and comments are saved.
- **Deleting signatures 1**
  Signatures at Level 1 are automatically deleted again when creating a new version.
- **Deleting signatures 2**
  Signatures at Level 2 can only be deleted by users who have the appropriate rights.
- **Signing methods**
  Methods can only be signed individually.
- **Signature options**
  The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

2.3.2 Procedure for electronic signatures

Programmteile: **Database / Method**

Methods and determinations exhibit one of the following three states in relation to signatures (see flow diagram):

- **Not signed**
  Methods and determinations which are not signed can be deleted and changed, a new version being created at each change.
- **Signed (1)**
  When signing methods and determinations at Level 1, no new versions are generated. If methods and determinations signed at Level 1 are changed, a new version is generated, which no longer contains any signatures. Methods and determinations signed at Level 1 can be deleted.
- **Signed (2)**
  When signing methods and determinations at Level 2, no new versions are generated. Methods and determinations signed at Level 2 can neither be changed nor deleted. However, it is possible to delete the signatures (2), whereby the signatures (1) are retained.



2.3.3 Signature Level 1

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ Signature &1... ▸ Signature Level 1**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Signature &1... ▸ Signature Level 1**

In the window **Signature Level 1**, methods or determinations can be signed at level 1.

Note

Methods or determinations which have been signed at level 1 can be modified and deleted. If the modified method or determination is saved as a new version then all existing signatures will be deleted automatically, i.e. the method or determination must be signed again.

Info

Display of information for signing and deleting signatures. The following messages are possible:

Selection	**Signature possible | Signature 1 not possible (signature 2 exists) | Signature not possible (accessed by other client)**

Signature possible
The selected method or determination can be signed.

Signature 1 not possible (signature 2 exists)
The selected method or determination can no longer be signed at level 1 as it has already been signed at level 2.

Signature not possible (accessed by other client)
The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 1**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Sign]

Sign the method or determination. The window remains open.

Note

Methods or determinations can only be signed at level 1 if the user belongs to a user group with the corresponding authorization.

2.3.4 Signature Level 2

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ Signature &2... ▸ Signature Level 2**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Signature &2... ▸ Signature Level 2**

In the window **Signature Level 2**, methods or determinations can be signed at level 2.

Note

Methods or determinations signed at level 2 are **locked**, i.e. they can neither be modified nor deleted. In order to be able to edit such methods or determinations again, the signatures on level 2 must first be deleted.

Info

Information for signing and deleting signatures is displayed in this box. The following messages are possible:

Selection	**Signature possible** | **Signature 2 not possible (signature 1 missing)** | **Signature not possible (accessed by other client)**

Signature possible
The selected method or determination can be signed.

Signature 2 not possible (signature 1 missing)
The selected method or determination cannot be signed at level 2 as it has not yet been signed at level 1.

Signature not possible (accessed by other client)
The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 2**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Sign]

Sign the method or determination. The window remains open.

Note

Methods or determinations can only be signed at level 2 if the user belongs to a user group with the corresponding authorization.

2.3.5 Delete signatures level 2

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ &Delete signatures 2... ▸ Delete Signatures Level 2**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Delete signatures 2... ▸ Delete Signatures Level 2**

In the window **Delete Signatures Level 2**, all signatures on level 2 for the selected method or determination can be deleted.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 2**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Delete]

Delete signatures 2.

Note

Signatures 2 can only be deleted if the user belongs to a user group with the corresponding authorization.

2.4 Formula editor

Dialog window: **Formula editor**

The formula editor serves as a support when entering formulas for calculating results. It has an automatic **Syntax check**, which is activated when applying the formula. The general rules of priority apply for the calculation operations.

The **Formula editor** dialog window contains the following elements:

- **Input field**
  Entry of the calculation formula *(see Chapter 2.4.1, page 31)*.
- **Function buttons**
  Buttons for the rapid entry of operators and parentheses *(see Chapter 2.4.1, page 31)*.
- **Variables**
  Selection of the variables available for the calculation formula *(see Chapter 2.4.3, page 34)*.
- **Operators/Functions**
  Selection of the operators and functions available for the calculation formula *(see Chapter 2.4.4.1, page 46)*.
- **Description**
  Description of the selected variables, operators or functions.

2.4.1 Input field

Dialog window: **Formula editor**

The calculation formula is entered in the input field of the formula editor. The following options are available for the entry:

Entry via keyboard

- **Numbers**
  Numbers as well as mathematical functions can be entered directly via the keyboard.
- **Text**
  Text must be enclosed in quotation marks **"** (e.g. **"my text"**).
- **Variables**
  Variables must be entered and ended with an apostrophe **'** (e.g. **'MV.my variable'**).
- **Time**
  Time indications must always be made with the aid of the **Time( )** function.

Entry using the function buttons

Mathematical operators and parentheses can simply be added to the formula using the corresponding buttons. A space is automatically added before and after the sign.

+	*Addition*	=	*Equal to*	AND	*Logical AND*
–	*Subtraction*	>	*Greater than*	OR	*Logical OR*
×	*Multiplication*	<	*Less than*	( )	Round parentheses
/	*Division*	<>	*Not equal to*	{ }	Curly brackets: Request values of variables with index, the Index is in curly brackets
^	*Potentiation*	<=	*Less than or equal to*		*Molar mass calculator*
		>=	*Greater than or equal to*		Undo last action
					Redo last action

Entry via selection

The element selected in the fields **Variables** or **Operators** can be added to the formula by double clicking or **[Insert]**.

2.4.2 Calculation algorithms

Dialog window: **Formula editor**

Numerical format

The standard IEEE 754 (1985) for binary floating point arithmetic is implemented in "double precision" (64 Bit) in the software.

Rounding off process

Measured values and results are rounded off symmetrically (commercial rounding), i.e. **1, 2, 3, 4** are always rounded down whereas **5, 6, 7, 8, 9** are always rounded up.

Examples

2.33 yields **2.3**

2.35 yields **2.4**

2.47 yields **2.5**

-2.38 yields **-2.4**

-2.45 yields **-2.5**

Statistics

The mean value, absolute and relative standard deviation of results *R* are calculated using the following formula:

Mean value

$$\bar{x}_k = \frac{1}{n} \cdot \sum_{i=1}^{n} R_{k,i}$$

Absolute standard deviation

$$Sabs_k = +\sqrt{\frac{\sum_{i=1}^{n} \left(R_{k,i} - \bar{x}_k\right)^2}{n-1}}$$

Relative standard deviation (in %)

$$Srel_k = 100 \cdot \frac{Sabs_k}{\bar{x}_k}$$

The statistical calculations of the software have been implemented so that they can be checked to as great a degree as possible by the user. The individual values are therefore incorporated in the statistics with full accuracy.

It is not the number of decimal places which is decisive for the accuracy of the calculations, but rather the number of significant digits of the decimal numbers displayed. The binary 64 bit numerical format implemented on the basis of the IEEE 754 standard means that the decimal numerals resulting from this have 15 certain significant decimal places.

You can influence the number of significant digits by selecting the unit and the number of decimal places. As the result unit to be set sometimes contains the prefix "milli" as well as the actual physical unit, the number of significant places changes accordingly by three places during such a conversion.

Example

The result displayed **1234.56789158763 mg/L** has 15 certain places. It should be rounded off to three decimal places according to the above rounding-off process:

1234.568 mg/L (7 significant places, 3 of them decimal places)

The unit "**g/L**" means that the same result **1.23456789158763 g/L** is also rounded off to three decimal places:

1.235 g/L (4 significant places, 3 of them decimal places)

The number of significant digits has now been reduced by three to four digits by omitting the prefix "milli".

Note

The above losses of accuracy by rounding off in the area of the maximum certain places are only relevant theoretically. Most of the time they are lower by several orders of magnitude than – as an example – the uncertainties resulting from weighing out the sample.

2.4.3 Variables

2.4.3.1 Variables - Overview

Dialog window: **Formula Editor ▸ Variables**

Variables are automatically generated by the program during or at the end of the determination. You can use the formula editor to access these and either use the values for further calculations or output them as a result.

Variable types

The following types of variables are differentiated:

Variable type	Syntax	Description
Sample data variables		Sample data variables contain all of the sample data of the determination.
▪ *Sample data variables*	▪ **'SD.Variable name'** These variables contain the sample data of a single determination and/or the sample data of the current determination of a determination series.	
▪ *Sample data variables of the next sample line*	▪ **'SD.NEXT.Variable name'** These variables contain the sample data of the *next* determination of a determination series.	
Method variables		Method variables can contain parameters of a method or data which has been generated in the method run.
▪ *Evaluation parameter variables*	▪ **'ED.Variable name'** **'ED.Analysis name. Variable name'** **'ED.Analysis name. Component name. Variable name'**	
▪ *Time program variables*	▪ **'TP.Command number.Variable name'**	
▪ *Subprogram variables*	▪ **'SR.Subprogram name.Variable name'**	
▪ *Hardware variables*	▪ **'HW.Hardware class. Hardware name. Variable name'**	
▪ *Determination variables*	▪ **'DV.Variable name'**	

Variable type	Syntax	Description
Result variables		Result variables are automatically generated during the evaluation either by the program or from the results defined by the user.
▪ Single result variable	▪ **'RS.Result name'**	
▪ Component result variable	▪ **'RS.Analysis name. Component name. Result name'**	
System variables	**'SV.Variable identification'**	System variables are general variables which are adopted in the determination at the start of the determination.
Common variables	**'CV.Variable name'**	Common variables are global variables which are adopted from the table of the program part **Configuration** at the start of the determination and assigned to the determination.

Entering variables

Variables must always be entered and ended with an apostrophe **'** (e.g. **'SD.myVariable'**).

You can select the variables directly in the formula editor so as to avoid syntax errors.

Note

When using variables, always observe their data type (**Number**, **Text** or **Date/Time**).

2.4.3.2 Sample data variables

Dialog window: **Formula Editor** ▸ **Variables** ▸ **Variable types**

Syntax

'SD.Variable name'

These variables contain the sample data of a single determination and/or the sample data of the current determination of a determination series. They are automatically generated after a determination has been run. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Available sample data variables

Variable name	Description	Data type
METHOD	Method which has been used for the sample determination	Text
IDENT	Identification of the sample	Text
TYPENAME	Name of the sample type	Text

Variable name	Description	Data type
TYPEVALUE	Numerical value of the sample type: '**Sample**' and '**Blank**' = **0** All other sample types = Sample type number (e.g. '**Standard 2**' = **2**)	Number
POSITION	Position of the sample If the variable **SD.POSITION** contains digits only, it is **automatically** converted into the data type Number. In this case, the function *TextToNumber(), page 70* does **not** need to be applied.	Text
INJECTIONS	Number of injections of the same sample (multiple determination)	Number
INJCOUNT	Injection number of a multiple determination	Number
VOLUME	Volume of the sample [µL]	Number
DILUTION	Dilution of the sample	Number
AMOUNT	Amount of the sample	Number
INFO1	Sample identification info 1	Text
INFO2	Sample identification info 2	Text
INFO3	Sample identification info 3	Text
INFO4	Sample identification info 4	Text
VALUE1	Sample identification value 1	Number
VALUE2	Sample identification value 2	Number
VALUE3	Sample identification value 3	Number
VALUE4	Sample identification value 4	Number

2.4.3.3 Sample data variables of the next sample line

Dialog window: **Formula Editor ▸ Variables ▸ Variable types**

Syntax

'SD.NEXT.Variable name'

These variables contain the sample data of the *next line of the sample table* of a determination series; this also applies when the determination of the current sample line involves the running of a multiple injection. These variables are distinguished in the syntax from the sample data variables of the current sample data line by means of the word **NEXT**. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Note

- The sample data variables of the next sample line are available **only in the time program**.
- The variable names in **'SD.NEXT.Variable name'** are the same as with the normal sample data variables *(see Chapter 2.4.3.2, page 35)*, with the **exception** of **INJCOUNT**, which is not available here.
- In the event of a single determination or if the current determination is the last determination of a series, then all of the **'SD.NEXT.Variable name'** variables contain the value **Invalid**.

2.4.3.4 Evaluation parameter variables

Dialog window: **Formula Editor ▸ Variables ▸ Variable types**

The evaluation parameter variables are method-specific and are automatically generated after a determination in which an evaluation has been defined has been run. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

'ED.Variable name'

Available evaluation parameter variables

Variable name	Description	Data type
CONCUNIT	Unit of the concentration	Text
DT	Void time of the analysis [min]	Number
DAT	Recording time of the analysis [min]	Number
RET	Specified retention time [min]	Number
RETWIN	Specified time slot for retention time [%]	Number

2.4.3.5 Time program variables

Dialog window: **Formula Editor ▸ Variables ▸ Variable types**

The time program variables are method-specific and are automatically generated after certain time program commands have been run. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

TP.'Command number'.'Variable name'

Available time program variables

Variable name	Description	Data type
ABSORBANCE	Measured absorbance [mAu] in the corresponding measuring channel	Number
AMOUNT	Amount of the sample	Number
ANALOG SIGNAL	Measured analog signal [mV]	Number
AVOL	Aspirated volume [mL]	Number
BAR	Measured pressure [bar]	Number
CONC	Concentration of the solution	Number
CONC1	Concentration of the solution	Number
CONC2	Concentration of the solution	Number
CTIME	Duration of combustion [min]	Number
LOOPNO	Number of loop runs	Number
CONDUCTIVITY	Measured conductivity	Number
DATA{x}	Data from RS-232 communication (command: **Transfer**). x = xth data segment.	Text
DILUTION	Dilution of the sample	Number
DRIFT	Measured drift (conductivity detector)	Number
DRIFT_I	Measured drift in channel **Current** of the amperometric detector.	Number
DRIFT_Q	Measured drift in channel **Charge** of the amperometric detector.	Number
DVOL	Dosed volume [mL]	Number
IDENT	Identification of the sample	Text
INFO1	Sample identification info 1	Text
INFO2	Sample identification info 2	Text
INFO3	Sample identification info 3	Text
INFO4	Sample identification info 4	Text
INJECTIONS	Number of injections of the same sample (multiple determination)	Number
LPO	Current, absolute lift position [mm]	Number
METHOD	Method which has been used for the sample determination	Text
MPA	Measured pressure [MPa]	Number
MWAIT	Time until the 'Wait' command has been manually terminated [s]	Number
NOISE	Measured noise (conductivity detector)	Number
NOISE_I	Measured noise in channel **Current** of the amperometric detector.	Number
NOISE_Q	Measured noise in channel **Charge** of the amperometric detector.	Number

Variable name	Description	Data type
POSITION	Position of the sample If the variable TP.'Command number'.POSITION contains digits only, it is automatically converted into the data type Number in formulas. In this case, it is not necessary to use the TextToNumber () function.	Text
PSI	Measured pressure [Psi]	Number
RAN	Current, absolute rotation angle of the rack in relation to the axis of the selected tower [°]	Number
RPO	Current rack position when terminating the command **0** = Rack position when terminating the command not defined	Text
SAN	Current, absolute swing angle of the robotic arm [°]	Number
SDA	Start time of the data acquisition	Date/ Time
SDAD	Drift of the chromatogram	Number
SDAN	Noise of the chromatogram	Number
SDAP	Pressure at the start time point of the data acquisition	Number
SDAT	Temperature at the start time point of the data acquisition [°C]	Number
SPO	**1…4** = Current external position when terminating the command **0** = Position when terminating the command not defined	Number
TEMP	Measured temperature [°C]	Number
TOU	**1** = max. waiting time expired **0** = max. waiting time not expired	Number
TSLS	Time elapsed [min] since the previous (manual or automatic) forward switching of the rotor of the affected module of the type MSM, MSM-HC, SPM. TSLS stands for **Time Since Last Step**.	Number
TYPE	Sample type that is entered	Text
VALUE1	Sample identification value 1	Number
VALUE2	Sample identification value 2	Number
VALUE3	Sample identification value 3	Number
VALUE4	Sample identification value 4	Number
VOLUME	Volume of the sample [µL]	Number

Special case

The device-independent time program command **Calculation** *(see Chapter 5.7.4.2.8, page 406)* generates for each single result 2 variables of the form **TP.'Command number'.'Result name'. 'Variable name'**:

Variable name	Description	Data type
VAL	Value of the result 'Result name' from the time program command no. 'Command number'.	(dependent on the formula used)
UNI	Unit of the result 'Result name' from the time program command no. 'Command number'.	Text

2.4.3.6 Subprogram variables

Dialog window: **Formula Editor ▸ Variables ▸ Variable types**

The subprogram variables are method-specific and are generated when a subprogram is called up. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

'SR.Subprogram name.Variable name'

Available subprogram variables

Variable name	Description	Data type
LCO	Loop counter. Number of completed cycles of a call. Each new call sets the counter to **1**. This variable is also valid if the subprogram has not been called as a loop, and then has the value **1**.	Number
FIN	Status. **0** = Subprogram has been called up and not yet terminated. **1** = Subprogram has been called up and terminated at least once. **invalid** = Subprogram has never been called up.	Number

2.4.3.7 Hardware variables

Dialog window: **Formula Editor ▸ Variables ▸ Variable types**

The hardware variables are method-specific and are automatically generated. They contain certain parameters of the columns and modules which can be used in the method. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

'HW.Hardware class.Hardware name.Variable name

Available hardware variables

Variable name	Description	Data type
HW.COL.'Column name'.ID	Inner diameter of the column [mm]	Number
HW.COL.'Column name'.LEN	Length of the column [mm]	Number
HW.COL.'Column name'.PS	Particle size of the column [µm]	Text
HW.COL.'Column name'.IDPRE	Inner diameter of the guard column [mm]	Number
HW.COL.'Column name'.LENPRE	Length of the guard column [mm]	Number

2.4.3.8 Determination variables

Dialog window: **Formula Editor ▸ Variables**

Determination variables are general variables that are generated in the method run. They are not assigned to individual commands. The **Variables** field of the Formula editor lists the **determination variables** which are available for the current method, sorted according to name.

Syntax

'DV.Variable name'

Examples: **'DV.DUR'**, **'DV.STT'**

You can select the determination variables directly in the formula editor under **Variables/Determination variables** in order to avoid syntax errors.

Available determination variables

Variable name	Description	Data type
DUR	Duration of the determination in s	Number
STT	Time point at which the determination was started	Date/ Time

2.4.3.9 Result variables

Dialog window: **Formula Editor ▸ Variables ▸ Variable types**

Some result variables are automatically generated by the program. In addition, the user can also define the result variables (user-defined results), which can then also be used in the Formula editor for further calculations.

A basic distinction is made between **single results** and **component results**.

A **single result** is an individual numerical value which is calculated according to a specified formula. Single results are never generated by the program, they are always user-defined.

In the case of a **component result**, a formula is specified with which a result is calculated in the same way for each component. Component results are generated both by the program as well as by the user.

Syntax

Single result:

- **'RS.Result name'**

Component result:

- **'RS.Analysis name.AC.Result name'**, whereby **AC** stands for "all components" and represents all components as a wildcard.
- **'RS.Analysis name.SPEC.Result name'**, whereby **SPEC** means "Spectrum".
- **'RS.Analysis name.Component name.Result name'**, whereby the **component name** stands for one specific component.

Available result variables

The following result variables are automatically generated by the program. They are available at the time of the creation of the time program.

The variables marked with an asterisk (*****) are only executed if the corresponding option is activated in the evaluation.

Variable name	Description	Data type
NUM	Peak number	Number
COMP	Component name	Text
RET	Retention time [min]	Number
FWHM	Width at half peak height [min]	Number
HGT	Height of the peak (unit depends on the measuring signal)	Number
HGT%	Peak height ratio, 100% for a normalization of the peak heights of all peaks	Number
AREA	Area of the peak (unit: measuring signal unit x minutes)	Number
AREA%	Peak area ratio, 100% for a normalization of the sum of all peak areas	Number
CAP	Capacity factor: Ratio of the corrected retention time to the void time	Number
RES	Resolution for two adjoining peaks	Number
PLA	Theoretical plates: Effectiveness of the column for the peak	Number
PLAM	Theoretical plates per meter: Effectiveness of the column for the peak	Number
PGF	Gauss factor of the peak	Number

Variable name	Description	Data type
ASY	Peak asymmetry	Number
CONC	Concentration of the component	Number
CONC%	Concentration ratio, 100% for a normalization of the sum of all concentrations	Number
CONCMEAN	Concentration mean value from a single or multiple determination	Number
CONCMEANSD	Standard deviation of the concentration mean value, including calibration errors	Number
CONCMEAN-CONF95	Half width of the confidence interval for the concentration mean value, at 95% confidence	Number
LDTCCONF95	Detection limit from linear calibration function, at 95% confidence	Number
STDCONC	Standard concentration of the component	Number
TYPE	Peak type, designates several properties of the peak	Number
START	Peak start [min]	Number
END	Peak end [min]	Number
A044	Width of the peak between the peak start and peak maximum at 4.4% of the peak height [min]	Number
B044	Width of the peak between the peak maximum and peak end at 4.4% of the peak height [min]	Number
A05	Width of the peak between the peak start and peak maximum at 5.0% of the peak height [min]	Number
B05	Width of the peak between the peak maximum and peak end at 5.0% of the peak height [min]	Number
A10	Width of the peak between the peak start and peak maximum at 10% of the peak height [min]	Number
B10	Width of the peak between the peak maximum and peak end at 10% of the peak height [min]	Number
A134	Width of the peak between the peak start and peak maximum at 13.4% of the peak height [min]	Number
B134	Width of the peak between the peak maximum and peak end at 13.4% of the peak height [min]	Number
A324	Width of the peak between the peak start and peak maximum at 32.4% of the peak height [min]	Number
B324	Width of the peak between the peak maximum and peak end at 32.4% of the peak height [min]	Number
A50	Width of the peak between the peak start and peak maximum at 50% of the peak height [min]	Number
B50	Width of the peak between the peak maximum and peak end at 50% of the peak height [min]	Number

Variable name	Description	Data type
A61	Width of the peak between the peak start and peak maximum at 61% of the peak height [min]	Number
B61	Width of the peak between the peak maximum and peak end at 61% of the peak height [min]	Number
HVA	Height of the base at the peak start over the baseline of the chromatogram	Number
HVB	Height of the base at the peak end over the baseline of the chromatogram	Number
PVA	Peak-to-valley ratio of the peak height to the height of the foot point at peak start over the baseline of the chromatogram	Number
PVB	Peak-to-valley ratio of the peak height to the height of the foot point at peak end over the baseline of the chromatogram	Number
WIDTH	Base width of the peak [min].	Number
CALK0	Coefficient of zero order of the calibration curve	Number
CALK1	Coefficient of first order of the calibration curve	Number
CALK2	Coefficient of second order of the calibration curve	Number
CALK3	Coefficient of third order of the calibration curve	Number
CALCORR	Correlation coefficient of the calibration curve	Number
CALPSD	Percentage standard deviation of the calibration curve	Number
CALXMEAN	Arithmetic mean of the x value of the calibration points	Number
CALYMEAN	Arithmetic mean of the y value of the calibration points	Number
CALNUM	Number of calibration points	Number
CALTERM	Number of terms of the calibration curve	Number
CALXSD	Standard deviation of the x value of the calibration points	Number
CALYRSD	Residual standard deviation of the y values of the calibration points from the calculated calibration curve	Number
REC*	Recovery	Number
SREC*	Recovery (spiking)	Number
INJCOUNTFIN	Number of injections carried out for a single or multiple determination	Number
WVLMAX{x}	Wavelength maximum in the wavelength range x of the spectrum.	Number

Results statistics

If results are evaluated statistically, the result variable of the statistical order is comprised of the variable of the result about which the statistic has been made and the attached name of the statistical order, e.g.

'RS'.'Analysis name'.'Component name'.'Result name'.MNV (component result)

'RS'.'Result name'.MNV (single result)

Variable name	Description	Data type
MNV	Mean value	Number
ASD	Absolute standard deviation	Number
RSD	Relative standard deviation	Number
MIN	Minimum value	Number
MAX	Maximum value	Number

Monitoring results

If results are monitored, the result variable of the monitoring comprises the variable of the monitored result and the attached abbreviation **OVF**:

'RS'.'Analysis name'.'Component name'.'Result name'.OVF (component result)

'RS'.'Result name'.OVF (single result)

Variable name	Description	Data type
OVF	Monitoring	Number

2.4.3.10 System variables

Dialog window: **Formula Editor ▸ Variables**

System variables are general variables which are adopted in the determination at the start of the determination. They are assigned neither to individual commands nor to determinations. The **Variables** field of the Formula editor lists all **System variables** which are available for the current method.

Syntax

'SV.Variable name'

Examples: **'SV.SIN'**, **'SV.SLI'**

You can select the system variables directly in the formula editor under **Variables/System variables** in order to avoid syntax errors.

Available system variables

Variable name	Description	Data type
FUN	Full name of the logged-in user	Text
REM	Remarks	Text
SEN	Indication whether the end of the sample table has been reached; **1 = yes**, **0 = no**	Number

Variable name	Description	Data type
SFL	Indication whether the sample table actual line is the first line after start ; **1 = yes**, **0 = no**	Number
SIN	Indication whether the determination has been started as a single determination or within a series; **1 = single determination**, **0 = series determination**	Number
SLI	Sample table actual line (**number**)	Number
STC	Start counter	Number
USN	Short name of the logged-in user	Text

2.4.3.11 Common variables

Dialog window: **Formula Editor ▸ Variables**

Common variables are global variables, which are adopted from the corresponding table of the program part **Configuration**, where the common variables can be defined, at the start of the determination and assigned to the determination. The **Variables** field of the Formula editor lists all **Common Variables** which are available for the current method, sorted according to name.

Syntax

'CV.Variable name.Variable name'

Examples: **'CV.TestDate'**, **'CV.TestTime.VAL'**, **'CV.Average-Temp.UNI'**

You can select the common variables directly in the formula editor under **Variables/Common Variables** in order to avoid syntax errors.

Available Common Variables

Variable name	Description	Data type
VAL	Value of the Common Variable (facultative, i.e. **'CV.Test.VAL'** = **'CV.Test'**)	Text, number or date/ time
UNI	Unit of the Common Variable	Text

2.4.4 Operators/Functions

2.4.4.1 Operators/Functions - Overview

Dialog window: **Formula editor ▸ Operators/Functions**

Overview of the operators and functions

Operators	Functions
Arithmetic: ▪ *Addition* (+) ▪ *Subtraction* (-) ▪ *Multiplication* (*) ▪ *Division* (/) ▪ *Potentiation* (^)	**Arithmetic:** ▪ *Exponential function* (Exp) ▪ *Natural logarithm* (Ln) ▪ *Common logarithm* (Log) ▪ *Square root* (Sqrt) ▪ *Absolute value* (Abs) ▪ *Fraction* (Frac) ▪ *Integer* (Int) ▪ *Round integer* (Round) ▪ *Sign* (Sign) ▪ *Quantiles of the Student's t-distribution* (Tinv)
Logic: ▪ *AND* ▪ *OR*	**Date/Time:** ▪ *Time()* ▪ *Time(Date)* ▪ *Time(Date+Time)*
Comparison: ▪ *Equal to* (=) ▪ *Greater than* (>) ▪ *Greater than or equal to* (>=) ▪ *Less than* (<) ▪ *Less than or equal to* (<=) ▪ *Not equal to* (<>)	**Type conversion:** ▪ *NumberToText* ▪ *NumberToTime* ▪ *TextToNumber* ▪ *TextToTime* ▪ *TimeToNumber* ▪ *TimeToText*
	Text: ▪ *TextPosition* ▪ *SubText* ▪ *Trim*
	Miscellaneous: ▪ *Error* ▪ *Case*

Priority rules of the operators

The operators are evaluated in the order in which they are listed in the table below. In order to attain the required order, it may be necessary to place operators in parentheses.

	Operators
Arithmetic	^
	*, /
	+, -
Comparison	<, <=, >, >=
Logic	AND, OR

2.4.4.2 Arithmetical operators

2.4.4.2.1 Addition

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 + Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
both operands of the same type:				
Number	Number	Number	**1.2 + 3 = 4.2**	-
Text	Text	Text	**"Metrohm" + "AG" = "Metrohm AG"**	If the maximum permissible length (65 536 characters) of the character string is exceeded by addition of the operands, the surplus characters will be removed from the second operand.
Time	Time	Number	**Time(1998;04;06) + Time(1964;02;03) = 59300.875** (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	**1.2 + "Metrohm" = "1.2Metrohm"**	-
Text	Number	Text	**"Metrohm" + 1.2 = "Metrohm1.2"**	-
Number	Time	Number	**2.0 + Time(1999;11;7) = 36472.96** (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	**Time(1999;10;7) + 2.0 = 36441.92** (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	**"Metrohm" + Time(1999;10;7) = "Metrohm1999-10-07 00:00:00 UTC+2"**	Before the operation, the operand of the type **Date/Time** is converted to **Text**.
Time	Text	Text	**Time(1999;01;7) + "Metrohm" = "1999-01-07 00:00:00 UTC +1Metrohm"**	The same rules apply here as for the previous operation.

2.4.4.2.2 Subtraction

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 - Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
both operands of the same type:				
Number	Number	Number	**1.2 - 3 = -1.8**	-
Text	Text	Text	**"Metrohm" - "AG" = invalid**	This operation is not allowed.
Time	Time	Number	**Time(1998;01;06) - Time(1964;12;03) = 12'087.00** (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	**1.2 - "Metrohm" = invalid**	This operation is not allowed.
Text	Number	Text	**"Metrohm" - 1.2 = not valid**	This operation is not allowed.
Number	Time	Number	**2.0 - Time(1999;10;7) = -36'437.917** (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	**Time(1999;10;7) - 2.5 = 36'437.917** (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	**"Metrohm" - Time(1999;10;7) = invalid**	This operation is not allowed.
Time	Text	Text	**Time(1999;10;7) - "Metrohm" = invalid**	This operation is not allowed.

2.4.4.2.3 Multiplication

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 * Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**1.2 * 3 = 3.6**	-
Text	Text	Text	**"Metrohm" * "AG" = invalid**	This operation is not allowed.
Time	Time	Number	**Time(1998;05;06) * Time(1902;02;03) = 27'478'004.545** (for UTC+1 or +2 for summer time)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	**2 * "Metrohm" = "MetrohmMetrohm"**	-
Text	Number	Text	**"Metrohm" * 2 = "MetrohmMetrohm"**	-
Number	Time	Number	**2.0 * Time(1999;10;7) = 72'879.833** (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	**Time(1999;10;7) * 2.0 = 72'879.833** (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	**"Metrohm" * Time(1999;10;7) = invalid**	This operation is not allowed.
Time	Text	Text	**Time(1999;10;7) * "Metrohm" = invalid**	This operation is not allowed.

2.4.4.2.4 Division

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 / Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**1.2 / 3 = 0.4**	Operand2 must not be zero!
Text	Text	Text	**"Metrohm" / "AG" = invalid**	This operation is not allowed.

Operand1	Operand2	Result	Example	Remark
Time	Time	Number	**Time(1998;04;06) / Time(1964;02;03) = 1.533** (for UTC +1 or +2 for summer time)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	**1.2 / "Metrohm" = invalid**	This operation is not allowed.
Text	Number	Text	**"Metrohm" / 1.2 = invalid**	This operation is not allowed.
Number	Time	Number	**10'000 / Time(1999;10;7) = 274** (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	**Time(1999;02;17) / 10'000 = 3.621** (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	**"Metrohm" / Time(1999;10;7) = invalid**	This operation is not allowed.
Time	Text	Text	**Time(1999;10;7) / "Metrohm" = invalid**	This operation is not allowed.

2.4.4.2.5 Potentiation

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 ^ Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**1.2 ^ 3 = 1.728**	Complex results (which comprise +b*i*, i.e. a real and an imaginary component) are displayed as an error.
Text	Text	Text	**"Metrohm" ^ "AG" = invalid**	This operation is not allowed.
Time	Time	Number	**Time(1900;01;05) ^ Time(1900;01;02) = 196.371** (for UTC +1)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	**1.2 ^ "Metrohm" = invalid**	This operation is not allowed.

Operand1	Operand2	Result	Example	Remark
Text	Number	Text	**"Metrohm" ^ 1.2 = invalid**	This operation is not allowed.
Number	Time	Number	**1.2 ^ Time(1900;02;03) = 586.198** (for UTC+1)	-
Time	Number	Number	**Time(1999;10;7) ^ 2.5 = 253479847878.04** (for UTC+2)	-
Text	Time	Text	**"Metrohm" ^ Time(1999;10;7) = invalid**	This operation is not allowed.
Time	Text	Text	**Time(1999;10;7) ^ "Metrohm" = invalid**	This operation is not allowed.

2.4.4.3 Logical operators

2.4.4.3.1 AND

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 AND Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false). The following cases are possible:

Operand1	Operand2	Result
1	**1**	**1**
0	**1**	**0**
1	**0**	**0**
0	**0**	**0**

Examples

Oper-and1	Oper-and2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 AND 4 --> 1** **4 AND 0 --> 0**	Numbers greater than 0 are interpreted as **1** (true).
Text	Text	Number	**"Metrohm" AND "AG" --> 1** **"" AND "AG" --> 0**	An empty character string (**""**) is interpreted as **0** (false), everything else as **1** (true). The first operation therefore corresponds to **1 AND 1 --> 1.**
Time	Time	Number	**Time(1999;10;07) AND Time(1999;10;07) --> 1**	**Time()**: see *Time(Date)*
Operands of a different type:				

Oper-and1	Oper-and2	Result	Example	Remark
Number	Text	Number	**1.2 AND "1.2" --> 1** **0 AND "1" --> 1** **0 AND "0" --> 1** **0 AND "" --> 0**	Before the operation, the operand of the type **Number** is converted to the type **Text**, as a conversion from **Text** to **Number** is not advisable. During the second operation, the 0 is therefore converted to **"0"**, which corresponds to the logical value **1** (true), as every character string that is not empty is interpreted as 1.
Text	Number	Number	**"Metrohm" AND 1.2 --> 1**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 AND Time(1999;10;7) --> 1** **0 AND Time(1999;10;07) --> 0**	Before the operation, the operand of the type **Date/Time** is converted to **Number** and all data from December 30, 1899 are interpreted as **1** (true).
Time	Number	Number	**Time(1999;10;7) AND 2.5 --> 1**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" AND Time(1999;10;7) --> 1** **"" AND Time(1999;10;07) --> 0**	Before execution of the operation, the operand of the type **Date/Time** is converted to the type **Text** and every character string that is not empty is interpreted as **1** (true).
Time	Text	Number	**Time(1999;10;7) AND "Metrohm" --> 1**	The same rules apply here as for the previous operation.

2.4.4.3.2 OR

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 OR Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false). The following cases are possible:

Operand1	Operand2	Result
1	**1**	**1**
0	**1**	**1**
1	**0**	**1**
0	**0**	**0**

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				

Operand1	Operand2	Result	Example	Remark
Number	Number	Number	**5 OR 4 --> 1** **4 OR 0 --> 1**	Numbers greater than 1 are automatically interpreted as 1 (true)
Text	Text	Number	**"Metrohm" OR "AG" --> 1** **"" OR "Metrohm" --> 1** **"" OR "" --> 0**	An empty character string ("") is interpreted as 0 (false), everything else as 1 (true). The first operation therefore corresponds to 1 OR 1 --> 1
Time	Time	Number	**Time(1999;10;07) OR Time(1964;02;03) --> 1**	**Time()**: see *Time(Date)*
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Number	**1.2 OR "1.2" --> 1** **0 OR "" --> 1**	Before the operation, the operand of the type **Number** is converted to the type **Text**, as a conversion from **Text** to **Number** is not advisable. During the second operation, the 0 is therefore converted to "0", which corresponds to the logical value 1 (true), as every character string that is not empty is interpreted as 1.
Text	Number	Number	**"Metrohm" OR 1.2 --> 1**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 OR Time(1999;10;7) --> 1** **0 OR Time(1964;02;03) --> 1**	Before the operation, the operand of the type **Date/Time** is converted to **Number** and all data from December 30, 1899 are interpreted as 1 (true).
Time	Number	Number	**Time(1999;10;7) OR 2.5 --> 1**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" OR Time(1999;10;7) --> 1**	Before execution of the operation, the operand of the type **Date/Time** is converted to the type **Text** and every character string that is not empty is interpreted as 1 (true).
Time	Text	Number	**Time(1999;10;7) OR "Metrohm" --> 1**	The same rules apply here as for the previous operation.

2.4.4.4 Relational operators

2.4.4.4.1 Equal to

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 = Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Oper-and1	Oper-and2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 = 5 --> 1** **4 = 5 --> 0**	-
Text	Text	Number	**"Metrohm" = "AG" --> 0** **"aG" = "AG" --> 0**	When making a comparison between two texts the **ASCII value** of the character sequence is compared *(see Chapter 2.4.4.10, page 79)*. **Attention:** Uppercase and lowercase letters have different values!
Time	Time	Number	**Time(1998;04;06) = Time(1964;02;03) --> 0**	*(see Chapter 2.4.4.6.2, page 67)*
Operands of a different type:				
Number	Text	Number	**1.2 = "1.2" --> 11.2 = "Metrohm" --> 0**	Before the relational operation, the **Number** is converted to **Text**, afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Text	Number	Number	**"Metrohm" = 1.2 --> 0**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 = Time(1999;10;07) --> 0**	Before the operation, the operand of the type **Date/Time**is converted to **Number**. During execution of the operation, the exact value is always used after this conversion, even if maximum 5 places after the comma can be displayed *(see Chapter 2.4.4.7.5, page 72)*.
Time	Number	Number	**Time(1999;10;7) = 2.0 --> 0**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" = Time(1999;10;07) --> 0**	Before the operation, the operand is converted from the type **Date/Time** to **Text** (here thus: **"1999-10-07 00:00:00 UTC+2"**), afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Time	Text	Number	**Time(1999;10;07) = "Metrohm" --> 0**	The same rules apply here as for the previous operation.

2.4.4.4.2 Greater than

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 > Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 > 4 --> 1** **4 > 5 --> 0**	-
Text	Text	Number	**"Metrohm" > "AG" --> 1** **"Aarau" > "Zug" --> 0**	When making a comparison between two texts the **ASCII value** of the character sequence is compared *(see Chapter 2.4.4.10, page 79)*. **Attention:** Uppercase and lowercase letters have different values!
Time	Time	Number	**Time(1998;04;06) > Time(1964;02;03) --> 1**	*(see Chapter 2.4.4.6.2, page 67)*
Operands of a different type:				
Number	Text	Number	**1.2 > "Metrohm" --> 01.23 > "1.2" --> 1**	Before the relational operation, the **Number** is converted to **Text**, afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Text	Number	Number	**"Metrohm" > 1.2 --> 1**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 > Time(1999;10;07) --> 0**	Before the comparison, the operand is converted from the type **Date/Time** to a **Number**.
Time	Number	Number	**Time(1999;10;07) > 2.0 --> 1**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" > Time(1999;10;07) --> 1**	Before the operation, the operand is converted from the type **Date/Time** to **Text** (here thus: **"1999-10-07 00:00:00 UTC +2"**), afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Time	Text	Number	**Time(1999;10;7) > "Metrohm" --> 0**	The same rules apply here as for the previous operation.

2.4.4.4.3 Greater than or equal to

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 >= Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 >= 4 --> 1** **4 >= 5 --> 0**	-
Text	Text	Number	**"Metrohm" >= "AG" --> 1**	When making a comparison between two texts the **ASCII value** of the character sequence is compared *(see Chapter 2.4.4.10, page 79)*. **Attention:** Uppercase and lowercase letters have different values!
Time	Time	Number	**Time(1998;04;06) >= Time(1964;02;03) --> 1**	*(see Chapter 2.4.4.6.2, page 67)*
Operands of a different type:				
Number	Text	Number	**1.2 >= "1.2" --> 11.2 >= "Metrohm" --> 0**	Before the relational operation, the **Number** is converted to **Text**, afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Text	Number	Number	**"Metrohm" >= 1.2 --> 1**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 >= Time(1999;10;07) --> 0**	Before the comparison, the operand is converted from the type **Date/Time** to a **Number**.
Time	Number	Number	**Time(1999;10;07) >= 2.0 --> 1**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" >= Time(1999;10;07) --> 1**	Before the operation, the operand is converted from the type **Date/Time** to **Text** (here thus: **"1999-10-07 00:00:00 UTC +2"**), afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Time	Text	Number	**Time(1999;10;7) >= "Metrohm" --> 0**	The same rules apply here as for the previous operation.

2.4.4.4.4 Less than

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 < Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 < 4 --> 0** **4 < 5 --> 1**	-
Text	Text	Number	**"Metrohm" < "AG" --> 0**	When making a comparison between two texts the **ASCII value** of the character sequence is compared *(see Chapter 2.4.4.10, page 79)*. **Attention:** Uppercase and lowercase letters have different values!
Time	Time	Number	**Time(1998;04;06) < Time(1964;02;03) --> 0**	*(see Chapter 2.4.4.6.2, page 67)*
Operands of a different type:				
Number	Text	Number	**1.2 < "Metrohm" --> 11.2 < "1" --> 0**	Before the relational operation, the **Number** is converted to **Text**, afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Text	Number	Number	**"Metrohm" < 1.2 --> 0**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 < Time(1999;10;07) --> 1**	Before the comparison, the operand is converted from the type **Date/Time** to a **Number**.
Time	Number	Number	**Time(1999;10;07) < 2.0 --> 0**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" < Time(1999;10;07) --> 0**	Before the operation, the operand is converted from the type **Date/Time** to **Text** (here thus: **"1999-10-07 00:00:00 UTC +2"**), afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Time	Text	Number	**Time(1999;10;7) < "Metrohm" --> 1**	The same rules apply here as for the previous operation.

2.4.4.4.5 Less than or equal to

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 <= Operand2

The operands can be entered either directly or as variables and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 <= 4 --> 0** **4 <= 5 --> 1**	-
Text	Text	Number	**"Metrohm" <= "AG" --> 0**	When making a comparison between two texts the **ASCII value** of the character sequence is compared *(see Chapter 2.4.4.10, page 79)*. **Attention:** Uppercase and lowercase letters have different values!
Time	Time	Number	**Time(1998;04;06) <= Time(1964;02;03) --> 0**	*(see Chapter 2.4.4.6.2, page 67)*
Operands of a different type:				
Number	Text	Number	**2 <= "1.2" --> 01.2 <= "Metrohm" --> 1**	Before the relational operation, the **Number** is converted to **Text**, afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Text	Number	Number	**"Metrohm" <= 1.2 --> 0**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 <= Time(1999;10;07) --> 1**	Before the comparison, the operand is converted from the type **Date/Time** to a **Number**.
Time	Number	Number	**Time(1999;10;07) <= 2.0 --> 0**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" <= Time(1999;10;07) --> 0**	Before the operation, the operand is converted from the type **Date/Time** to **Text** (here thus: **"1999.10.07"**), afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Time	Text	Number	**Time(1999;10;7) <= "Metrohm" --> 1**	The same rules apply here as for the previous operation.

2.4.4.4.6 Not equal to

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

Operand1 <> Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	**5 <> 4 --> 1** **5 <> 5 --> 0**	-
Text	Text	Number	**"Metrohm" <> "AG" --> 1**	When making a comparison between two texts the **ASCII value** of the character sequence is compared *(see Chapter 2.4.4.10, page 79)*. **Attention:** Uppercase and lowercase letters have different values!
Time	Time	Number	**Time(1998;04;06) <> Time(1964;02;03) --> 1**	*(see Chapter 2.4.4.6.2, page 67)*
Operands of a different type:				
Number	Text	Number	**1.2 <> "1.2" --> 01.2 <> "Metrohm" --> 1**	Before the relational operation, the **Number** is converted to **Text**, afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Text	Number	Number	**"Metrohm" <> 1.2 --> 1**	The same rules apply here as for the previous operation.
Number	Time	Number	**2.0 <> Time(1999;10;07) --> 1**	Before the comparison, the operand is converted from the type **Date/Time** to a **Number**.
Time	Number	Number	**Time(1999;10;07) <> 2.5 --> 1**	The same rules apply here as for the previous operation.
Text	Time	Number	**"Metrohm" <> Time(1999;10;07) --> 1**	Before the operation, the operand is converted from the type **Date/Time** to **Text** (here thus: **"1999-10-07 00:00:00 UTC +2"**), afterwards the texts are compared according to **ASCII value** *(see Chapter 2.4.4.10, page 79)*.
Time	Text	Number	**Time(1999;10;7) <> "Metrohm" --> 1**	The same rules apply here as for the previous operation.

2.4.4.5 Arithmetical functions

2.4.4.5.1 Exponential function

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Exp(number)

Calculates e ^ number. Other notation for $y = e^{(number)}$, whereby e is the Euler number (e = 2.71828…).

Parameters

Number Exponent

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Exp(1.5) = 4.48169

Exp('CV.AverageTemp') = Power of the exponent (common variable **CV.AverageTemp**) for base e

2.4.4.5.2 Natural logarithm

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Ln(number)

Gives the logarithm of the entered number for base e. Alternative notation for y = loge(number), whereby $_e$ is the Euler number (e = 2.71828…).

Parameters

Number > 0

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Ln(3) = 1.09861

Ln('CV.AverageTemp') = Natural logarithm of the value of the common variable **CV.AverageTemp** for base e

2.4.4.5.3 Common logarithm

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Log(number)

Gives the logarithm of the entered number for base 10. Alternative notation for $y = \log_{10}(\text{number})$.

Parameters

Number **>** 0

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Log(10) = 1

Log('CV.AverageTemp') = Common logarithm of the value of the common variable **CV.AverageTemp**

2.4.4.5.4 Square root

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Sqrt(number)

Gives the square root of the entered number. Alternative notation for $y = \sqrt{}$ **number** or $y = \sqrt[2]{}$ **number**.

Parameters

Number ≥ 0

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Sqrt(33) = 5.745

Sqrt('CV.AverageTemp') = Square root of the value of the common variable **CV.AverageTemp**

2.4.4.5.5 Absolute value

Dialog window: **Formula editor** ▸ **Operators/Functions**

Syntax

y = Abs(number)

Gives the absolute value of the entered number, i.e. the value of the number irrespective of its sign.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Abs(-55.3) = 55.3

Abs('CV.AverageTemp') = Value of the common variables **CV.AverageTemp** without signs

2.4.4.5.6 Fraction

Dialog window: **Formula editor** ▸ **Operators/Functions**

Syntax

y = Frac(number)

Gives the fraction of the entered number.

Note

In the results properties, the number **Decimal places** of the result must always be given, as otherwise the fraction cannot be displayed.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Frac(-55.325) =0.325

Frac('CV.AverageTemp') = Value of the common variable **CV.AverageTemp** without sign

2.4.4.5.7 Integer

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Int(number)

Gives the integer of the entered number.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Int(-55.325) = -55

Int('CV.AverageTemp') = Integer of the value of the common variable **CV.AverageTemp**

2.4.4.5.8 Rounding integer

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Round(number)

Gives the rounded value of the entered number as a whole number.

Note

If the first decimal place is 5 or greater, the number is rounded up to the next whole number (commercial rounding).

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Round(-55.5259) = -56

Round('CV.AverageTemp') = Rounded value of the common variable **CV.AverageTemp**

2.4.4.5.9 Sign

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Sign(number)

Gives the sign of the entered number: **1** for a positive number, **-1** for a negative number.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Sign(-55.3) = -1

Sign(26.115) = 1

Sign('CV.AverageTemp') = Sign of the value of the common variable **CV.AverageTemp**

2.4.4.5.10 Quantiles of the Student's t-distribution

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

t_s **= Tinv(Probability; Degrees of freedom)**

Calculates the quantiles of the Student's t-distribution for two-sided intervals.

The result describes the half interval length as a multiple of the standard deviation of a sampling totality with given **degrees of freedom** within which, with the indicated **probability**, the mean value of the distribution lies, when the interval is centered on the mean value of the sampling totality.

Parameters

Probability

Type number, value range: 0 ... 1. Direct entry as number or as formula providing a number. If the type of value is non-permitted, then the result will become **invalid**. This is to indicate the probability with which the unknown mean value of the t-distributed result is expected to lie within the two-sided interval.

Degrees of freedom

Type number, value range: 1 ... n. Direct entry as number or as formula providing a number. If the type of value is non-permitted, then the result will become **invalid**. The number of independent samplings for calculating the standard deviation, reduced by the number of adjusted parameters for the model to which the standard deviation refers, must be specified as degrees of freedom (Degrees of freedom = Number of samplings – Number of parameters).

Examples

Tinv(0.95; 9) = 2.26 : With a 10-fold determination (e.g. of a titer) half the interval length corresponds to 2.26 times the standard deviation.

Calculation of the confidence interval for a mean value of sampling: A variance-homogenous sampling with a range n for a normally distributed quantity with an expected value μ has the mean value x_m, the standard deviation s and the freedom degrees $v = n - 1$. Half the interval length $t_s \cdot s/\sqrt{n}$ then indicates how high the absolute difference between the mean value x_m and the expected value μ maximally is within the given probability. The **confidence interval** is the full interval length, centered to the mean value: $\mu = x_m \pm t_s \cdot s/\sqrt{n}$.

Titer determination: 0.991, 1.021, 0.995, 1.003, 1.007, 0.993, 0.998, 1.015, 1.003, 0.985

Mean value = 1.001

Standard deviation = 0.0111

Student's t-quantiles for a probability of 95% = 2.26

Confidence interval of the titer = 1.001 ± 0.008

2.4.4.6 Date/time functions

2.4.4.6.1 Time()

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Time()

Gives the current date and the current time.

Parameters

none

Return value

Current date and current time in the format **yyyy-mm-dd hh:mm:ss UTC ±xx**

Note

UTC = Universal Time , from which the times in the various time zones of the earth are derived. CET (Central European Time) is equal to UTC plus 1 hour, in the summer time UTC plus 2 hours.

2.4.4.6.2 Time(Date)

Dialog window: **Formula editor** ▸ **Operators/Functions**

Syntax

y = Time(year; month; day)

Gives the entered figures in the format **Date/Time**.

Parameters

year	**00…99** or **1000…9999**
month	**1…12**
day	**1…31**

A parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Note

Only the integral part is used for all parameters.

A variable of the type **Date/Time** cannot be transferred as a parameter here.

Both for the automatic and explicit conversion of a **Time** to the type **Number**, the number of days are counted since **December 30, 1899** at **01 hours**.

Attention: December 30, 1899 01 hour = 0.00000 days, this number is **rounded** off to 5 decimal places, but a relational operation for example is carried out with the exact value!

Return value

Date/Time in the format **yyyy-mm-dd hh:mm:ss UTC ±xx**

Note

UTC = Universal Time , from which the times in the various time zones of the earth are derived. CET (Central European Time) is equal to UTC plus 1 hour, in the summer time UTC plus 2 hours.

Examples

Time(2004;02;02) = 2004-02-02 00:00:00 UTC +1 (dependent on the system time)

Time('CV.Test year';'CV.Test month';'CV.Test day') = Date comprised of the common variables

2.4.4.6.3 Time(Date + Time)

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Time(year; month; day; hour; minute; second)

Gives the entered numbers in the format **Date/Time**.

Parameters

year	**00…99** or **1000…9999**
month	**1…12**
day	**1…31**
hour	**0…23**
minute	**0…59**
second	**0…59**

A parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Note

Only the integral part is used for all parameters.

A variable of the type **Date/Time** cannot be transferred as a parameter here.

Both for the automatic and explicit conversion of a **Time** to the type **Number**, the number of days are counted since **December 30, 1899** at **01 hours**.

Attention: December 30, 1899 01 hour = 0.00000 days, this number is **rounded** off to 5 decimal places, but a relational operation for example is carried out with the exact value!

Return value

Date/Time in the format **yyyy-mm-dd hh:mm:ss UTC ±xx**

Note

UTC = Universal Time , from which the times in the various time zones of the earth are derived. CET (Central European Time) is equal to UTC plus 1 hour, in the summer time UTC plus 2 hours.

Examples

Time(2004;06;02;10;30;25) = 2004-06-02 10:30:25 UTC +2 (dependent on the system time)

Time('CV.TestYear';'CV.TestMonth';'CV.TestDay';'CV.TestHour';'CV.TestMin';'CV.TestSek') = Date comprised of the common variables

2.4.4.7 Type Conversion functions

2.4.4.7.1 NumberToText

Dialogfenster: **Formula editor ▸ Operators/Functions**

Syntax

y = NumberToText(number)

Returns the entered number as **Text**.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**.

Examples

NumberToText(-55.3) = **-55.3**

NumberToText('CV.AverageTemp') = Vale of the common variable (AverageTemp) as **Text**

2.4.4.7.2 NumberToTime

Dialogfenster: **Formula editor ▸ Operators/Functions**

Syntax

y = NumberToTime(number)

Returns the entered number as **Date/Time**, whereby the number is interpreted as the number of days since December 30, 1899 at 01 hours.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**.

Examples

NumberToTime(35545.526) = **1997-05-25 14:37:26 UTC+2** (dependent on the system time)

NumberToTime(35780.55) = **1997-12-16 14:12:00 UTC+1** (dependent on the system time)

NumberToTime('CV.TestDate') = Value of the common variable (TestDate) as **Date/Time**

2.4.4.7.3 TextToNumber

Dialogfenster: **Formula editor ▸ Operators/Functions**

Syntax

y = TextToNumber(Text)

Returns the entered text as a **number**.

Parameters

Text

The parameter may only contain **numerical characters** or variables of the type **Text**, as otherwise a type conversion is not possible. The result of this conversion or the calculation would then be **invalid**. In addition, text must be marked by **inverted commas**.

Examples

TextToNumber("-55.3") = **-55.3**

TextToNumber('CV.AverageTemp') = Value of the variables (Average-Temp) as **Number**

TextToNumber('MV.ID1') = entered text of **ID 1** as **Number**

Special case

If the sample data variable *SD.POSITION, page 35* (sample position) contains only digits, it will be **automatically** converted to the data type Number. In this case, it is **not** necessary to apply the TextToNumber() function.

2.4.4.7.4 TextToTime

Dialogfenster: **Formula editor ▸ Operators/Functions**

Syntax

y = TextToTime(Text;Format)

Returns the entered text as a **Date/Time**.

Parameters

Text

The parameter may only contain **numerical characters** or variables of the type **Text**, as otherwise a type conversion is not possible (Result = **invalid**). As **separator** between Year, Month etc. you can use the following characters: slash (**/**), full stop (**.**), minus (**-**), semi-colon (**;**), colon (**:**), space and comma. You can determine the **order** of the individual data yourself, but must indicate this in the **Format** parameter.

Format

Indicates in which format or order the text has been entered. This parameter must be marked by **inverted commas** and can comprise the following code characters:

Characters	Significance
y	Year
M	Month
d	Day
H	Hour 0…23
h	Hour AM/PM
m	Minute
s	Second
a	AM/PM marking

Note

If you indicate the time in the format **AM/PM**, it is necessary in addition to the formatting character **h** to use the AM/PM marking **a** (see first example below).

Examples

TextToTime("2004-12-3 5:22:01 PM";"yMdhmsa") = **2004-12-03 17:22:01 UTC+1** (dependent on the system time)

TextToTime("12-15-01 2001:3:5";"HmsyMd") = **2001-03-05 12:15:01 UTC+1** (dependent on the system time)

TextToTime('CV.TestDate';'CV.TestFormat') = Values of the common variables in the time format indicated

TextToTime('MV.ID1';'CV.TestFormat') = entered text of ID1 in the time format indicated

2.4.4.7.5 TimeToNumber

Dialogfenster: **Formula editor** ▸ **Operators/Functions**

Syntax

y = TimeToNumber(Time)

Returns the entered time as a **Number**.

Note

Both for the automatic and explicit conversion of a **Time** to the type **Number**, the number of days are counted since **December 30, 1899 at 01 hours**.

Attention: December 30, 1899 01 hours = 0.00000 days, this number is **rounded** off to 5 decimal places, but a relational operation for example is carried out with the exact value.

Parameters

Time

This parameter can be indicated either in the form of a time function or as a variable of the type **Time**.

Examples

TimeToNumber(Time()) = current date and current time represented as **Number** (in days since December 1899)

TimeToNumber(Time(1999;12;31;23;59;59)) = 36525.95832

TimeToNumber(Time('TestYear';'TestMonth';'TestDay')) = Value of the common variables as number of days as a **Number**

2.4.4.7.6 TimeToText

Dialogfenster: **Formula editor ▸ Operators/Functions**

Syntax

y = TimeToText(Time)

Returns the time entered as **Text**.

y = TimeToText(Time;Format)

Gives the time entered as **Text** in the required format.

Parameters

Time

This parameter can be indicated either in the form of a time function or as a variable of the type **Date/Time**.

Format

Indicates in which format or order the time is to be output as text. This parameter can comprise the following code characters and must be marked by **inverted commas**:

Characters	Significance	Example
y	two-digit year number	**03**
yyyy	four-digit year number	**1999**
M	one or two-digit month number	**4, 12**
MM	two-digit month number	**04, 12**
MMM	Month name short form	**Jul, Aug**
MMMM	Month name	**July, August**
d	one or two-digit day number	**2, 25**
dd	two-digit day number	**02, 25**
h	one-digit or two-digit hour number (1…12 AM/PM)	**5, 11**
hh	two-digit hour number (1…12 AM/PM)	**05, 11**
H	one-digit or two-digit hour number (0…23)	**8, 17**
HH	two-digit hour number (0…23)	**08, 17**
m	one or two-digit minute number	**2, 25**
mm	two-digit minute number	**02, 25**

Characters	Significance	Example
s	one or two-digit second number	**3, 55**
ss	two-digit second number	**03, 55**
E	Weekday short form	**Mon, Tue, Wed**
EEEE	Weekday	**Monday, Tuesday**
D	one, two or three-digit number of the day in the year	**2, 35, 142**
DD	two or three-digit number of the day in the year	**02, 35, 142**
DDD	three-digit number of the day in the year	**002, 035, 142**
F	one-digit number of the weekday in the month, e.g. the **2**nd Monday in May	**2**
w	one or two-digit number of the week in the year	**5, 25**
ww	two-digit number of the week in the year	**05, 25**
W	one-digit number of the week in the month	**3**
a	Format AM/PM	**AM, PM**
'	Inverted commas used for entering any text	
''	Entry of '	**'**

Note

If you wish to indicate the time in the format **AM/PM**, it is necessary in addition to the formatting character **h** to use the AM/PM marking **a** (see last example below).

Examples

TimeToText(Time()) = current date and current time (system) as **Text**

TimeToText(Time(2004;05;04)) = **2004-05-04 00:00:00 UTC+2** (dependent on the system time)

TimeToText('CV.TestTime') = Value of the common variable (type **Time**) as **Text**

TimeToText(Time(2000;12;31);"EEEE', 'dd'.'MMMM' 'yyyy") = **Sunday, December 31, 2000**

TimeToText(Time(1997;05;22);"M'/'d'/'yyyy', 'ha") = 5/22/1997, 12PM

2.4.4.8 Text functions

2.4.4.8.1 TextPosition

Dialog window: **Formula editor** ▸ **Operators/Functions**

Syntax

y = TextPosition(Text ; sample text)

Gives the **Index** which indicates at which point the **sample text** appears for the first time in the **Text**. The numbering of the index begins at **1**!

Parameters

Text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**.

Sample text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**. If the types of the two parameters do not coincide, the type is converted from **Sample text** to the type **Text**. If the **Sample text** is not included in the **Text**, the status **invalid** is given.

Note

Entries of the type **Number** are always provided with a decimal place.

Example: **TexPosition("12345";3)** = **invalid**, as the 3 is converted to 3.0 before the operation in 3.0 and this is not included in the text.

Examples

TextPosition("Citric acid";"acid") = 9, the word "**acid**" occurs in the text from index number 9 onwards

TextPosition("Citric acid";"Acid") = **invalid**, the word "**Acid**" (capitalized) does not occur in the text

TextPosition("Citirc acid";"salt") = **invalid**, the word "**salt**" does not occur in the text

TextPosition(Time(2004;05;05);"5") = **7**

TextPosition(3362.14;"6") = **3**

TextPosition('MV.ID2';"Carbonate") = Index in which the word part "**Carbonate**" begins for the first time in the ID2

2.4.4.8.2 SubText

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = SubText(Text ; Position ; Length)

Gives that part of the text from **Text** which begins at the index **Position** and which has the length **Length**.

Parameters

Text

The parameter can be indicated either directly as text or as a variable of the type **Text**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this type conversion is not possible, the result of this operation is given as **invalid**.

Position

The numbering of the **Position** begins at **1**. The parameter can be indicated either **directly as a number** or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If a type conversion is not possible or the position does not exist, the result of this operation is given as **invalid**.

Length

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. It a type conversion is not possible or the length indicated here is greater than the length of the subtext, **invalid** is given

Examples

SubText("Citric acid";9;5) = **acid**

SubText("Citric acid";9;6) = **invalid**, only five characters exist from position 9 onwards

SubText('MV.ID2';1;3) = the first three chracters of the identification 2

2.4.4.8.3 Trim

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Trim(Text)

Gives the **Text** without spaces before and after.

y = Trim(Text ; sample text)

Gives the **Text** without **Sample text**.

Parameters

Text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**.

Sample text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**. If the types of the two parameters do not coincide, the type is converted from **Sample text** to the type **Text**.

Note

Entries of the type **Number** are always provided with a decimal place.

Example: **Trim("12345";3)** = **12345**, as the 3 is converted to 3.0 before the operation and this is not included in the text.

Examples

Trim(" Citric acid ") = **"Citric acid"**

Trim("Citric acid";"acid") = **Lemons**

Trim("Citric acid";"salt") = **Citric acid**

2.4.4.9 Miscellaneous functions

2.4.4.9.1 Case

Dialog window: **Formula editor** ▸ **Operators/Functions**

Syntax

y = Case(Condition ; value_true ; value_false)

y = Case(Condition ; value_true ; value_false ; value_error)

Gives **value_true** if the condition is true. Otherwise **value_false** is given. If an error occurs in the condition (result **invalid**), **value_error** is given.

Parameters

Condition Number

Any variable (type **Number**) can be entered here, or a relational or logic operation can be performed whose operators can be transferred either directly or as a variable. These can be of the type **Text**, **Number** or **Date/Time**.

Value_true

If **condition <> 0**, this parameter is saved as a result of the function. This parameter can be transferred either directly or as a variable and can be of

the type **Text**, **Number** or **Date/Time**. Entire operations can also be transferred here.

Value_false

If **condition = 0**, this parameter is saved as a result of the function. This parameter can be transferred either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. Entire operations can also be transferred here.

Value_error

If **condition = invalid**, this parameter is saved as a result of the function. This parameter can be transferred either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. Entire operations can also be transferred here.

Examples

Case('MV.ID1' = "";"ID1 empty";"ID1 not empty") = if no entry has been made for ID1 in the run window, the text **ID1 empty**, otherwise **ID1 not empty**will be saved in the result.

Case('RS.IntermediateRes' > 5.5;"Intermediate result too high";'RS.IntermediateRes' * 26.5;"Error occurred") = If the result "**IntermediateRes**" is greater than 5.5, the text "**Intermediate result too high**" will be written into the result, otherwise the intermediate result will be multiplied by 26.5. If an error occurs during the comparison (**'RS.IntermediateRes' > 5.5**), "**Error occurred**" will be saved as a result of this operation.

2.4.4.9.2 Error

Dialog window: **Formula editor ▸ Operators/Functions**

Syntax

y = Error(value)

Gives **+1** if the **value is invalid** (error) or **0** if the **valie is valid**. This function can be used e.g. to check variables for their existence or validity.

Parameters

Value

The variable to be tested.

Examples

Error('RS.IntermediateRes') = 0: the intermediate result was able to be calculated.

Error('RS.ZwischenRes') = 1: the intermediate result is invalid.

2.4.4.10 ASCII table

Dialog window: **Formula editor**

Only printable characters are listed in the table below:

ASCII value (dec)	Characters	ASCII value (dec)	Characters	ASCII value (dec)	Characters
32	Space	64	At sign (@)	96	Accent grave (`)
33	Exclamation mark (!)	65	A	97	a
34	Quotation mark (")	66	B	98	b
35	Hash mark (#)	67	C	99	c
36	Dollar ($)	68	D	100	d
37	Percent (%)	69	E	101	e
38	Commercial "and" (&)	70	F	102	f
39	Inverted comma (')	71	G	103	g
40	Opening parentheses (()	72	H	104	h
41	Closing parentheses ())	73	I	105	i
42	Multiplication sign (*)	74	J	106	j
43	Addition sign (+)	75	K	107	k
44	Apostrophe (´)	76	L	108	l
45	Subtraction sign (-)	77	M	109	m
46	Period (.)	78	N	110	n
47	Slash mark (/)	79	O	111	o
48	0	80	P	112	p
49	1	81	Q	113	q
50	2	82	R	114	r
51	3	83	S	115	s
52	4	84	T	116	t
53	5	85	U	117	u
54	6	86	V	118	v

ASCII value (dec)	Characters	ASCII value (dec)	Characters	ASCII value (dec)	Characters
55	7	87	W	119	w
56	8	88	X	120	x
57	9	89	Y	121	y
58	Colon (:)	90	Z	122	z
59	Semi-colon (;)	91	Square parentheses ([)	123	Curly parentheses ({)
60	Less than (<)	92	Backslash (\)	124	Vertical stroke (¦)
61	Equals (=)	93	Square parentheses (])	125	Curly parentheses (})
62	Greater than (>)	94	Circumflex (^)	126	Tilde (~)
63	Question mark (?)	95	Underscore (_)		

2.4.5 Molar mass calculator

Dialog window: **Molar mass calculator**

The dialog window **molar mass calculator** is used for the simple entry of molar masses into the formula editor and is opened with the button .

Mode of operation

The molecular formula of any chemical compound can be entered in the **Molecular formula** field, after which pressing **[OK]** will cause the molar mass of the compound to be calculated and entered directly into the formula editor.

The molecular formula can be entered either directly or by clicking on the symbols of the periodic system.

Examples

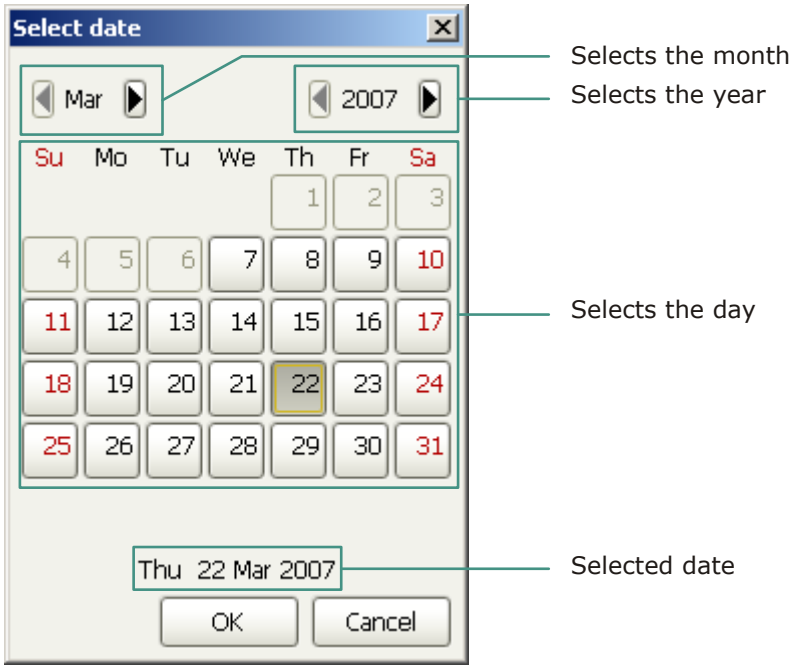
Molecular formula	Molar mass
H2SO4	**98.0734**
Ca(OH)2	**74.09268**
AlCl3*6H2O	**238.43174**

2.5 Editing

2.5.1 Select date

Dialog window: **Select date**

The dialog window **Select date** serves for entering a date in a field and is opened with the button ....



2.5.2 Text editor

Dialog window: **Text editor**

The text editor serves for entering formatted text in text fields and is opened with the button T.

The toolbar of the text editor includes the following functions:

Cut selected text and copy it to the clipboard.

Copy selected text to the clipboard.

Insert text from the clipboard.

Open editor for entering a hyperlink *(see Chapter 2.5.3, page 82)*.

Open formula editor for entering calculation formulas .*(see Chapter 2.4, page 31)*

Note

In order for results of formulas of the type **Date** to be output correctly, for text windows they must be converted to **Text** using the function **TimeToText** *(see Chapter 2.4.4.7.6, page 73)*.

Font size in pt.

Select font color.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

2.5.3 Hyperlink

Dialog window: **Hyperlink**

The dialog window **Hyperlink** serves for entering a hyperlink in a field and is opened with the button .

Displayed text

Designation of the hyperlink that is displayed.

Link target

Address of the link target to which the hyperlink refers (Web site, E-mail address, file,...).

The button opens a selection dialog for linking a file as a link target.

2.6 Graphics window

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

The graphics window is used for displaying the recorded chromatograms, calibration curves, spectra and cyclovoltammograms. It is used in the following program parts:

Workplace

Live display of chromatograms, spectra and cyclovoltammograms during the recording of a determination *(see Chapter 3.8, page 184)*.

Method

Assigning the peaks and visualizing the effects of parameter changes on chromatograms, spectra and calibration curves during the method development *(see Chapter 5.9, page 484)*.

Database

Viewing chromatograms, calibration curves, spectra and cyclovoltammograms of the recorded determinations *(see Chapter 4.10, page 349)*.

Reprocessing determinations *(see Chapter 4.7.18.4.4, page 318)*:

- Assigning the peaks and visualizing the effects of parameter changes on chromatograms and calibration curves during reprocessing.
- Manual integration.

Note

The graphics window does not have exactly the same properties in all program parts. Where there are deviations, this is specially indicated.

2.6.1 Elements

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

Header

This contains the title of the subwindow and a button for minimizing/maximizing the subwindow.

Note

The **Ident** of the determination is additionally displayed in the database and in the method.

Tabs

Each analysis which has been assigned a data source has its own tab. Chromatograms of the determination and the associated calibration data set as well as the calibration curves of the components are displayed there.

Radio buttons

Switches back and forth between **Chromatogram view**, **Calibration curve view**, **Spectrum view** and **Cyclovoltammogram view**.

If an analysis has been selected which does not have an evaluation (auxiliary curve), the radio buttons will be inactive and the chromatogram view set.

Note

Not available in **Workplace ▸ Live display #**. Only the current chromatogram or the cyclovoltammogram can be displayed during recording.

Selection	**Chromatogram** | **Calibration curve** | **Spectrum** | **Cyclovoltammogram**
Default value	**Chromatogram**

Chromatogram
This radio button activates the chromatogram view. If the radio button is active, the spin box will contain the chromatogram selection. The chromatogram of the last determination or of a determination which has been incorporated in the calibration can be displayed.

Calibration curve
This radio button activates the calibration view. If the radio button is active, the spin box is labeled with **Components** and contains the calibration curve selection for all components.

Spectrum
This radio button is only available for analyses using the 887 Professional UV/VIS Detector. It activates the spectrum view. The selection list next to it contains the names of the spectra.

Cyclovoltammogram
This radio button is only available for analyses using the 850.9110 IC Amperometric Detector. It activates the cyclovoltammogram view. The selection list next to it contains the designations of the cyclovoltammograms.

Current measuring value

Left field above the curve, shows the current measured value when recording.

Note

Available only in **Workplace ▸ Live display #**.

Cursor

Right field above the curve, shows the coordinates of the cursor position.

Note

The cursor position is displayed in the header of the subwindow **Database ▸ Curve #**.

2.6.2 Chromatogram view

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

The chromatogram view consists of the following elements:

- Field **Chromatogram** for selecting the displayed curve.
- **Overview window** which displays the complete curve and the zoom range.
- **Curve window**, you can zoom and configure the display here.

Chromatogram

Chromatogram

Selection of the determination whose curve is displayed.

Note

Not available in **Workplace ▸ Live display #**. Only the current chromatogram can be displayed during recording.

Database

The chromatogram can be selected from selected determination and from all determinations located in its calibration data set.

Selection	**Chromatogram** | **Blank** | **Standard 1...n**
Default value	**Chromatogram**

Method

The chromatogram of the last determination or the last sample which has been measured can be selected, while all the determinations which are incorporated in the current calibration data set are also available.

Selection	**Last chromatogram** | **Sample** | **Blank** | **Standard 1...n**
Default value	**Last chromatogram**

Overview window

The overview window always displays the entire measurement curve. The zoom range is represented as a red square in the overview window, which can be moved with the mouse.

Curve window

The curve window serves for displaying and viewing the measurement curve. The curve can be zoomed in or out and its visualization (background, axes, peak label,...) completely configured.

If you click on the curve window with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Show the whole curve. This menu item is always enabled.

Default view	Show the default view. This menu item is inactive, if **Show all** is selected for both axes as the definition of the default view *(see Chapter 2.6.10.1, page 96)*.
Zoom	Open the dialog for setting a zoom range *(see Chapter 2.6.9, page 95)*.
Unzoom	Undo the last zoom action.
Properties...	Open the dialog window **Properties - 'Analysis name'** to define properties of the curve display *(see Chapter 2.6.10, page 96)*.
Copy	Copy the graph displayed in the graphics window.
Export graph...	Open the dialog window **Export graph** to export the graph displayed in the graphics window *(see Chapter 2.6.11, page 103)*.

Note

The following menu items are only available in dialog window **Reprocessing** (**Subwindow: Database ▸ Determinations ▸ Reprocess... ▸ Chromatograms - 'Ident' #**) *(see Chapter 4.7.18.4.4, page 318)*.

Add peak	Add a peak. Only active if cursor is not placed on a peak.
Add rider	Add a rider. Only active if cursor is placed on a peak. Is is not possible to insert a rider in peaks with a common baseline or in other riders.
Remove peak	Remove the highlighted peak. Only active if a peak is highlighted.
Split peak	Split the peak at cursor position into two peaks with a common baseline. Only active if a peak is highlighted.
Join peaks	Join peaks with a common baseline to one peak. Only active if two peaks with a common baseline are highlighted.

Note

The following menu items are only available in program part **Method** and in dialog window **Reprocessing** (**Subwindow: Method ▸ Chromatograms - 'Ident' #** or **Subwindow: Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #**).

New component	Open the dialog window **Component** to define a new component. The cursor position is automatically applied as the retention time *(see Chapter 5.8.3.2, page 419)*.
New event	Open the dialog window **Integration event** to define a new event. The cursor position is automatically applied as the event time *(see Chapter 5.8.2.4, page 415)*.

2.6.3 Calibration curve view

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

The calibration curve view consists of the following elements:

- Field **Component** for selecting the displayed calibration curve.
- Graph showing the calibration points and the **calibration curve**.
- The mathematical **properties** of the calibration curve.
- A table with the **calibration points**.

Component

Component

Selection of the component whose calibration curve is displayed. The selection comprises all components which are defined in the active analysis.

Calibration curve

Shows the calibration curve of the component which is selected in the **Component** field.

The graph of the calibration curve is synchronized with the calibration points table. A calibration point can be selected both in the curve and in the table. The point is then highlighted in **blue** and the corresponding line in the table in **yellow**. Points which have been removed manually from the calibration appear as a **red cross** in the graph and as a **red line** in the table.

The label of the axes or assignment in respect to which property is applied to the x/y axis is derived from the function type of the calibration which is defined in the method. For a calibration with an internal standard, the unit of the measuring quantity is called **Ratio**.

If you click on the calibration curve with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Show the whole curve. This menu item is always enabled.
Default view	This menu item is inactive for the calibration curve.
Zoom	Open the dialog for setting a zoom range *(see Chapter 2.6.9, page 95)*.
Unzoom	Undo the last zoom action.
Copy	Copy the calibration curve displayed in the graphics window.
Export graph...	Open the dialog window **Export graph** to export the graph displayed in the graphics window *(see Chapter 2.6.11, page 103)*.

Properties

Display of several characteristics of the calibration curve.

Function

Function of the calibration curve.

Relative standard deviation

Relative standard deviation of the calibration curve.

Correlation coefficient

Correlation coefficient of the calibration curve.

Curve type

Curve type of the calibration curve. This is derived from the method used to record the determination *(see Chapter 5.8.5.2, page 428)*.

Weighting

Weighting used to incorporate a calibration point in the calibration curve. This is derived from the method used to record the determination *(see Chapter 5.8.5.2, page 428)*.

Retention time of the last standard or retention time of the last determination

Is displayed only if **Readjust retention times** is selected in the method *(see Chapter 5.8.3.3, page 420)*.

Calibration points

Table with the calibration points used to calculate the calibration curve. The table contains the following columns:

Sample type

Type of the standard, from the sample data of the determination.

Index

The index indicates the numbering of the standard from the same table in the calibration data set. The numbering is in the same sequence as the standard determinations occurring in the calibration data set of the determination.

Concentration

Indicates the concentration of the component in the standard, from the standard table in the method.

Volume

Injected volume, from the sample data of the determination.

Dilution

Dilution, from the sample data of the determination.

Sample amount

Sample amount, from the sample data of the determination.

Area / Height

Property of the component peak, measured quantity used to calculate the calibration curve. The method defines whether the area or height is used.

Ident

Ident, from the sample data of the determination.

Date

Recording date, from the determination data.

Used

Indicates whether a calibration point is used for calculating the calibration curve.

Note

Cannot be edited in **Subwindow: Database ▸ Curve #**.

The setting can be edited via the context-sensitive menu item. If a change is made, the calibration curve is immediately recalculated and the updated curve is also updated in the graphics window. The calibration data set is also updated.

The graph of the calibration curve is synchronized with the calibration points table. A calibration point can be selected both in the curve and in the table. The point is then highlighted in **blue** and the corresponding line

in the table in **yellow**. Points which have been removed manually from the calibration appear as a **red cross** in the graph and as a **red line** in the table.

If you click on the table for the calibration points with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

On	Switch on the check box **Used** for the highlighted calibration points.
Off	Switch off the check box **Used** for the highlighted calibration points.
Invert selection	Invert the setting **Used** for the highlighted calibration points.
Change calibration	Open the dialog window **Select calibration** *(see Chapter 2.6.12, page 104)*.

2.6.4 Spectrum view

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Method ▸ Spectrum #

The spectrum view consists of the following elements:

- Field **Spectrum** for selecting the displayed spectrum.
- **Curve window**, you can zoom and configure the display here.

Spectrum

Spectrum

Selection of the spectrum to be displayed.

Curve window

This serves for displaying and viewing the measurement curve. The curve can be zoomed in or out and its visualization (background, axes, peak label,...) completely configured.

If you click on the curve window with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Show the whole curve. This menu item is always enabled.
Default view	Show the default view. This menu item is inactive, if **Show all** is selected for both axes as the definition of the default view *(see Chapter 2.6.10.1, page 96)*.
Zoom	Open the dialog for setting a zoom range *(see Chapter 2.6.9, page 95)*.
Unzoom	Undo the last zoom action.

Properties...	Open the dialog window **Properties - 'Analysis name'** to define properties of the curve display *(see Chapter 2.6.10, page 96)*.
Copy	Copy the chromatogram displayed in the graphics window.
Export graph...	Open the dialog window **Export graph** to export the graph displayed in the graphics window *(see Chapter 2.6.11, page 103)*.

2.6.5 Cyclovoltammogram view

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Method ▸ CV #

The cyclovoltammogram view consists of the following elements:

- Field **CV** for selecting the displayed cyclovoltammogram.
- **Curve window**, you can zoom and configure the display here.

Cyclovoltammograms

CV

Selection of the cyclovoltammogram to be displayed.

Curve window

This serves for displaying and viewing the measurement curve. The curve can be zoomed in or out and its visualization (background, axes, peak label,...) completely configured.

If you click on the curve window with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Show the whole curve. This menu item is always enabled.
Default view	Show the default view. This menu item is inactive, if **Show all** is selected for both axes as the definition of the default view *(see Chapter 2.6.10.1, page 96)*.
Zoom	Open the dialog for setting a zoom range *(see Chapter 2.6.9, page 95)*.
Unzoom	Undo the last zoom action.
Properties...	Open the dialog window **Properties - 'Analysis name'** to define properties of the curve display *(see Chapter 2.6.10, page 96)*.
Copy	Copy the curve displayed in the graphics window.

Export graph...	Open the dialog window **Export graph** to export the graph displayed in the graphics window *(see Chapter 2.6.11, page 103)*.

2.6.6 Zooming

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

Zooming with the mouse

Curves can be zoomed as often as required by spanning a section of the curve display with the left-hand mouse key pressed down. The smallest range that can be zoomed is 10^{-6}.

Zooming with the dialog

Zooming can be undone with a double-click on the section of the graph or with the context-sensitive menu command **Show All**.

The context-sensitive menu item **Zoom** opens the dialog window **Set Zoom** for entering the zoom range *(see Chapter 2.6.9, page 95)*.

Zooming with the keyboard

The arrow keys only become active if the graphics window has the focus. It receives the focus by clicking on the graphics window, the focus being displayed by a red frame.

Zooming with the keyboard can make the zoom range bigger than in the overview window. In this case, the overview window does not change its size. Only a partial frame or not even a red frame is drawn.

[↑]	Zooms in the view in the direction of the Y axis.
[↓]	Zooms out the view in the direction of the Y axis.
[←]	Zooms in the view in the direction of the X axis.
[→]	Zooms out the view in the direction of the X axis.

2.6.7 Moving a curve

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

Note

These actions are only possible in the **Chromatogram view**.

The arrow keys only become active if the graphics window has the focus. It receives the focus by clicking on the graphics window, the focus being displayed by a red frame around the graphics window.

[PageUp]	Moves the chromatogram upwards by 10 % of the graphics window.
[PageDown]	Moves the chromatogram downwards by 10 % of the graphics window.
[Shift][↑]	Increases the spacing of two chromatograms within the same graphics window by 10 %.
[Shift][↓]	Reduces the spacing of two chromatograms within the same graphics window by 10 %.
[0](Zero)	Moves the lowest point of the chromatogram to zero. This function is not possible in the live display.
[Ctrl][←]	Moves the zoomed section to the right by 10 % of the graphics window, i.e. the chromatogram shifts to the left in the visible range.
[Ctrl][→]	Moves the zoomed section to the left by 10 % of the graphics window, i.e. the chromatogram shifts to the right in the visible range.

2.6.8 Working with the cursor

The curve window is synchronized with definite areas of the evaluation in the **Method** program part. Thus the time of the cursor position in the curve window can be directly adopted in the method evaluation.

Integration events

Tab: Method ▸ Evaluation ▸ Integration ▸ Events

If an event is selected in the table for the integration events, its starting time point will be highlighted by a **blue** vertical cursor and its ending time point by a **red** vertical cursor in the curve window. Events which have a time point are highlighted by a red cursor. The cursors can be moved manually. The changed times are accepted in the evaluation with the **[Update Event]** button *(see Chapter 5.8.2.4, page 415)*.

Retention times

Tab: Method ▸ Evaluation ▸ Components ▸ Component table

If a component has been selected in the component table, its retention time will be highlighted by a **blue** vertical cursor in the curve window. The cursor can be moved manually. The changed retention time is updated with accepted in the evaluation with the **[Update Retention Time]** button *(see Chapter 5.8.3.2, page 419)*.

2.6.9 Set Zoom

Dialog window: **Graphics window ▸ Zoom... ▸ Zoom**

Specifies the displayed area, which is always spanned over the whole size of the curve window.

Note

The settings are temporary. They are not saved in the properties of the curve display.

X axis

Visible range in X direction.

from

Starting point in x direction.

Input range	**-10^{12} - 10^{12}**

to

Endpoint in x direction

Input range	**-10^{12} - 10^{12}**

Y axis

Visible range in Y direction.

from

Starting point in y direction.

Input range	**-10^{12} - 10^{12}**

to

Endpoint in y direction

Input range	**-10^{12} - 10^{12}**

2.6.10 Properties

Subwindow:Workplace ▸ Live display #

Subwindow:Database ▸ Curve #

Subwindow:Database ▸ Determinations ▸ Reprocess ▸ Chromatograms - 'Ident' #

Subwindow:Method ▸ Chromatograms - 'Ident' #

The context-sensitive menu item **Properties...** in the curve window opens the dialog window **Properties - 'Analysis Name'**. The visualization of the curve display can be configured here. The window consists of up to four tabs.

2.6.10.1 Properties - Axes

The label and scaling of the axes is defined on the **Properties - Axes** tab.

X axis

Axis label

Freely definable label of the axis.

Selection	**auto** | **any text**
Default value	**auto**

auto
The axis is labeled with the unit of the applied size.

any text
Any text can be entered.

Default view

The default view includes option buttons for defining the standard visualization of the axes.

Selection	**Show all** | **Range**
Default value	**Show all**

Show all
The axis scaling is selected in such way that all points of the curve are displayed.

Range
Only the area indicated of the axis between **from** and **to** is displayed. These two fields can only be edited if the option **Range** is activated.

from

Initial value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Input range	**-10^{12} - 10^{12}**

to

Final value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Input range	**-10^{12} - 10^{12}**

Y axis

Axis label

Freely definable label of the axis.

Selection	**auto** | **any text**
Default value	**auto**

auto
The axis is labeled with the unit of the applied size.

any text
Any text can be entered.

Default view

The default view includes option buttons for defining the standard visualization of the axes.

Selection	**Show all** | **Range**
Default value	**Show all**

Show all
The axis scaling is selected in such way that all points of the curve are displayed.

Range
Only the area indicated of the axis between **from** and **to** is displayed. These two fields can only be edited if the option **Range** is activated.

from

Initial value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Input range	**-10^{12} - 10^{12}**

to

Final value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Input range	**-10^{12} - 10^{12}**

Scaling

Selection whether the y axis is to be scaled absolutely or relatively.

Selection	**Absolute** | **Relative**
Default value	**Absolute**

Absolute
The values displayed correspond to the actual measured values. The Y axis starts at y_0(abs) and ranges to y_{max}(abs).

Relative
Not selectable with auxiliary curves. The curve is represented in the same way as with absolute scaling. The y axis however starts at 0 and ranges to y_{max}(abs) – y_0(abs). This calculation applies for positive as well as for negative polarity. Example: A signal in the range of -600 to -500 is shown in the range of 0 to 100 with relative scaling.

2.6.10.2 Properties - Chromatogram

The peak label, display of the baseline and curve visualization are defined in the **Properties - Chromatogram** tab.

Peak label

Orientation

Specifies the orientation of the peak label.

Input range	**0° (horizontal) - 90° (vertical)**
Default value	**90° (vertical)**

Always visible

on | off (Default value: **on**)

Note

The peak label is always located on the tip of the peak, regardless of whether positive or negative peaks are involved.

Specifies where the peak label is located if the **peak tip is not visible** (e.g. via zoom).

- If the option is **active**, the peak label is displayed on the upper and lower edge of the curve window.
- If the option is **inactive**, the peak label will always remain at the peak tip, i.e. it is also not visible.

The following properties can be activated/deactivated for the peak label:

Peak number

on | off (Default value: **off**)

Number of the peak. The recognized peaks are numbered consecutively in order. A peak which cannot be assigned to any component, is **always** provided with the peak number.

Component name

on | off (Default value: **on**)

Name of the component. The component name is displayed if the peak can be assigned to a component from the component table.

Retention time

on | off (Default value: **on**)

Retention time of the peak.

Concentration

Concentration of the components. No concentration can be calculated and displayed for a peak which cannot be assigned to any component.

Tooltip

on | off (Default value: **on**)

The Tooltip appears if the mouse cursor rests on a peak and shows the peak properties **Component name**, **Retention time** and **Concentration** if they are activated for the peak label.

Baseline

Show baseline

on | off (Default value: **on**)

Specifies whether the baseline is displayed.

Show base point

on | off (Default value: **on**)

Specifies whether the base points of the peaks are displayed.

Curve

Filter spikes

on | off (Default value: **on**)

Specifies whether the curve is smoothed for the display. The spike filter smoothes the first and last points of the curve and the points which are

identified as spikes. The spike is replaced by the half sum of the two adjoining points.

2.6.10.3 Properties - Reference chromatogram

The tab **Properties - Reference chromatogram** allows you to define whether a chromatogram already recorded is displayed within the graphics window.

Note

Not possible in **Database** ▸ **Curve #** and **Database** ▸ **Determinations** ▸ **Reprocess** ▸ **Chromatograms - 'Ident' #**. The reference chromatogram can only be displayed in the method development and during the recording.

Radio buttons

Selection	**Off** | **Last standard** | **Last check standard** | **Last chromatogram**
Default value	**Off**

Off
No reference chromatogram is shown.

Last standard
The chromatogram of the most recently determined standard is shown.

Last check standard
The chromatogram of the most recently determined check standard is shown.

Last chromatogram
The chromatogram of the most recently recorded determination is shown, regardless of which sample type has been determined.

A reference chromatogram is only displayed if the reference chromatogram has been determined with the same method. The analysis must also correspond to the two chromatograms which are to be compared.

As soon as a new **standard** (for **Last standard**), **check standard** (for **Last check standard**) or any **sample type** (for **Last chromatogram**) has been determined, the associated chromatogram is displayed as a reference chromatogram. The latest available reference chromatogram is displayed.

2.6.10.4 Properties - Spectrum

The tab **Properties - Spectrum** allows you to define whether a spectrum already recorded is displayed within the graphics window.

Labeling of maxima

Orientation

The orientation of the label from 0° (horizontal) to 90° (vertical).

Input range	**0 - 90 °** (Increment: **1**)
Default value	**90 °**

Always visible

on | off (Default value: **on**)

Setting whether the label should always be visible.

With the option **activated**, the default position is at the top of the maximum, if this one is however not visible because of zooming or other viewing options, the label is shown on the upper edge of the graphics window.

With the option **deactivated**, the peak label is always at the top of the maximum, i.e. with corresponding zooming/viewing options the peak label may be located outside the range displayed.

Show number of maximum

on | off (Default value: **off**)

Calculated maxima are numbered consecutively.

Show wavelength

on | off (Default value: **on**)

The wavelength of the calculated maxima is shown.

Curve

Smoothing (Cubic Splines)

on | off (Default value: **off**)

Interpolation of the measuring points displayed by a spline of the third grade.

2.6.10.5 Properties - Display

The visual appearance of the graphics window is defined in the **Properties - Display** tab.

Overview

Show Overview window

on | off (Default value: **on**)

Check box for showing/hiding the Overview window. Not available with cyclovoltammograms.

Curve

Area for defining the color of the measurement curve.

Curve

List box for the color of the measurement curve.

Line thickness

Input range	**1 - 10 pPixels**
Default value	**1 pPixels**

Baseline

List box for the color of the baseline. Not available with cyclovoltammograms.

Comparison curve

Area for defining the color of the comparison curve.

Comparison curve

List box for the color of the comparison curve.

Line thickness

Input range	**1 - 10 pPixels**
Default value	**1 pPixels**

Graph

Area for defining the appearance of the graphics window.

Background

Clicking on the symbol ... opens the dialog window **Select color**.

Axes

List box for the color of the axes.

Line thickness

Input range	**1 - 10 pPixels**
Default value	**1 pPixels**

Grid

on | off (Default value: **off**)

Check box for showing/hiding a grid in the background of the measurement curve.

List box for the color of the grid.

2.6.11 Export graph

The context-sensitive menu item **Export graph...** in the curve window opens the dialog window **Export graph**. Here you can define how the current content of the graph display is to be exported in a file (vector graph) in the format ***.eps**.

File name

Display of the selected file name.

Opens the standard dialog of the operating system for selecting or entering a file name. The specification of the file type ***.eps** is fixed. After the selection or input of a valid file name, this will be displayed in the parameter **File name**.

Dimensions

on | off (Default value: **off**)

Option for the application of dimensions to the graph to be exported (**Width** and **Height**).

If this option is **switched on**, then the graph will be exported in the size which is defined in the parameters **Width** and **Height**.

If this option is **switched off**, then the graph will be exported in the currently displayed size.

Width

Definition of the width of the graph to be exported. Available only if the parameter **Dimensions** is switched on.

Input range	**40 - 1000 mm**
Default value	**100 mm**

Height

Definition of the height of the graph to be exported. Available only if the parameter **Dimensions** is switched on.

Input range	**40 - 1000 mm**
Default value	**80 mm**

Font for text in the graph

on | off (Default value: **off**)

Option for the use of a font for texts which are located in the graph to be exported.

If this option is **switched on**, then text which is located in the graph will be exported with the selected font and in the selected size.

If this option is **switched off**, then text which is located in the graph will be vectorized.

Note

If you switch on this option, then you should check whether the selected font is available on the computer where the exported graph may need to be edited further.

(Font type)

Selection of the font from the list of fonts which are installed on the computer. Available only if the parameter **Font for text in the graph** is switched on.

(Font size)

Selection of the size of the selected font. Available only if the parameter **Font for text in the graph** is switched on and a font has been selected.

2.6.12 Changing the calibration

Client

Selection list used for selecting the client whose calibration data set is to be loaded.

Selection	**all clients**

If the selection is confirmed with **[OK]**, the calibration data set of the client on which the action is to be executed is overwritten with the calibration data set of the selected client.

2.6.13 Choosing color

The dialog window contains radio buttons for setting the hue, saturation and brightness.

Color selection

Clicking in the left color field allows you to select a color; the settings for the color are automatically transferred to the fields for the color setting at the same time.

Scroll bar

The scroll bar in the center of the dialog window is synchronized with the activated field of the color setting. This allows the **Hue**, **Saturation** and **Brightness** to be set very quickly.

Color setting

The hue, saturation and brightness of the color can be set independently of one another.

Selection	**Hue** | **Saturation** | **Brightness**
Default value	**Hue**

Hue

Hue entry.

Input range	**0 - 359**

Saturation

Saturation entry.

Input range	**0 - 100**

Brightness

Brightness entry.

Input range	**0 - 100**

RGB values display

The RGB values for the selected color are displayed.

Red

Display of the red contribution.

Input range	**0 - 255**

Green

Display of the green contribution.

Input range	**0 - 255**

Blue

Display of the blue contribution.

Input range	**0 - 255**

Color sample

A sample with the color set is displayed in the lower part of the dialog window.

2.7 E-mail

2.7.1 Send E-mail

Dialog window: **[E-mail...]** ▸ **Send e-mail**

E-mail template

Selection of the template for sending E-mails.

Subject

Subject to describe the message.

Message

Text of the message, which is output at the address defined under **[E-mail...]**E-mail. Clicking on the symbol opens the dialog window of the text editor *(see Chapter 2.5.2, page 81)*.

3 Workplace

3.1 Workplace - General

3.1.1 Workplace - Definition

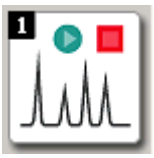
Program part: **Workplace**

In **MagIC Net**, **Workplace** is defined as the program part in which up to 4 workplaces can be opened next to one another for the simultaneous, independent running of determinations.

3.1.2 Workplace - Desktop

Program part: **Workplace**

Workplace symbol



Clicking on the workplace symbol in the vertical bar on the left opens the program part **Workplace** while, at the same time, the workplace symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of workplaces currently opened *(see Chapter 3.2.3.1, page 117)*.

Elements

The desktop of the program part **Workplace** comprises the following elements:

- Workplace-specific menu bar.
- Workplace-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

3.1.3 Workplace - Menu bar

3.1.3.1 Workplace - Main menu

Program part: **Workplace**

The menu bar in the program part **Workplace** contains the following main menu items:

- *File*
  Create, edit, close workplaces; save methods; open manual control.
- *View*
  Change layout, load views, save views, edit properties of subwindows.

- *Tools*
  Manual control, run test, sample tables, sample assignment tables, text templates.
- *Help*
  Open help, show program info.

3.1.3.2 Workplace - Menu File

Program part: **Workplace**

File	
Workplace ▸	
New...	Open new workplace *(see Chapter 3.2.1, page 116)*.
Properties...	Edit properties of the selected workplace *(see Chapter 3.2.2, page 116)*.
Close	Close the selected workplace *(see Chapter 3.2.4, page 118)*.
Method ▸	
Save	Save the method with the modified live parameters *(see Chapter 3.8.3, page 186)*.
Save as...	Save the method with the modified live parameters under a new name *(see Chapter 3.8.3, page 186)*.
Logout...	Logout user *(see Chapter 2.2.3, page 24)*.
Exit	Exit the program.

3.1.3.3 Workplace - Menu View

Program part: **Workplace**

View	
Change layout...	Change the layout of the loaded workplace view *(see Chapter 3.1.7.2, page 114)*.
Load view...	Load a saved workplace view *(see Chapter 3.1.7.3, page 115)*.
Save view...	Save the current workplace view *(see Chapter 3.1.7.4, page 115)*.
Split vertically	Split the workplace window vertically and display two workplaces side by side *(see Chapter 3.2.3.3, page 117)*.

Split horizontally	Split the workplace window horizontally and display two workplaces below each other *(see Chapter 3.2.3.4, page 118)*.
Unsplit	Unsplit the workplace window *(see Chapter 3.2.3.2, page 117)*.
Properties ▸	
Properties Run window	Set the properties for the tab **Single determination** or **Determination series** in the subwindow **Run**.
Properties Live display 1	Set the properties for the subwindow **Live display 1** *(see Chapter 3.8, page 184)*.
Properties Live display 2	Set the properties for the subwindow **Live display 2** *(see Chapter 3.8, page 184)*.
Properties Watch window	Set the properties for the subwindow **Watch window** *(see Chapter 3.10, page 189)*.
Toolbar	Switch the toolbar display on/off.

3.1.3.4 Workplace - Menu Tools

Program part: **Workplace**

Tools	
Run test	Carry out the run test for determination(s) *(see Chapter 3.7.2, page 146)*.
Sample table ▸	
New...	Open a new and empty sample table *(see Chapter 3.3.1.1, page 118)*.
Open...	Open a saved sample table *(see Chapter 3.3.1.2, page 118)*.
Manager...	Manage saved sample tables *(see Chapter 3.3.3.1, page 136)*.
Timer...	Define automatically executable actions *(see Chapter 3.4.1, page 138)*.
Sample assignment table...	Define sample identifications which a certain method can be assigned to *(see Chapter 3.5.1, page 142)*.
Text templates...	Create text templates for the sample data *(see Chapter 3.6.1, page 144)*.

3.1.3.5 Menu Help

Program parts: **Workplace / Database / Method / Configuration**

MagIC Net&Help	Open MagIC Net Help.
&About	Display information about the program and the installation.

3.1.4 Workplace - Toolbar

Program part: **Workplace**

Sample table/New...	Open a new and empty sample table *(see Chapter 3.3.1.1, page 118)*.
Sample table/Open...	Open a saved sample table *(see Chapter 3.3.1.2, page 118)*.
Sample table/Manager...	Manage saved sample tables *(see Chapter 3.3.3.1, page 136)*.
Change layout	Change the layout of the loaded workplace view *(see Chapter 3.1.7.2, page 114)*.
Load view	Loads a saved workplace view *(see Chapter 3.1.7.3, page 115)*.
Save view	Save the current workplace view *(see Chapter 3.1.7.4, page 115)*.
Run test	Carry out the run test for determination(s) *(see Chapter 3.7.2, page 146)*.
Timer...	Define automatically executable actions *(see Chapter 3.4.1, page 138)*.
Split vertically	Split the workplace window vertically and display two workplaces side by side *(see Chapter 3.2.3.3, page 117)*.
Split horizontally	Split the workplace window horizontally and display two workplaces below each other *(see Chapter 3.2.3.4, page 118)*.
Unsplit	Unsplit the workplace window *(see Chapter 3.2.3.2, page 117)*.
Logout	Logout user *(see Chapter 2.2.3, page 24)*.
MagIC Net Help	Open MagIC Net Help.

3.1.5 Workplace - Subwindows

Program part: **Workplace**

Selection

The following subwindows can be displayed in the main window:

- *Run*
  Window for controlling sequences and entering sample data. This subwindow is permanently on display.
- *Live display 1*
  Display of live curves, measured values and messages for the running determination.
- *Live display 2*
  Display of live curves, measured values and messages for the running determination.
- *Report*
  Display of reports of recorded determinations.
- *Watch window*
  Display of important information concerning method and instruments.
- *Time program*
  Display of the time program of the method loaded.

Presentation

The subwindows can be enlarged or made smaller to suit by dragging the separating bar between the windows.

By clicking on the button ☐ above at the right, the subwindows can be maximized so that only one subwindow is displayed in the main window. The original view of all subwindows is restored when the ☐ button is clicked in the maximized subwindow again.

3.1.6 Workplace - Functions

Program part: **Workplace**

The following functions can be carried out in the **Workplace** program part:

Views

- *Define the workplace view layout*
- *Load workplace view*
- *Save workplace view*
- *Rename workplace view*
- *Delete workplace view*

Workplaces

- *Create workplace*
- *Edit workplace*

- *Select workplace*
- *Close workplace*

Sample tables

- *Create sample table*
- *Open sample table*
- *Edit sample table*
- *Edit sample data*
- *Save sample table*
- *Print sample table*
- *Define sample table properties*
- *Manage sample tables*

Single determination

- *Start/stop single determination*
- *Interrupt/resume single determination*
- *Enter sample data*
- *Modify sample data live*
- *Define properties*

Determination series

- *Start/stop series*
- *Interrupt/resume determination*
- *Interrupt/resume series*
- *Load sample table*
- *Edit sample table*
- *Enter sample data*
- *Modify sample data live*
- *Define properties*

Subwindow Live display

- *Define properties*

Subwindow Report

- *Select a report*

Tools

- *Perform run test*
- *Edit sample assignment table*
- *Define text templates*

3.1.7 Views

3.1.7.1 Views - General

Program parts: **Workplace / Database / Configuration**

Definition

The term **View** defines the contents and design of the main window in the program parts **Workplace**, **Database** and **Configuration**. The following elements belong to a view:

- Number, arrangement, sequence and size of the subwindows.
- Representation within the individual subwindows, i.e. column sequence, column width, sorting and filter.

Functions

The following functions are possible for views:

- *Change layout*
  Define the number, arrangement and sequence of the subwindows for the current view.
- *Save view*
  Save current view.
- *Load view*
  Load a saved view.
- *Rename view*
  Rename a saved view.
- *Delete view*
  Delete a saved view.

Automatic save

If the corresponding option is activated in the program part **Configuration** under **Tools ▸ Options...** on the tab **Save** under **Save on closing**, then the current view will be saved automatically when the program is closed.

Automatic load

The standard procedure is that the view saved when the program is terminated will be loaded automatically the next time that the program is opened. As an alternative a standard view can be defined for each user group that is loaded automatically the first time that the program part is opened.

The standard procedure is that the view with the following subwindow is opened with the very first program start:

- **Workplace**
  Run, **Live display 1**, **Report**, **Watch window**, **Time program**

- **Database**
  Determination overview, **Curves 1**, **Information**, **Results**
- **Configuration**
  Devices, **Columns**, **Eluents**, **Accessories**

Export/Import

Views can also be exported and imported. In this way these views can be exchanged between different client / server systems.

3.1.7.2 Change layout

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Change &layout... ▸ Change layout**

The symbol or the menu item **&View ▸ Change &layout...** opens the dialog window **Change layout**.

Select layout

Selection of a graphical symbol for the number, arrangement and sequence of the subwindows.

Selection	**'Selection of the possible combinations'**

Available subwindows

Displaying the subwindows that are still available for displaying the view.

Selection	**'Selection of the subwindows'**

Displayed subwindows

Displaying the subwindows that are shown in the view.

Selection	**'Subwindows'**

Add the selected subwindow to the view.

Remove the selected subwindow from the view.

Move the selected subwindow upward (modifies sequence).

Move the selected subwindow downward (modifies sequence).

3.1.7.3 Loading a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Load &view... ▸ Load view**

The symbol or the menu item **&View ▸ Load &view...** opens the dialog window **Load view**.

Name

Name of the view to be loaded.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Load]

Load the selected view.

3.1.7.4 Saving a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ &Save view... ▸ Save view**

The symbol or the menu item **&View ▸ &Save view...** opens the dialog window **Save view**.

Name

Name under which the view is to be saved.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Save]

Save the view under the given name. The saved views are globally valid and available for client/server systems.

3.1.7.5 Renaming a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Load &view... ▸ Load view ▸ [Rename] ▸ Rename view**

To be able to rename a view, either the dialog window **Load view** or **Save view** must be opened and the button **[Rename]** must be pressed down. Afterwards, the window **Rename view** opens.

Rename view '%1' to

Entry of a new name for the view.

Entry	**50 characters**

3.1.7.6 Deleting a view

Function: **Workplace / Database / Configuration ▸ &View ▸ Load/save view… ▸ [Delete]**

To delete a view, either the dialog window **Load view** or **Save view** must be opened and the button **[Delete]** must be pressed down. The delete procedure must then be confirmed.

3.2 Workplaces

3.2.1 Create new workplace

Dialog window: **Workplace ▸ File ▸ Workplace ▸ New… ▸ New workplace**

The properties of the new workplace can be defined in this dialog window.

Name

Entry of a name for the new workplace or selection from the list of the 10 names most recently used.

Entry	**50 characters**

Color

Selection of the color for the title bar of the subwindow and the status symbol for the new workplace in the status bar.

Selection	**yellow** | **blue** | **green** | **brown**
Default value	**yellow**

3.2.2 Edit workplace

Dialog window: **Workplace ▸ File ▸ Workplace ▸ Properties… ▸ Workplace properties**

The properties of the selected workplace can be defined in this dialog window.

Name

Entry of a name for the selected workplace or selection from the list of the 10 names most recently used.

Entry	**50 characters**

Color

Selection of the color for the title bar of the subwindow and the status symbol for the selected workplace in the status bar

Selection	**yellow** | **blue** | **green** | **brown**
Default value	**yellow**

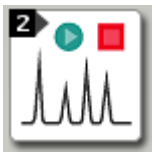
3.2.3 Displaying workplaces

3.2.3.1 Selecting workplace

Program part: **Workplace**

The number of the currently opened workplaces is displayed in the left upper corner of the workplace symbol. If 2 or more workplaces are opened, then these two workplaces, which can be displayed next to one another or one above the other, can be selected with the aid of the workplace symbol.

One workplace is opened and is displayed in the main window.



Two workplaces are opened. Normally only one workplace is displayed in the main window but the option exists of displaying two workplaces at once, either next to one another or one below the other.

A menu with the currently opened workplaces is displayed by clicking with either the left or right mouse button on the workplace symbol. The workplaces displayed in the main window are marked with a checkmark. Clicking on the desired workplace will cause it to be displayed in the main window in place of the previously selected one.

3.2.3.2 Displaying single workplaces

Menu item: **Workplace ▸ View ▸ Unsplit**

In the default settings, the most recently opened workplace is displayed alone in the main window. If the display of two windows is enabled, then the symbol or the menu item **View ▸ Unsplit** can be used to switch back to the display of just one single workplace.

3.2.3.3 Displaying workplaces next to one another

Menu item: **Workplace ▸ View ▸ Split vertically**

With the symbol or the menu item **View ▸ Split vertically** two workplaces are displayed next to one another in the main window.

3.2.3.4 Displaying workplaces one below the other

Menu item: **Menu item ▸ Workplace ▸ Split horizontally**

With the symbol or the menu item **View ▸ Split horizontally** two workplaces can be displayed one below the other in the main window.

3.2.4 Close workplace

Menu item: **Workplace ▸ File ▸ Workplace ▸ Close**

With this menu item the selected workplace is closed.

3.3 Sample tables

3.3.1 Editing the sample table

3.3.1.1 Creating new sample table

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ New… ▸ Sample table 'New sample table'**

With the symbol or the menu item **Tools ▸ Sample table ▸ New…** a new sample table is opened that can then be edited.

3.3.1.2 Opening sample tables

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Open… ▸ Open sample table**

With the symbol or the menu item **Tools ▸ Sample table ▸ Open…** a globally available sample table can be opened.

List of sample tables

The list of sample tables contains information about all the saved sample tables. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the **Comment** tab as a comment concerning the sample table *(see Chapter 3.3.2.6, page 135)*.

Opening the sample table

Name

Name of the sample table that is to be opened. If a sample table from the table is selected, the name will be entered automatically in this field. It can, however, also be entered manually.

Entry	**50 characters**

[Open]

Open selected sample table.

3.3.1.3 Editing sample table

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Open... ▸ [Open] ▸ Sample table 'Name'**

A newly created sample table or one that has been opened can be edited and saved in this dialog window.

Toolbar

Save sample table	Save the sample table.
Output of PDF file	Output the sample table as a PDF file.
Reset sample table	Reset lines that have been processed, i.e. they can be edited again.
Duplicate	Duplicate selected line(s). The new lines are inserted underneath the selected range.
Increment	Increment the selected lines automatically.
Filling	Fill the selected lines automatically.
Test sample table	Check whether or not all sample data in the sample table is correct.

Sample data table

This table contains the sample data lines that have already been saved in the sample table and a line for entering new data that contains a star instead of a line number. The table cannot be edited or sorted directly.

For the meaning of the columns, see *Editing sample data*.

Window menus

[Edit] contains the following menu items:

Edit line	Edit the selected line.
Insert new line	Insert a new empty line above the line selected.
Cut lines	Cut the selected lines and transfer them to the clipboard.
Copy lines	Copy the selected lines to the clipboard.
Paste lines	Paste lines from the clipboard above the selected line.
Delete lines	Delete the selected lines.
Increment	Using the cursor, which takes on the form ✚, the range which is to be automatically incremented can be selected from a column in the table. The number standing at the end of the expression will thereby be automatically increased by 1 in the selected cells of a column, starting from the first selected cell. This works with pure numbers as well as with character strings ending with a number (e.g. **ABC10** → **ABC11** → **ABC12**…).
Filling	Fill the selected lines automatically.
Duplicate	Duplicate selected line(s). The new lines are inserted underneath the selected range.
Mark lines	Mark the selected lines with a red background for the line number. Before the start of such a line the corresponding actions defined under **Properties** on the **Process** tab *(see Chapter 3.3.2.4, page 133)* will be triggered.
Unmark lines	Remove the line marking for the selected lines.
Set lines inexecutable	Set the selected lines to "inexecutable", i.e. these lines will not be executed in the run. Such lines are crossed through with a red line.
Set lines executable	Set the selected lines to "executable", i.e. they will be executed in the run.

[Sample table] contains the following menu items:

Save	Save the current sample table under the same name.
Save As...	Save the current sample table under a new name.

Sample table test...	Check whether or not all sample data in the sample table is correct.
&Print (PDF)...	Output the sample table as a PDF file.
Properties...	Edits properties of the selected sample table.
Import data...	Import a sample table from a file with the format ***.csv**.
Export data...	Export a sample table to a file with the format ***.csv**.
Reset	Reset lines that have been processed, i.e. they can be edited again.

Moving lines with Drag&Drop

The lines selected in the sample table can be moved into the working sample table via Drag&Drop.

Copying lines with Drag&Drop

The lines selected in the sample table can be copied into the working sample table with Drag&Drop by pressing the **Ctrl key**.

3.3.1.4 Editing sample data

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Open... ▸ [Open] ▸ [Edit] ▸ Edit line ▸ Edit line - Sample table 'Name'**

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first characters, the method selection is continuously restricted and allows fast selecting of the method required.

Entry	**50 characters**
Selection	**Method selection**

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.

Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.

Note

The following sample data fields can no longer be edited if they were defined as **Fixed value** in the method *(see Chapter 5.3.1, page 363)*.

Ident

Entry of an identification or selection of a defined text template to identify the chromatogram.*(see Chapter 3.6.1, page 144)*

Entry	**100 characters**
Selection	**Selection of text templates**

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Entry	**64 characters**
Selection	**'empty'** | **Sample** | **Standard 1…n** | **Spiking 1…n** | **Check standard 1…n** | **Blank**
Default value	**'empty'**

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Entry	**100 characters**

Injections

Number of injections per sample line. The determinations of this kind of multiple injection are linked statistically with one another.

Input range	**1 - 99** (Increment: **1**)
Default value	**'empty'**

Volume

Volume of the sample in µL.

Input range	**0.01 - 1000000.00 µL**
Default value	**'empty' µL**

Dilution

Dilution factor for the sample.

Input range	**0.001 - 100,000.00**
Default value	**'empty'**

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
  Basic initial weight = 2.0 g
  Sample initial weight = 2.1 g
  Sample amount = 2.1 / 2.0 = 1.05
  The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
  Basic unit = 1.0 mg
  Initial sample size = 2.1 mg
  Sample amount = 2.1 / 1.0 = 2.1
  The result is divided by 2.1 and indicates how high the content per mg of sample is.

Input range	**0.00001 - 1000000.00000**
Default value	**'empty'**

Info 1…4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**
Selection	**Selection of text templates**

Value 1…4

Input of additional values for the sample.

Input range	**-10^{99} - 10^{99}**
Default value	**'empty'**

Navigation

Display of the currently selected line in the sample table with the following functions:

Jump to the first line in the sample table.

Jump to the previous line in the sample table.

Option of entering the desired line number to which the program jumps when the **[Enter]** is actuated.

Jump to the next line in the sample table. If the end of the table has been reached, then a new line will be inserted automatically and the program will jump to it.

The same function can also be triggered by pressing the **[Enter]** key.

Jump to the last line in the sample table.

Jump to a new, empty line.

Functions

[Apply]

Apply the sample data entered in the respective line of the sample table. If the end of the table has been reached, then a new line will be generated automatically. The same function can also be triggered by pressing the **[Enter]** key. The next line will, however, also be highlighted automatically when **[Enter]** is used.

[Close]

Closes the input window. The current sample data will not be applied in the sample table (this needs to be triggered beforehand with **[Apply]**).

3.3.1.5 Duplicate sample data

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Edit] ▸ Duplicate ▸ Duplicate**

Number

Request as to how often the selected lines are to be duplicated. The new lines are inserted underneath the selected range.

Input range	**1 - 999**
Default value	**1**

3.3.1.6 Importing sample data

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Import data… ▸ Select files to import**

Select a ***.csv** file in this dialog window with the sample data to be imported.

File name

Input or selection of the file that is to be imported.

Selection	**File name**

File type

Selection of the import format for the import of data from a file (only ***.csv** is possible).

Selection	***.csv** | ***.csv (Unicode)**
Default value	***.csv**

[Open]

The sample data from the selected file is inserted at the end of the sample table.

Note

No matter the number of data fields defined on the **Display** tab, the import file must always contain for each line the entirety of the sample data in the format **Method name;Ident;Sample type;Position;Injections;Volume;Dilution;Sample amount**.

3.3.1.7 Exporting sample data

Dialog window:Workplace ▸ Tools ▸ Sample table ▸ Open… ▸ [Open] ▸ [Sample table] ▸ Export data… ▸ Save file under..

Dialog window:Workplace ▸ Run ▸ Determination series ▸ [Sample table] ▸ Export data… ▸ Save file as..

In this dialog window, you determine the file into which the sample data is to be exported.

File name

Input or selection of the file into which the export is to be made.

Selection	**File name**

File type

Prescribed format ***.csv**.

Selection	**[*.csv]**
Default value	**[*.csv]**

[Save]

The sample data will be written to the export file.

3.3.1.8 Sample table test

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Sample table test... ▸ Sample table test -Sample table name**

The menu item **[Sample table] ▸ Sample table test...** or the symbol is used to perform the sample table test. At the same time, the dialog window **Sample table test - 'Sample table name'** in which the information concerning the test is displayed opens.

Note

The **Sample table test** is only used to check whether or not all sample data is correct (in contrast to the **Run test** *(see Chapter 3.7.2, page 146)*, which also checks the required hardware).

Line

Displays the line number of the currently tested sample data line.

Status displays

One of the following status displays appears underneath the line number:

Selection	**Sample table test running… | Sample table test stopped manually | Sample table test finished without errors | Sample table test finished with errors**

Sample table test running…
This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

Sample table test stopped manually
This display appears if the sample table test was canceled manually by the user.

Sample table test finished without errors
This display appears at the end of a sample table test that has been completed without errors.

Sample table test finished with errors
This display appears if an error has occurred during the sample table test. The errors that occured are listed in the **Test report** field.

Test report

Display of errors that occurred during the sample table test, together with line numbers.

3.3.1.9 Save sample table

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Save as… ▸ Save sample table**

A name for the working sample table to be saved can be entered or selected in this dialog window.

List of sample tables

The list of sample tables contains information about all the saved sample tables.

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table *(see Chapter 3.3.2.6, page 135)*.

Saving sample table

Name

Name under which the sample table is to be saved.

Note

The name of the sample table must be unique throughout the entire client/server system.

Entry	**50 characters**

[Save]

Save the sample table under the desired name.

3.3.1.10 Print sample table (PDF)

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Print (PDF)... ▸ Print sample table (PDF)**

The output format for the PDF output can be selected in this dialog window.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Output in portrait format.

Landscape
Output in landscape format.

3.3.2 Sample table - Properties

3.3.2.1 Properties - Overview

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ New... ▸ [Sample table] ▸ Properties... ▸ Properties - Sample table 'Name'**

The properties for a sample table are set on the following tabs:

- *Properties - Display*
  Definition of the columns that are to be displayed in the sample table.

- *Properties - Edit*
  Options for editing the sample table in the dialog windows **Sample table** and **Edit line**.
- *Properties - Process*
  Options for processing the working sample table on the tab **Determination series**.
- *Properties - Data import*
  Activating/deactivating the import of external data for sample table fields.
- *Properties - Comment*
  Entry of a comment on the sample table.

3.3.2.2 Properties - Display

Dialog window:Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window:Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Definition of the operating elements and columns that are to be displayed in the sample table.

Sample data

Ident

on | off (Default value: **on**)

Enable/disable the display of the column **Ident** in the sample table.

Sample type

on | off (Default value: **on**)

Enable/disable the display of the column **Sample type** in the sample table.

Position

on | off (Default value: **on**)

Enable/disable the display of the column **Position** in the sample table.

Injections

on | off (Default value: **on**)

Enable/disable the display of the column **Injections** in the sample table.

Volume

on | off (Default value: **on**)

Enable/disable the display of the column **Volume** in the sample table.

Dilution

on | off (Default value: **on**)

Enable/disable the display of the column **Dilution** in the sample table.

Sample amount

on | off (Default value: **on**)

Enable/disable the display of the column **Sample amount** in the sample table.

Info 1

on | off (Default value: **on**)

Enable/disable the display of the column **Info 1** in the sample table.

Info 2 … Info 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Info 2 … Info 4** in the sample table.

Value 1 … Value 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Value 1 … Value 4** in the sample table

3.3.2.3 Properties - Edit

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Options for the editing of the sample table.

Apply data with

on | off (Default value: **off**)

Selection of the data field which must be filled in connection with automatic data import via barcode reader or file in order to apply the data for the line in the sample data storage and to switch onward to the next line. If the relevant column is empty, then additional imported data will be written into the same line. This means that it is possible, for example, to fill a line first with sample identifications per barcode reader and then later to apply the sample size from a balance for the same line.

Note

This option has no relevance when entering data manually.

Selection	**Method** | **Ident** | **Volume** | **Sample amount** | **Info 1** | **Info 2** | **Info 3** | **Info 4** | **Value 1** | **Value 2** | **Value 3** | **Value 4**
Default value	**Method**

Lock editing in working sample table

on | off (Default value: **off**)

If this option is activated, then it is not possible to edit lines in the sample table that is loaded in the working sample table.

Copy automatically into next line

Method

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Ident

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample type

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample position + 1

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be incremented by **+1** when a new sample data line is created.

Injections

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Volume

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Dilution

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample amount

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Info 1

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Info 2 ... Info 4

on | off (Default value: **off**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Value 1 … Value 4

on | off (Default value: **off**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

3.3.2.4 Properties - Process

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ Sample table 'Name' ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Options for processing the working sample table in the Workplace window in the tab **Determination series**.

Delete processed lines

on | off (Default value: **off**)

If this option is activated, then lines in the working sample table which have already been processed completely will be deleted automatically.

Method selection by assignment ID

on | off (Default value: **off**)

If this option is activated, then the selected sample identification will be used for the method selection in the working sample table. This identification received the designation **Assignment ID**, which can then no longer be changed; if this ID matches one of the Assignment IDs from the sample assignment table *(see Chapter 3.5.1, page 142)*, then the respective method will be loaded.

Selection	**Ident** | **Info 1** | **Info 2** | **Info 3** | **Info 4** | **Value 1** | **Value 2** | **Value 3** | **Value 4**
Default value	**Ident**

Request assignment ID

on | off (Default value: **off**)

If this option is activated, the **Assignment ID** will be queried immediately after the start of the determination.

Actions for marked sample table lines

Selection	**Pause series ([Pause]) and show message** | **Stop series ([Stop])**
Default value	**Pause series ([Pause]) and show message**

Pause series ([Pause]) and show message
If this option is selected, then the series is interrupted before the start of the marked line (equivalent to [Pause]). At the same time a message will appear which also contains the text defined in the message box.

Stop series ([Stop])
If this option is selected, then the series is stopped before the start of the marked line (equivalent to [Stop]).

Start the text editor with which the message can be entered and edited.

3.3.2.5 Properties - Data import

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Activating/deactivating the import of external data for sample table fields.

Note

The successful completion of the data import is indicated during the run by an acoustic signal (beep).

Import from a barcode reader

on | off (Default value: **off**)

If this option is activated, then external data from the selected barcode reading device will be imported into the opened sample table. The device properties of the barcode reader will define the field into which the data is imported *(see Chapter 7.20.4, page 1140)*.

Barcode reader

Selection of the barcode reader from which data is to be imported.

Selection	**Device name**
Selection	**Always accept data** | **Accept data only for active window**
Default value	**Always accept data**

Always accept data
If this option is selected, then the data sent from the barcode reader is imported into the open sample table for which this barcode reader is defined as data source.

Accept data only for active window
If this option is selected, then the data sent from the barcode reader is only imported into the open sample table if this is actively selected (i.e. when the window has the focus).

Import from a file

on | off (Default value: **off**)

If this option is activated, then external data from a file (e.g. via LIMS) will be imported into a sample table. When this is the case, a check is made to determine whether the specified import file is available when the sample table is opened, when the sample table is loaded into the working sample table and also periodically (every 10 s) when the sample table is open (although not when the dialog window **Edit line** is open). If the import file is available, then the data from this file is automatically inserted at the end of the sample table. The import file is deleted after each import.

Note

No matter the number of data fields defined on the **Display** tab, the import file must always contain for each line the entirety of the sample data in the format **Method name;Ident;Sample type;Position;Injections;Volume;Dilution;Sample amount**.

Import file

File that is to be imported. With ... the file can be selected in the dialog window **Select files for import**.

Entry	**File name**

Import format

Selection of the import format for the import of data from a file.

Selection	***.csv** | ***.csv (Unicode)**
Default value	***.csv**

***.csv**
Format for the import of CSV files with Western European ASCII character sets.

***.csv (Unicode)**
Format for the import of CSV files with Unicode character sets.

3.3.2.6 Properties - Comment

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Entry of a comment on the sample table.

Comment on sample table

Entry of a comment on the sample table. This comment will be displayed in the column of the same name in the dialog windows **Open sample table** and **Sample table manager**.

Entry	**1000 characters**

3.3.3 Sample table manager

3.3.3.1 Sample table manager

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Manager… ▸ Sample table manager**

With the symbol or the menu item **Tools ▸ Sample table ▸ Manager…**, the saved sample tables can be managed.

List of sample tables

The list of sample tables contains information about all the saved sample tables. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing order.

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table *(see Chapter 3.3.2.6, page 135)*.

Window menus

The menu **[Edit]** below the list of sample tables contains the following menu items:

Rename…	Renames the selected sample table *(see Chapter 3.3.3.2, page 137)*.
Copy	Copies the selected sample table(s) *(see Chapter 3.3.3.3, page 137)*.

Delete…	Deletes the selected sample table(s) *(see Chapter 3.3.3.4, page 137)*.
Export…	Exporting selected sample table(s) in the file format ***.mstab** *(see Chapter 3.3.3.5, page 137)*.
Import…	Importing sample table(s) from ***.mstab** file(s) *(see Chapter 3.3.3.6, page 138)*.

3.3.3.2 Renaming sample table

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Manager… ▸ [Edit] ▸ Rename… ▸ Rename sample table**

The selected sample table can be renamed in this dialog window.

Rename sample table 'Name' to

Entry of the new name for the sample table.

Note

The name of the sample table must be unique throughout the entire client/server system.

Entry	**50 characters**

3.3.3.3 Copying sample table

Menu item: **Workplace ▸ Tools ▸ Sample table ▸ Manager… ▸ [Edit] ▸ Copy**

The selected sample tables are copied under the name **Copy of 'Name'** with the menu item **[Edit] ▸ Copy** in the dialog window **Sample table manager**.

3.3.3.4 Deleting sample table

Menu item: **Workplace ▸ Tools ▸ Sample table ▸ Manager… ▸ [Edit] ▸ Delete…**

The selected sample tables are deleted with the menu item **[Edit] ▸ Delete…** in the dialog window **Sample table manager**.

3.3.3.5 Exporting sample table

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Manager… ▸ [Edit] ▸ Export… ▸ Select directory for export**

With the menu item **[Edit] ▸ Export…**, the dialog window **Select directory for export** is opened in which the directory for export needs to be selected. The selected sample table is exported into a file with the name **'Name'.mstab**.

3.3.3.6 Importing sample table

Dialog window: **Workplace ▸ Tools ▸ Sample table ▸ Manager… ▸ [Edit] ▸ Import ▸ Select files for import**

The dialog window **Select files for import**, in which the sample table (file format ***.mstab**) to be imported needs to be selected, is opened by means of the menu item **[Edit] ▸ Import…**.

3.3.3.7 Renaming imported sample tables

Rename imported sample table 'Name' to

Entry of the new name for the sample table.

Note

The name of the sample table must be unique throughout the entire client/server system.

Entry	**50 characters**

3.4 Timer

3.4.1 Timer - General

Dialog window: **Workplace ▸ Tools ▸ T&imer... ▸ Timer**

With the menu item **Tools ▸ T&imer...** or the symbol , the window **Timer** opens, in which one-time or recurrent tasks can be defined which are to be carried out automatically at a particular time.

Timer table

The timer table shows all the defined tasks and cannot itself be edited directly. The first tasks to appear in the table are the recurrent ones, which are sorted according to day of the week and time of day. These are followed by one-time tasks sorted according to date/time.

Date/Day

Display of the date on which the action is to be performed.

Time

Display of the time at which the action is to be performed.

Action

Display of the action which is to be performed.

Parameters

Display of the parameters or method for the action.

Active

Displays whether the action is active or not.

Menu items

Activating the **[Edit]** button or clicking on the right-hand mouse button opens the following menu for editing the timer table:

New task ▸	
Single task	Create a new single task *(see Chapter 3.4.2, page 139)*.
Recurrent task	Create a new recurrent task *(see Chapter 3.4.3, page 140)*.
&Edit	Edit the selected single task *(see Chapter 3.4.2, page 139)* or recurrent task *(see Chapter 3.4.3, page 140)*.
Active ▸	
On	Set the selected task to **Active**.
Off	Set the selected task to **Not active**.
Invert selection	Set all active tasks to **Not active** and all not active tasks to **Active**.

3.4.2 Edit single task

Dialog window: **Workplace ▸ Tools ▸ T&imer... ▸ Timer ▸ [Edit] ▸ &Edit ▸ Edit single task**

Activating the menu item **[Edit] ▸ New task ▸ One-time task** or **[Edit] ▸ &Edit** opens the window **Edit one-time task**, in which a new one-time task or one selected from those in the table can be edited.

Active task

on | off (Default value: **on**)

If this option is activated, then the action is activated for the workplace.

Date

Date on which the task is to be carried out. This date can be selected by clicking on … in the dialog window **Select date**.

Time

Moment in hours and minutes at which the task is to be carried out.

Input range	**00:00 - 23:59**

Action

Action that is to be started automatically.

Selection	**Start equilibration** | **Start sample table** | **Stop devices**

Start equilibration
The equilibration for the active workplace is started with the method selected under **Parameters**.

Start sample table
The selected sample table is loaded and started on the active workplace.

Stop devices
The devices defined under **Parameter** are stopped.

Parameters

Method

Selection of the method which is to be loaded for the equilibration. With the **Select method** window opens for extended method selection. This parameter appears only for **Action** = **Start equilibration**.

Selection	**Methods from method groups**

Sample table

Selection of the sample table that is to be loaded. This parameter appear only for **Action** = **Start sample table**.

Selection	**Sample tables**

Devices

Selection of the devices that are to be stopped. This parameter appears only for **Action** = **Stop devices**.

Selection	**Devices of the method** | **All devices**

Devices of the method
Only the devices of the method loaded will be stopped.

All devices
All devices are stopped.

3.4.3 Edit recurrent task

Dialog window: **Workplace ▸ Tools ▸ T&imer... ▸ Timer ▸ [Edit] ▸ &Edit ▸ Edit recurrent task**

Activating the menu item **[Edit] ▸ New task ▸ Recurrent task** or **[Edit] ▸ Edit** opens the window **Edit recurrent task**, in which a new recurrent task or one selected from those in the table can be edited.

Active task

on | off (Default value: **on**)

If this option is activated, then the action is activated for the workplace.

Day

Selection of the day of the week on which the task is to be carried out.

Time

Moment in hours and minutes at which the task is to be carried out.

Input range	**00:00 - 23:59**

Action

Action that is to be started automatically.

Selection	**Start equilibration** | **Start sample table** | **Stop devices**

Start equilibration
The equilibration for the active workplace is started with the method selected under **Parameters**.

Start sample table
The selected sample table is loaded and started on the active workplace.

Stop devices
The devices defined under **Parameter** are stopped.

Parameters

Method

Selection of the method which is to be loaded for the equilibration. With the **Select method** window opens for extended method selection. This parameter appears only for **Action** = **Start equilibration**.

Selection	**Methods from method groups**

Sample table

Selection of the sample table that is to be loaded. This parameter appear only for **Action** = **Start sample table**.

Selection	**Sample tables**

Devices

Selection of the devices that are to be stopped. This parameter appears only for **Action** = **Stop devices**.

Selection	**Devices of the method** | **All devices**

Devices of the method
Only the devices of the method loaded will be stopped.

All devices
All devices are stopped.

3.5 Sample assignment table

3.5.1 Sample assignment table

Dialog window: **Workplace** ▸ **Tools** ▸ **Sample assignment table…** ▸ **Sample assignment table**

The **Sample assignment table** causes the samples to be processed automatically with the **correct method**. A particular method will be assigned thereby to a sample identification (**Assignment ID**). In order to make sure this functions as intended, the option **Method selection by assignment ID** must be enabled in the properties of the **Individual determination** or **Determination series** on the tab **Process** and one of the sample identifications needs to have been selected as Assignment ID. The respective method will be loaded automatically as soon as an **Assignment ID** has been recognized during the processing of the sample data. The **Method** is then no longer available for editing and will be displayed in gray.

Note

The sample assignment table is valid for all opened workplaces and is saved per client.

The overview table shows all the defined assignment IDS and cannot itself be edited directly. With a click on the column title **Assignment ID** or **Method**, the table can be sorted according to the selected column in either increasing or decreasing sequence.

Assignment ID

Identification on the basis of which the method is assigned.

Method

Method which is loaded for the Assignment ID.

[New]

Add new sample assignment.

[Properties]

Edit selected sample assignment.

[Delete]

Delete selected sample assignment.

3.5.2 Sample assignment

Dialog window: **Workplace** ▸ **Tools** ▸ **Sample assignment table…** ▸ **[New] / [Properties]** ▸ **Sample assignment**

Assignment ID

Entry of an identification on the basis of which the method is assigned or selection of a defined text template. The assignment ID can contain any number of alphanumerical characters or wildcards (*). No assignment ID can occur more than once, although several different assignment IDs can be assigned the same method.

Entry	**50 characters**
Selection	**Selection of text templates**

Note

The character * itself must be generated with **. It stands for an arbitrary number of characters. No identical sample may be entered when the samples are entered. If a string of characters fits several samples, then the first suitable sample in the table will be used.

Method

Selection of the method in the current method group. If one remains in this field with the cursor, then the name of the current method group will appear as Tooltip **Group: 'Group name'**, in the event that other groups are on hand besides the main group.

Selection	**Method selection**

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field.

This button is active only if more than one method group is present.

3.5.3 Enter assignment ID

Dialog window: **Workplace ▸ Sample assignment**

Assignment ID

Request for the assignment ID on the basis of which the method will be assigned or selection of a definite text template.

Entry	**50 characters**
Selection	**Selection of text templates**

3.6 Text templates

3.6.1 List of text templates

Dialog window: **Workplace ▸ Tools ▸ Text templates... ▸ Text templates**

Text templates can be defined for the fields **Ident**, **Info 1...4** and **Remark** which can be applied for inclusion in these fields on the tab **Single determination**, in the **Sample table** and in the **Working sample table**. The text templates are saved per client.

Text templates for

selection of the field for which the text templates are to be defined.

Selection	**Ident** | **Info 1** | **Info 2** | **Info 3** | **Info 4** | **Remarks**
Default value	**Ident**

List of the text templates

All defined text templates for the selected field are displayed in the list of the text templates. The table cannot be edited. With a click on the column title **Text** the table can be sorted according in either increasing or decreasing sequence.

Text

Shows the text templates defined for the selected field.

[New]

Add new text template *(see Chapter 3.6.2, page 145)*.

[Properties]

Edit selected text template *(see Chapter 3.6.2, page 145)*.

[Delete]

Delete the selected text template.

3.6.2 Edit text template

Dialog window: **Workplace** ▸ **Tools** ▸ **Text templates...** ▸ **Text templates** ▸ **[New] / [Properties]** ▸ **Text templates**

The text templates can be edited in the dialog window **Text templates**.

Text

Text template entry.

Entry	**100 characters**

3.7 Subwindow Run

3.7.1 Run - General

Subwindow: **Workplace**

Subwindow Run

The subwindow **Run** contains the operating elements for controlling method sequences and for administering sample data. It is always displayed in the program part **Workplace**, i.e. it cannot be removed from the Workplace display. The subwindow can be enlarged and reduced as required; it can also be maximized.

Tabs

The subwindow **Run** is comprised of the following three tabs:

- *Equilibration*
  Control of equilibration.
- *Single determination*
  Control of single determinations.
- *Determination series*
  Control of determination series.

Note

If a run has been started on the tab **Single determination** (**Status** = **BUSY**), then the tab **Determination series** is no longer accessible (disabled). The same holds true for the tab **Single determination** in the event that a run has started on the tab **Determination series**.

3.7.2 Run test

Menu item: **Workplace ▸ Tools ▸ Run test**

Note

In contrast to the **Sample table test**, which is only used to check whether or not all sample data is correct, the **Run test** also checks the required hardware.

Single determination

The menu item **Tools ▸ Run test** or the symbol is used to perform the start test for the selected method. The precondition for this is that the workplace is in **READY** status.

For the Run test, the dialog window **Run test - 'Workplace name' - Single determination** opens, in which information concerning the test is displayed.

Method

Displays the method for the single determination.

Determination series

The menu items **Tools ▸ Run test** or **[Sample table] ▸ Run test...** or the symbol are used to perform the Start test . The precondition for this is that the workplace is in **READY** status.

For the Run test, the dialog window **Run test - 'Workplace name' - Determination series** opens, in which information concerning the test is displayed.

Line

Displays the line number of the currently tested sample data line for the determination series.

Status displays

One of the following status displays appears underneath the line number:

Selection	**Run test running... | Run test error | Run test finished without errors**

Run test running...
This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

Run test error
This display appears if an error has occurred during the run test. During a determination series, the user can determine, on the basis of the line number displayed, the line to which the the error message belongs that appeared at the time of the error and that is currently displayed in the usual message window.

Run test finished without errors
This display appears at the end of a run test that has been completed without errors.

3.7.3 Equilibration

Tab: **Workplace** ▸ **Run** ▸ **Equilibration**

Note

The tab **Equilibration** is enabled only when no determination is running in the **Single determination** or in the **Determination series**.

The following operating elements and parameters are located on the tab **Equilibration**:

Start hardware (abbreviation: **Ctrl G**)

Sends all basic parameters of the loaded **Method** to the hardware and starts it. If the start can be triggered, then the button will be green, otherwise light gray.

Stop hardware (Abbreviation: **Ctrl S**)

Stops the hardware of the loaded method.

Method

Entry or selection of the method from the current method group with which the equilibration is to be carried out.

Entry	**50 characters**
Selection	**Method selection**

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current

method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.

Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new equilibration is started.

3.7.4 Single determination

3.7.4.1 Single determination - Overview

Tab: **Workplace** ▸ **Run** ▸ **Single determination**

Parameters and sample data for single determinations can be edited and run functions can be triggered on the tab **Single determination**. It contains the following tools and functions:

- *Single determination - Operating elements*
  Buttons for starting, stopping, interrupting and resuming determinations.
- *Single determination - Status display*
  Displaying the current status of the workplace.
- *Single determination - Sample data*
  Entry of method and sample identification for the next determination.
- *Properties - Overview*
  Definition of the properties for the tab **Single determination**.

3.7.4.2 Single determination - Operating elements

Tab: **Workplace** ▸ **Run** ▸ **Single determination**

The following operating elements and parameters are located on the tab **Single determination**:

Start a single determination (Shortcut: **Ctrl G**)

The button is disabled as soon as the determination begins running. If the start can be triggered, then it will be green, otherwise light gray.

Stop a single determination (Shortcut: **Ctrl S**)

The button is enabled as soon as the determination begins running. If the stop can be triggered, then it will be red, otherwise light gray.

Combustion IC system

When **[Stop]** is triggered

- During preparation of a sample (for example, the washing procedure), the determination is canceled.
- While a quartz boat is inserted or a sample is injected, the determination is canceled.
- During combustion, the determination is canceled. The combustion is completed.
- During post-combustion, the determination is canceled. The post-combustion is completed.
- During the cool-down period, the determination is canceled.

3.7.4.3 Single determination - Status display

Tab: **Workplace ▶ Run ▶ Single determination**

The current status of the workplace will be displayed on the tab **Single determination**:

Status

Selection	**READY** | **BUSY** | **ERROR**

READY
Ready for the start of a determination.

BUSY
Determination is running.

ERROR
Error.

3.7.4.4 Single determination - Sample data

Tab: **Workplace ▶ Run ▶ Single determination**

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first characters, the method selection is continuously restricted and allows fast selecting of the method required.

Entry	**50 characters**
Selection	**Method selection**

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.

Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.

Note

The following sample data fields can no longer be edited if they were defined as **Fixed value** in the method *(see Chapter 5.3.1, page 363)*.

Remark

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries *(see Chapter 3.6.1, page 144)*.

Note

The field **Remarks** can also be modified live while determinations are running. The context-sensitive menu item **Modify remarks** is used to open the dialog window **Live modifications** *(see Chapter 3.7.4.5, page 152)*.

Entry	**100 characters**

Ident

Entry of an identification or selection of a defined text template to identify the chromatogram.*(see Chapter 3.6.1, page 144)*

Entry	**100 characters**
Selection	**Selection of text templates**

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Entry	**64 characters**
Selection	**'empty'** | **Sample** | **Standard 1…n** | **Spiking 1…n** | **Check standard 1…n** | **Blank**
Default value	**'empty'**

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Entry	**100 characters**

Volume

Volume of the sample in µL.

Input range	**0.01 - 1000000.00 µL**
Default value	**'empty' µL**

Dilution

Dilution factor for the sample.

Input range	**0.001 - 100,000.00**
Default value	**'empty'**

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
  Basic initial weight = 2.0 g
  Sample initial weight = 2.1 g
  Sample amount = 2.1 / 2.0 = 1.05
  The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
  Basic unit = 1.0 mg
  Initial sample size = 2.1 mg
  Sample amount = 2.1 / 1.0 = 2.1
  The result is divided by 2.1 and indicates how high the content per mg of sample is.

Input range	**0.00001 - 1000000.00000**
Default value	**'empty'**

Info 1…4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**
Selection	**Selection of text templates**

Value 1…4

Input of additional values for the sample.

Input range	**-10^{99} - 10^{99}**
Default value	**'empty'**

Note

Ident, **Volume**, **Dilution**, **Sample amount**, **info 1 through info 4** and **value 1 through value 4** can be changed live for a running determination*(see Chapter 3.7.4.6, page 152)*. Generally speaking, no formula input is possible in these fields.

3.7.4.5 Modify remark

Dialog window: **Workplace ▸ Run ▸ Single determination ▸ Modify remark ▸ Live modifications**

The dialog window **Live modifications**, in which the remarks can be modified in a determination while it is running, opens with the context-sensitive menu **Modify remark**.

Remarks

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**

3.7.4.6 Live modification

Dialog window: **Workplace ▸ Run ▸ Single determination ▸ Live modifications ▸ Live modifications**

Certain sample data can be modified live in this dialog window while a determination is running.

Ident

Entry of an identification or selection of a defined text template to identify the chromatogram.*(see Chapter 3.6.1, page 144)*

Entry	**100 characters**
Selection	**Selection of text templates**

Volume

Volume of the sample in µL.

Input range	**0.01 - 1000000.00 µL**
Default value	**'empty' µL**

Dilution

Dilution factor for the sample.

Input range	**0.001 - 100,000.00**
Default value	**'empty'**

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
  Basic initial weight = 2.0 g
  Sample initial weight = 2.1 g
  Sample amount = 2.1 / 2.0 = 1.05
  The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
  Basic unit = 1.0 mg
  Initial sample size = 2.1 mg
  Sample amount = 2.1 / 1.0 = 2.1
  The result is divided by 2.1 and indicates how high the content per mg of sample is.

Input range	**0.00001 - 1000000.00000**
Default value	**'empty'**

Info 1…4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**
Selection	**Selection of text templates**

Value 1…4

Input of additional values for the sample.

Input range	**-10^{99} - 10^{99}**
Default value	**'empty'**

Note

Generally speaking, no formula input is possible in these fields.

If the option **Comment on modification of sample data (live)** is enabled in the security settings, then a reason and a comment on the modification must be entered before saving *(see Chapter 6.2.2.4, page 509)*.

3.7.4.7 Single determination - Determination run

Tab: **Workplace** ▸ **Run** ▸ **Single determination**

A determination that is started on the tab **Single determination** in the subwindow **Run** runs through as follows:

1 - Loading the sample data

The sample data entered for the determination is loaded.

2 - Method selection

The following actions are triggered with method selection:

- **Method selection without Assignment ID**
  The method selected in the field **Method** is loaded.
- **Method selection by assignment ID**
  If the option **Method selection by assignment ID** is enabled in the properties of the single determination on the tab **Process** *(see Chapter 3.7.4.8.2, page 156)*, then the method defined in the sample assignment table will be loaded *(see Chapter 3.5, page 142)*.

3 - Start test

The following checks and actions are triggered with start test:

- **Authorization for carrying out the method?**
  Check whether the registered user is authorized to carry out the method required *(see Chapter 5.5.2.3, page 379)*.
- **Method executable?**
  Check whether the required method is executable. For methods which are not executable, a request appears to perform the method check and to modify the method accordingly *(see Chapter 5.2.5, page 357)*.
- **Hardware present?**
  Check whether the hardware (devices, modules, columns, solutions...) defined in the device group for the method loaded is present and available.
- **Method settings ok?**
  Check whether the method settings (e.g. pump head-dependent parameters) fit the hardware that is ready for use.

Note

When it is in the status **READY**, the start test can also be triggered manually with the symbol or the menu items **Tools** ▸ **Run test** or **[Sample table]** ▸ **Run test…**. In addition, the sample data test will also still be carried out afterwards.

4 - Sample data test

The following checks and actions are triggered with the sample data test:

- **Check fixed values**
  Check whether the sample data entered corresponds to the **Fixed values** defined in the properties of the method *(see Chapter 5.3.1, page 363)*.
- **Check sample data**
  Check whether the sample data is monitored in the method and whether the entered values lie within the defined limits.

5 - Determination run

The following actions are triggered during processing of the method loaded:

- **Start the determination**
  The start parameters defined in the method are sent to the devices (modules) and the devices are started.
- **Assign determination ID**
  A unique determination ID is assigned for the determination.
- **Reserve devices (modules)**
  The devices and/or their function units used in the method are reserved for the duration of the determination, i.e. they can neither be used in other workplaces nor can they be operated outside of the workplace.
- **Process time program**
  The status switches to **BUSY** after the start of the determination. The time program commands are processed in sequence. A determination that is running can be interrupted at any time with **[Stop]**. If an error occurs while a determination is running, that causes the determination to be interrupted, then the determination will also be ended.
- **Evaluate determination**
  The determination will be evaluated with the evaluation parameters of the method.
- **End determination**
  The status switches to **READY** after the end of the determination. The devices (modules) that were reserved are released once again.

3.7.4.8 Single determination - Properties

3.7.4.8.1 Properties - Overview

Dialog window: **Workplace ▸ Run ▸ Single determination ▸ Properties Run window ▸ Properties - Single determination**

The properties for the tab **Single determination** are set on the following tabs:

- *Process*
  Options for the processing of single determinations.
- *Data import*
  Enabling/disabling the import of external data for fields on tab **Single determination**.

3.7.4.8.2 Properties - Process

Tab: **Workplace ▸ Run ▸ Single determination ▸ Properties Run window ▸ Properties - Single determination ▸ Process**

Options for the processing of single determinations.

Method selection by assignment ID

on | off (Default value: **off**)

If this option is enabled, then the selected sample identification will be used for the method selection in the working sample table. This identification receives the designation **Assignment ID**, which can then no longer be changed; if this ID matches one of the Assignment IDs from the sample assignment table *(see Chapter 3.5.1, page 142)*, then the respective method will be loaded.

Selection	**Ident** | **Info 1** | **Info 2** | **Info 3** | **Info 4** | **Value 1** | **Value 2** | **Value 3** | **Value 4**
Default value	**Ident**

Request assignment ID

on | off (Default value: **off**)

If this option is enabled, the **Assignment ID** will be queried immediately after the start of the determination.

Autorepeat determination

on | off (Default value: **off**)

If this option is enabled, then the next determination will be started with the same method automatically after the completion of a determination. The determination must be canceled with **[Stop]** in order to cancel the automatic repetition.

3.7.4.8.3 Properties - Data import

Tab: **Workplace ▸ Run ▸ Single determination ▸ Properties Run window ▸ Properties - Single determination ▸ Data import**

Enabling/disabling the import of external data for fields on tab **Single determination**.

Note

The successful conclusion of the data import during the run will be signaled by an acoustic signal (beep).

Import from barcode reader

on | off (Default value: **off**)

If this option is enabled, then external data from the selected barcode reader will be imported into the fields on the tab **Single determination**. The device properties of the barcode reader will define the field into which the data is imported *(see Chapter 7.20.4, page 1140)*.

Barcode reader

Selection of the barcode reader from which data is to be imported.

Selection	**Device name**
Selection	**Always accept data** | **Accept data only for active window**
Default value	**Always accept data**

Always accept data
If this option is selected, then the data sent from the barcode reader is imported into all of the **Single determination** tabs of the open workplaces for which this barcode reader is defined as data source.

Accept data only for active window
If this option is selected, then the data sent from the barcode reader is imported only into the **Single determination** tab of the workplace that is actively selected.

3.7.4.9 Modification comment for sample data

Dialog window: Workplace ▸ Run ▸ Single determination ▸ Live modifications ▸ Live modifications ▸ Modification comments sample data

Dialog window: Workplace ▸ Sequence ▸ Determination series ▸ [Edit] ▸ Edit line ▸ Edit line - Working sample table - Workplace 'Name' ▸ Modification comment sample data

If the option **Comment on modification of sample data (live)** is enabled in the security settings, then this window must be opened before saving. A reason and a comment on the modification must be entered here *(see Chapter 6.2.2.4, page 509)*.

Reason

Selection from the standard reasons for the category **Modifications of sample data** *(see Chapter 6.2.2.6, page 511)* that are defined in the security settings.

Selection	**Selection from default reasons**

Comment

Entry of remarks about the modifications to the sample data.

Entry	**1000 characters**

3.7.5 Determination series

3.7.5.1 Determination series - Overview

Tab: **Workplace** ▸ **Run** ▸ **Determination series**

Parameters and sample data for determination series can be edited and run functions can be triggered on the tab **Determination series** the subwindow **Run**.

- *Operating elements*
  Buttons for starting, stopping, interrupting and resuming determinations and series.
- *Status display*
  Displaying the current status of the workplace.
- *Sample data*
  Entry of sample data for the next determinations.
- *Properties*
  Definition of the properties for the tab **Determination series**.

3.7.5.2 Determination series - Operating elements

Tab: **Workplace** ▸ **Run** ▸ **Determination series**

The following operating elements and parameters are located on the tab **Determination series**:

Start series (Shortcut: **Ctrl G**)

Start of the first determination of a sample series. The button is disabled as soon as the first determination begins running. If the start can be triggered, then it will be green, otherwise light gray.

Stop series (Shortcut: **Ctrl S**)

Immediate stop of the running determination of a sample series. The button is enabled as soon as the determination begins running. If the stop can be triggered, then it will be red, otherwise light gray.

Interrupt series

With this button, the running determination of a sample series will still be carried out to completion, but no new determination will be started. The button is enabled as soon as the determination begins running. If the function can be triggered, then it will be yellow, otherwise light gray. When **[Pause]** is pressed, this button will be replaced in the display by **[Cont]**.

Continue series

Start of the next determination of an interrupted sample series. The button is only present in the status **PAUSE** (series interrupted). Pressing **[Cont]** will cause this button to be replaced again in the display by **[Pause]**.

Combustion IC system

When **[Stop]** is triggered

- During preparation of a sample (for example, the washing procedure), the determination is canceled.
- While a quartz boat is inserted or a sample is injected, the determination is canceled.
- During combustion, the determination is canceled. The combustion is completed.
- During post-combustion, the determination is canceled. The post-combustion is completed.
- During the cool-down period, the determination is canceled.

3.7.5.3 Determination series - Status display

Tab: **Workplace** ▸ **Run** ▸ **Determination series**

The current status of the workplace will be displayed on the tab **Determination series**:

Status

Selection	**READY** | **BUSY** | **PAUSE** | **ERROR**

READY
Ready for the start of a determination.

BUSY
Determination running.

PAUSE
Series interrupted.

ERROR
Error.

3.7.5.4 Determination series - Sample data

Tab: **Workplace** ▸ **Run** ▸ **Determination series**

Remark

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries *(see Chapter 3.6.1, page 144)*.

Note

The field **Remarks** can also be modified live while determinations are running. The context-sensitive menu item **Modify remarks** is used to open the dialog window **Live modifications** *(see Chapter 3.7.4.5, page 152)*.

Entry	**100 characters**

The current working sample table, which contains the sample data for determination series in tabular form, is displayed under **Sample data**. Each line corresponds to a single determination.

This table contains the sample data lines that have already been saved in the sample table and a line for entering new data that contains a star instead of a line number. The table cannot be edited or sorted directly.

For the meaning of the columns, *see Edit sample data*.

The lines in the working sample table can exhibit different **background colors**:

- **Light gray background**
  Line already processed. Data in this line can no longer be modified. These lines only appear if the option **Delete processed lines** on the tab **Process** has been deactivated *(see Chapter 3.3.2.4, page 133)*.
- **Dark gray background**
  Selected, already processed line.
- **Light orange background**
  Line currently running.

- **Dark orange background**
  Selected line currently running. If sample data is not to be modified until after the start of the determination (in the status **BUSY**), then this is considered a live modification.
- **White background**
  Lines that have not yet been processed. These lines can be edited.
- **Yellow background**
  Selected line not yet processed.

Loaded

Display of the sample table, the data of which has been loaded into the working sample table. If no sample table has been loaded or if all lines have been deleted, then this field is empty. If data for a loaded sample table is modified retroactively or expanded to include new lines, then the term **(modified)** will be added to the display of the name.

Stop hardware when sample table has finished

on | off (Default value: **off**)

If this option is activated, then the hardware will be stopped automatically after the sample table run.

Toolbar

Save sample table	Save the sample table.
Output of PDF file	Output the sample table as a PDF file.
Reset sample table	Reset lines that have been processed, i.e. they can be edited again.
Duplicate	Duplicate selected line(s). The new lines are inserted underneath the selected range.
Increment	Increment the selected lines automatically.
Filling	Fill the selected lines automatically.
Test sample table	Check whether or not all sample data in the sample table is correct.

Window menus

[Edit] contains the following menu items:

Edit line	Edit the selected line.

Insert new line	Insert a new empty line above the line selected.
Cut lines	Cut the selected lines and transfer them to the clipboard.
Copy lines	Copy the selected lines to the clipboard.
Insert lines	Paste lines from the clipboard above the selected line.
Delete lines	Delete the selected lines.
Increment	Using the cursor, which takes on the form ✚, the range which is to be automatically incremented can be selected from a column in the table. The number standing at the end of the expression will thereby be automatically increased by 1 in the selected cells of a column, starting from the first selected cell. This works not only with pure numbers but also with text expressions which end with a number (e.g. **ABC10** → **ABC11** → **ABC12** etc.)
Filling	Fill the selected lines automatically.
Duplicate	Duplicate selected line(s). The new lines are inserted underneath the selected range.
Mark lines	Mark the selected lines with a red background for the line number. Before the start of such a line the corresponding actions defined under **Properties** on the **Process** *(see Chapter 3.3.2.4, page 133)* tab will be triggered.
Unmark lines	Remove the line marking for the selected lines.
Set lines inexecutable	Set the selected lines to "inexecutable", i.e. these lines will not be executed in the method run. Such lines are crossed through with a red line.
Set lines executable	Set the selected lines to "executable", i.e. they will be executed in the run.

[Sample table] contains the following menu items:

New	Load a new and empty sample table.
Load...	Load a saved sample table into the working sample table.
Save	Save the current sample table under the same name.
Save As...	Save the current sample table under a new name.
Sample table test...	Check whether or not all sample data in the working sample table is correct.

Run test...	Carry out the run test for the lines in the working sample table *(see Chapter 3.7.2, page 146)*.
Print (PDF)...	Output the working sample table as PDF file.
Properties...	Set the properties of the working sample table.
Import data...	Import a sample table from a file with the format ***.csv**.
Export data...	Export a sample table to a file with the format ***.csv**.
Reset	Reset lines that have been processed, i.e. they can be edited again.

Moving lines with Drag&Drop

The lines selected in the working sample table can be moved to an opened sample table via Drag&Drop.

Copying lines with Drag&Drop

The lines selected in the working sample table can be copied to an opened sample table with Drag&Drop by pressing the **Ctrl key**.

3.7.5.5 Modify remark

Dialog window: **Workplace ▸ Run ▸ Single determination ▸ Modify remark ▸ Live modifications**

The dialog window **Live modifications**, in which the remarks can be modified in a determination while it is running, opens with the context-sensitive menu **Modify remark**.

Remarks

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**

3.7.5.6 Determination series - Determination run

Tab: **Workplace ▸ Run ▸ Determination series**

For a series of determinations that is started on the tab **Determination series** in the subwindow **Run**, each determination proceeds as follows:

1 - Loading the sample data

The sample data for the determination entered on the current line in the **Working sample table** is loaded.

2 - Method selection

The following actions are triggered with method selection:

- **Method selection without Assignment ID**
  The method selected in the column **Method** is loaded.
- **Method selection by assignment ID**
  If the option **Method selection by assignment ID** is enabled in the properties of the determination series on the tab **Process** *(see Chapter 3.3.2.4, page 133)*, then the method defined in the sample assignment table will be loaded *(see Chapter 3.5, page 142)*.

3 - Start test

The following checks and actions are triggered with the start test:

- **Authorization for carrying out the method?**
  Check whether the registered user is authorized to carry out the method required *(see Chapter 5.5.2.3, page 379)*.
- **Method executable?**
  Check whether the required method is executable. For methods which are not executable, a prompt appears to perform the method check and to modify the method accordingly *(see Chapter 5.2.5, page 357)*.
- **Hardware present?**
  Check whether the hardware (devices, modules, columns, solutions...) defined in the device group for the method loaded is present and available.
- **Method settings ok?**
  Check whether the method settings (e.g. pump head-dependent parameters) fit the hardware that is ready for use.

Note

When it is in the status **READY**, the start test can also be triggered manually with the symbol or the menu items **Tools** ▸ **Run test** or **[Sample table]** ▸ **Run test...**. In addition, the sample data test will also still be carried out afterwards.

4 - Starting hardware

- **Reserve devices**
  The devices and/or their function units used in the method are reserved for the duration of the determination, i.e. they can neither be used in other workplaces nor can they be operated manually.
- **Send start parameters to devices**
  The start parameters defined in the method are sent to the devices (modules) and the devices are started.

5 - Sample data test

The following checks and actions are triggered with the sample data test:

- **Check fixed values**
  Check whether the sample data entered corresponds to the **Fixed values** defined in the properties of the method *(see Chapter 5.3.1, page 363)*.
- **Check sample data**
  Check whether the sample data is monitored in the method and whether the entered values lie within the defined limits.

Note

When it is in the status **READY**, the sample table can also be checked manually by means of the symbol or the menu item **[Sample table] ▸ Sample table test...**.

6 - Determination run

The following actions are triggered during processing of the method loaded:

- **Start determination**
  The determination is started and receives a unique determination ID; after the determination starts, the status switches to **BUSY**.
- **Process time program**
  The time program commands are processed in sequence. A determination that is running can be interrupted at any time with **[Stop]**. If an error occurs while a determination is running, that causes the determination to be interrupted, then the determination will also be ended. With **[Pause]**, the ongoing determination of a sample series will still be carried out to completion, but no new determination will be started. The next determination of the interrupted sample series can be started with **[Cont]**.
- **Evaluate determination**
  The determination will be evaluated with the evaluation parameters of the method.

- **End determination**
  The reserved devices (modules) are released again after the completion of the determination and the next determination starts. A distinction is made here between two different situations:
  - The same sample line is processed one more time as part of a multiple determination, the procedure now starts at **Point 3**.
  - The next sample line is processed, the procedure begins at **Point 1** again.

  The status switches to **READY** after the end of the last determination.

Note

If the **Stop hardware when sample table has finished** option is enabled, then the hardware will be stopped automatically after the sample table run.

3.7.5.7 Working sample table

3.7.5.7.1 Loading sample table

Menu item: **Workplace ▸ Run ▸ Determination series ▸ [Sample table] ▸ New**

A new, empty sample table is loaded as working sample table with the menu item **[Sample table] ▸ New** on the tab **Determination series**, i.e. all existing sample table rows will be deleted.

3.7.5.7.2 Loading sample table

Dialog window: **Workplace ▸ Run ▸ Determination series ▸ [Sample table] ▸ Load... ▸ Load sample table**

One of the globally available sample tables can be selected in this dialog window for loading as a working sample table.

List of sample tables

The list of sample tables contains information about all the saved sample tables. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the **Comment** tab as a comment concerning the sample table *(see Chapter 3.3.2.6, page 135)*.

Load sample table

Name

Name of the sample table that is to be loaded. If a sample table from the table is selected, the name will be entered automatically in this field. It can, however, also be entered manually.

Entry	**50 characters**

[Load]

Load the data of the selected sample table into the working sample table. In addition, all properties of the sample table, with the exception of the settings for **Import from file** and **Import format** for the working sample table, are applied.

3.7.5.7.3 Edit sample data

Menu item: **Workplace ▸ Run ▸ Determination series ▸ [Edit] ▸ Edit line ▸ Edit line - Working sample table - Workplace 'Name'**

The fields in this dialog window exhibit the same background colors as the lines in the working sample table:

- **Light gray background**
  Line already processed, the data of which can no longer be modified.
- **Orange background**
  Line currently running. If sample data is not to be modified until after the start of the determination (in the status **BUSY**), then this is considered a live modification.
- **White background**
  A line that has not yet been processed and which can still be edited.

Note

Generally speaking, no formula input is possible in the fields of this dialog window.

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first charac-

ters, the method selection is continuously restricted and allows fast selecting of the method required.

Entry	**50 characters**
Selection	**Method selection**

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.

Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.

Note

The following sample data fields can no longer be edited if they were defined as **Fixed value** in the method *(see Chapter 5.3.1, page 363)*.

Ident

Entry of an identification or selection of a defined text template to identify the chromatogram.*(see Chapter 3.6.1, page 144)*

Entry	**100 characters**
Selection	**Selection of text templates**

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Entry	**64 characters**
Selection	**'empty'** | **Sample** | **Standard 1…n** | **Spiking 1…n** | **Check standard 1…n** | **Blank**
Default value	**'empty'**

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample

changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Entry	**100 characters**

Injections

Number of injections per sample line. The determinations of this kind of multiple injection are linked statistically with one another.

Input range	**1 - 99** (Increment: **1**)
Default value	**'empty'**

Volume

Volume of the sample in µL.

Input range	**0.01 - 1000000.00 µL**
Default value	**'empty' µL**

Dilution

Dilution factor for the sample.

Input range	**0.001 - 100,000.00**
Default value	**'empty'**

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
  Basic initial weight = 2.0 g
  Sample initial weight = 2.1 g
  Sample amount = 2.1 / 2.0 = 1.05
  The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
  Basic unit = 1.0 mg
  Initial sample size = 2.1 mg
  Sample amount = 2.1 / 1.0 = 2.1
  The result is divided by 2.1 and indicates how high the content per mg of sample is.

Input range	**0.00001 - 1000000.00000**
Default value	**'empty'**

Info 1…4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**
Selection	**Selection of text templates**

Value 1…4

Input of additional values for the sample.

Input range	**-10^{99} - 10^{99}**
Default value	**'empty'**

Note

If data from the current sample data line is modified for the ongoing determination, then this is regarded as a live modification. If the option **Comment on modification of sample data (live)** is enabled in the security settings, then a reason and a comment on the modification must be entered before saving *(see Chapter 6.2.2.4, page 509)*.

Navigation

Display of the currently selected line in the working sample table with the following functions:

Jump to the first line in the working sample table.

Jump to the previous line in the working sample table.

Option of entering the desired line number to which the program jumps when the **[Enter]** is actuated.

Jump to the next line in the working sample table. If the end of the table has been reached, then a new line will be inserted automatically and the program will jump to it.

Jump to the last line in the working sample table.

Jump to a new, empty line.

Displaying application note

on | off (Default value: **off**)

If this check box is activated, then the application note defined in the method will be displayed during the editing of the sample data.

Functions

[Apply]

Apply the sample data entered in the respective line of the working sample table. If the end of the table has been reached, then a new line will be generated automatically. The same function can also be triggered by pressing the **[Enter]** key. The next line will, however, also be marked automatically when **[Enter]** is used.

[Close]

Closes the input window. The current sample data will not be applied in the working sample table (this needs to be triggered beforehand with **[Apply]**).

3.7.5.7.4 Duplicate sample data

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Edit] ▸ Duplicate ▸ Duplicate**

Number

Request as to how often the selected lines are to be duplicated. The new lines are inserted underneath the selected range.

Input range	**1 - 999**
Default value	**1**

3.7.5.7.5 Importing sample data

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Import data… ▸ Select files to import**

Select a ***.csv** file in this dialog window with the sample data to be imported.

File name

Input or selection of the file that is to be imported.

Selection	**File name**

File type

Selection of the import format for the import of data from a file (only ***.csv** is possible).

Selection	***.csv** | ***.csv (Unicode)**
Default value	***.csv**

[Open]

The sample data from the selected file is inserted at the end of the sample table.

Note

No matter the number of data fields defined on the **Display** tab, the import file must always contain for each line the entirety of the sample data in the format **Method name;Ident;Sample type;Position;Injections;Volume;Dilution;Sample amount**.

3.7.5.7.6 Exporting sample data

Dialog window:Workplace ▸ Tools ▸ Sample table ▸ Open… ▸ [Open] ▸ [Sample table] ▸ Export data… ▸ Save file under..

Dialog window:Workplace ▸ Run ▸ Determination series ▸ [Sample table] ▸ Export data… ▸ Save file as..

In this dialog window, you determine the file into which the sample data is to be exported.

File name

Input or selection of the file into which the export is to be made.

Selection	**File name**

File type

Prescribed format ***.csv**.

Selection	**[*.csv]**
Default value	**[*.csv]**

[Save]

The sample data will be written to the export file.

3.7.5.7.7 Sample table test

Dialog window: **Workplace** ▸ **Sample table / Determination series** ▸ **[Sample table]** ▸ **Sample table test...** ▸ **Sample table test -Sample table name**

The menu item **[Sample table]** ▸ **Sample table test...** or the symbol is used to perform the sample table test. At the same time, the dialog window **Sample table test - 'Sample table name'** in which the information concerning the test is displayed opens.

Note

The **Sample table test** is only used to check whether or not all sample data is correct (in contrast to the **Run test** *(see Chapter 3.7.2, page 146)*, which also checks the required hardware).

Line

Displays the line number of the currently tested sample data line.

Status displays

One of the following status displays appears underneath the line number:

Selection	**Sample table test running… | Sample table test stopped manually | Sample table test finished without errors | Sample table test finished with errors**

Sample table test running…
This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

Sample table test stopped manually
This display appears if the sample table test was canceled manually by the user.

Sample table test finished without errors
This display appears at the end of a sample table test that has been completed without errors.

Sample table test finished with errors
This display appears if an error has occurred during the sample table test. The errors that occured are listed in the **Test report** field.

Test report

Display of errors that occurred during the sample table test, together with line numbers.

3.7.5.7.8 Save sample table

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Save as… ▸ Save sample table**

A name for the working sample table to be saved can be entered or selected in this dialog window.

List of sample tables

The list of sample tables contains information about all the saved sample tables.

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table *(see Chapter 3.3.2.6, page 135)*.

Saving sample table

Name

Name under which the sample table is to be saved.

Note

The name of the sample table must be unique throughout the entire client/server system.

Entry	**50 characters**

[Save]

Save the sample table under the desired name.

3.7.5.7.9 Run test

Menu item: **Workplace** ▸ **Tools** ▸ **Run test**

> **Note**
>
> In contrast to the **Sample table test**, which is only used to check whether or not all sample data is correct, the **Run test** also checks the required hardware.

Single determination

The menu item **Tools** ▸ **Run test** or the symbol is used to perform the start test for the selected method. The precondition for this is that the workplace is in **READY** status.

For the Run test, the dialog window **Run test - 'Workplace name' - Single determination** opens, in which information concerning the test is displayed.

Method

Displays the method for the single determination.

Determination series

The menu items **Tools** ▸ **Run test** or **[Sample table]** ▸ **Run test…** or the symbol are used to perform the Start test . The precondition for this is that the workplace is in **READY** status.

For the Run test, the dialog window **Run test - 'Workplace name' - Determination series** opens, in which information concerning the test is displayed.

Line

Displays the line number of the currently tested sample data line for the determination series.

Status displays

One of the following status displays appears underneath the line number:

Selection	**Run test running… | Run test error | Run test finished without errors**

Run test running…
This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

Run test error
This display appears if an error has occurred during the run test. During a determination series, the user can determine, on the basis of the line number displayed, the line to which the the error message belongs that appeared at the time of the error and that is currently displayed in the usual message window.

Run test finished without errors
This display appears at the end of a run test that has been completed without errors.

3.7.5.7.10 Print sample table (PDF)

Dialog window: **Workplace ▸ Sample table / Determination series ▸ [Sample table] ▸ Print (PDF)… ▸ Print sample table (PDF)**

The output format for the PDF output can be selected in this dialog window.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Output in portrait format.

Landscape
Output in landscape format.

3.7.5.8 Determination series - Properties

3.7.5.8.1 Properties - Overview

Dialog window: Workplace ▸ Run ▸ Determination series ▸ [Sample table] ▸ Properties… ▸ Properties - Determination series

Dialog window: Workplace ▸ View ▸ Properties ▸ Properties Run window ▸ Properties - Determination series

The properties for the tab **Determination series** are set on the following tabs:

- *Display*
  Definition of the columns that are to be displayed in the working sample table.
- *Edit*
  Options for editing the working sample table on the tab **Determination series** and in the dialog window **Edit line**.
- *Process*
  Options for processing the working sample table on the tab **Determination series**.

- *Data import*
  Activating/deactivating the import of external data for working sample table fields.
- *Comment*
  Entry of a comment on the working sample table.

3.7.5.8.2 Properties - Display

Dialog window:Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window:Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Definition of the operating elements and columns that are to be displayed in the sample table.

Sample data

Ident

on | off (Default value: **on**)

Enable/disable the display of the column **Ident** in the sample table.

Sample type

on | off (Default value: **on**)

Enable/disable the display of the column **Sample type** in the sample table.

Position

on | off (Default value: **on**)

Enable/disable the display of the column **Position** in the sample table.

Injections

on | off (Default value: **on**)

Enable/disable the display of the column **Injections** in the sample table.

Volume

on | off (Default value: **on**)

Enable/disable the display of the column **Volume** in the sample table.

Dilution

on | off (Default value: **on**)

Enable/disable the display of the column **Dilution** in the sample table.

Sample amount

on | off (Default value: **on**)

Enable/disable the display of the column **Sample amount** in the sample table.

Info 1

on | off (Default value: **on**)

Enable/disable the display of the column **Info 1** in the sample table.

Info 2 … Info 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Info 2 … Info 4** in the sample table.

Value 1 … Value 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Value 1 … Value 4** in the sample table

3.7.5.8.3 Properties - Edit

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Options for the editing of the sample table.

Apply data with

on | off (Default value: **off**)

Selection of the data field which must be filled in connection with automatic data import via barcode reader or file in order to apply the data for the line in the sample data storage and to switch onward to the next line. If the relevant column is empty, then additional imported data will be written into the same line. This means that it is possible, for example, to fill a line first with sample identifications per barcode reader and then later to apply the sample size from a balance for the same line.

Note

This option has no relevance when entering data manually.

Selection	**Method** | **Ident** | **Volume** | **Sample amount** | **Info 1** | **Info 2** | **Info 3** | **Info 4** | **Value 1** | **Value 2** | **Value 3** | **Value 4**
Default value	**Method**

Lock editing in working sample table

on | off (Default value: **off**)

If this option is activated, then it is not possible to edit lines in the sample table that is loaded in the working sample table.

Copy automatically into next line

Method

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Ident

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample type

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample position + 1

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be incremented by **+1** when a new sample data line is created.

Injections

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Volume

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Dilution

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample amount

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Info 1

on | off (Default value: **on**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Info 2 ... Info 4

on | off (Default value: **off**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Value 1 … Value 4

on | off (Default value: **off**)

If this option is activated, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

3.7.5.8.4 Properties - Process

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ Sample table 'Name' ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Options for processing the working sample table in the Workplace window in the tab **Determination series**.

Delete processed lines

on | off (Default value: **off**)

If this option is activated, then lines in the working sample table which have already been processed completely will be deleted automatically.

Method selection by assignment ID

on | off (Default value: **off**)

If this option is activated, then the selected sample identification will be used for the method selection in the working sample table. This identification received the designation **Assignment ID**, which can then no longer be changed; if this ID matches one of the Assignment IDs from the sample assignment table *(see Chapter 3.5.1, page 142)*, then the respective method will be loaded.

Selection	**Ident** | **Info 1** | **Info 2** | **Info 3** | **Info 4** | **Value 1** | **Value 2** | **Value 3** | **Value 4**
Default value	**Ident**

Request assignment ID

on | off (Default value: **off**)

If this option is activated, the **Assignment ID** will be queried immediately after the start of the determination.

Actions for marked sample table lines

Selection	**Pause series ([Pause]) and show message** | **Stop series ([Stop])**
Default value	**Pause series ([Pause]) and show message**

Pause series ([Pause]) and show message
If this option is selected, then the series is interrupted before the start of the marked line (equivalent to [Pause]). At the same time a message will appear which also contains the text defined in the message box.

Stop series ([Stop])
If this option is selected, then the series is stopped before the start of the marked line (equivalent to [Stop]).

Start the text editor with which the message can be entered and edited.

3.7.5.8.5 Properties - Data import

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New… ▸ [Sample table] ▸ Properties… ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Activating/deactivating the import of external data for sample table fields.

Note

The successful completion of the data import is indicated during the run by an acoustic signal (beep).

Import from a barcode reader

on | off (Default value: **off**)

If this option is activated, then external data from the selected barcode reading device will be imported into the opened sample table. The device properties of the barcode reader will define the field into which the data is imported *(see Chapter 7.20.4, page 1140)*.

Barcode reader

Selection of the barcode reader from which data is to be imported.

Selection	**Device name**
Selection	**Always accept data** | **Accept data only for active window**
Default value	**Always accept data**

Always accept data
If this option is selected, then the data sent from the barcode reader is imported into the open sample table for which this barcode reader is defined as data source.

Accept data only for active window
If this option is selected, then the data sent from the barcode reader is only imported into the open sample table if this is actively selected (i.e. when the window has the focus).

Import from a file

on | off (Default value: **off**)

If this option is activated, then external data from a file (e.g. via LIMS) will be imported into a sample table. When this is the case, a check is made to determine whether the specified import file is available when the sample table is opened, when the sample table is loaded into the working sample

table and also periodically (every 10 s) when the sample table is open (although not when the dialog window **Edit line** is open). If the import file is available, then the data from this file is automatically inserted at the end of the sample table. The import file is deleted after each import.

Note

No matter the number of data fields defined on the **Display** tab, the import file must always contain for each line the entirety of the sample data in the format **Method name;Ident;Sample type;Position;Injections;Volume;Dilution;Sample amount**.

Import file

File that is to be imported. With ... the file can be selected in the dialog window **Select files for import**.

Entry	**File name**

Import format

Selection of the import format for the import of data from a file.

Selection	***.csv** | ***.csv (Unicode)**
Default value	***.csv**

***.csv**
Format for the import of CSV files with Western European ASCII character sets.

***.csv (Unicode)**
Format for the import of CSV files with Unicode character sets.

3.7.5.8.6 Properties - Comment

Dialog window: Workplace ▸ Tools ▸ Sample table ▸ New... ▸ [Sample table] ▸ Properties... ▸ Properties - Sample table 'Name'

Dialog window: Workplace ▸ Run ▸ Determination series ▸ Properties Run window ▸ Properties - Determination series

Entry of a comment on the sample table.

Comment on sample table

Entry of a comment on the sample table. This comment will be displayed in the column of the same name in the dialog windows **Open sample table** and **Sample table manager**.

Entry	**1000 characters**

3.7.5.9 Modification comment for sample data

Dialog window: Workplace ▸ Run ▸ Single determination ▸ Live modifications ▸ Live modifications ▸ Modification comments sample data

Dialog window: Workplace ▸ Sequence ▸ Determination series ▸ [Edit] ▸ Edit line ▸ Edit line - Working sample table - Workplace 'Name' ▸ Modification comment sample data

If the option **Comment on modification of sample data (live)** is enabled in the security settings, then this window must be opened before saving. A reason and a comment on the modification must be entered here *(see Chapter 6.2.2.4, page 509)*.

Reason

Selection from the standard reasons for the category **Modifications of sample data** *(see Chapter 6.2.2.6, page 511)* that are defined in the security settings.

Selection	**Selection from default reasons**

Comment

Entry of remarks about the modifications to the sample data.

Entry	**1000 characters**

3.8 Subwindow Live display

3.8.1 Live display - General

Subwindow: **Workplace ▸ Live display**

Subwindow live display

Chromograms of analyses of the determination currently running are displayed in the two subwindows **Live display 1** and **Live display 2**. The subwindows can be switched on in the program part **Workplace** during the definition of the Layout and thus made visible *(see Chapter 3.1.7.2, page 114)*. They can be enlarged and reduced as required; they can also be maximized.

Tabs

The subwindows **Live display 1** and **Live display 2** are comprised of the following tabs:

- *Analyses*
  A tab is displayed for each analysis which is lettered with the name of the analysis.

- *Application note*
  Display of the application note defined in the method properties.

3.8.2 Live display - Analyses

Tab: **Workplace ▶ Live display ▶ 'Analysis name'**

A tab lettered with the name of the analysis is displayed in the subwindow **Live display** for each analysis defined in the method. The measurement signal of this analysis is shown here live for the currently running determination.

Current measuring value

Display of the current measured value of the X axis (time) and Y axis (measured value).

Cursor

Display of the current position of the cursor on the X axis (time) and Y axis (measured value).

[Evaluate]

Trigger evaluation of the chromatogram currently running during the recording process. The measuring points recorded at this time are evaluated with the current method parameters (including parameters modified live). This evaluation is temporary and is used only for visualizing initial results during the recording. They are discarded when the recording has finished and the chromatogram receives final evaluation.

[Evaluation parameters]

The dialog window **Live modifications – Evaluation** opens in which the evaluation parameters of the method can be changed live *(see Chapter 3.8.3, page 186)*.

[Recording time]

The dialog window **Change recording time** opens in which the recording time can be changed live *(see Chapter 3.8.4, page 186)*.

The additional functions and properties of the subwindow **Live display 1** and **Live display 2** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Choose color*

3.8.3 Live display - Modifying evaluation parameters

Dialog window: **Workplace ▸ Live display ▸ 'Analysis name' ▸ [Evaluation parameters] ▸ Live modifications – Evaluation**

The dialog window **[Live modifications - Evaluation]**, in which the evaluation parameters of the method can be modified live, is opened with the function **Evaluation parameters**.

The dialog window is identical with the **Evaluation** window in the method *(see Chapter 5.8.1, page 411)*, but not all functions and parameters can be modified live.

Note

The modifications apply only for the current determination. If all subsequent determinations for this method are also to be carried out with the modified settings, then the method must be resaved with the menu item **File ▸ Method ▸ Save**.

3.8.4 Live display - Modifying recording time

Dialog window: **Workplace ▸ Live display ▸ 'Analysis name' ▸ [Recording time] ▸**

The dialog window **[Change recording time]**, in which the recording time for the chromatogram can be modified, is opened with the **Recording time** function.

Time

Input range	**0.5 - 1000.0 min**

Note

Only the recording time of the current analysis is extended. If all subsequent analysis recordings are to be extended for longer periods of time, then the method must be resaved by means of the menu item **File ▸ Method ▸ Save**.

3.8.5 Live display - Application note

Tab: **Workplace ▸ Live display ▸ 'Application note'**

The application note for the method loaded is shown on the tab **Application note**. This tab is displayed in the default settings when the method is loaded. The application note is defined in the method properties *(see Chapter 5.3.4, page 364)*.

3.9 Subwindow Report

3.9.1 Report - General

Subwindow: **Workplace ▸ Report**

Subwindow Report

The reports of determinations are displayed in the subwindow **Report**. The subwindow can be switched on in the program part **Workplace** during the definition of the Layout and thus made visible *(see Chapter 3.1.7.2, page 114)*. It can be enlarged and reduced as required; it can also be maximized.

Tabs

The subwindow **Report** is comprised of the following tabs:

- *Latest report*
  Display of the most recently automatically generated report.
- *Selected report*
  Display of the report selected in the report overview.
- *Report overview*
  Overview of the reports saved in the workplace.

3.9.2 Latest report

Tab: **Workplace ▸ Report ▸ Latest report**

The report most recently generated in the method run is automatically displayed on the tab **Latest report**. The content and format of the report are determined by the report template selected.

3.9.3 Selected report

Tab: **Workplace ▸ Report ▸ Selected report**

The report selected in the report overview is shown on the tab **Selected report**. The content and format of the report are determined by the report template selected.

3.9.4 Report overview

Tab: **Workplace ▸ Report ▸ Report overview**

The reports for the determinations since program start are shown in a table on the tab **Report overview**. The lines are arranged chronologically in ascending order. The table is automatically updated as new reports are received.

The table contains the following columns, which can be enlarged, reduced and moved with the mouse:

Date

Time of the compilation of the report, together with date, time and time zone (UTC ± ##).

Report

Name of the report template, that generated the report.

Method

Method name.

Ident

Identification of the chromatogram.

Sample type

Sample type

Position

Position of the sample on the rack.

Injections

Number of injections per sample.

Volume

Volume of the sample.

Dilution

Dilution factor for the sample.

Sample amount

Amount of solid sample.

Info 1…4

Additional information about the sample.

Value 1…4

Additional values for the sample.

[View]

Displays the selected report on the tab **Selected Report**.

[Delete]

Deletes the selected reports in the report overview.

[Properties]

Opens the dialog window **Properties - Report overview**.

3.9.5 Properties report overview

Dialog window: **Workplace ▸ Report ▸ Report overview ▸ [Properties] ▸ Properties - Report overview**

Maximum number of reports

Maximum number of reports that can be saved in the report overview table. If this number is exceeded, then the oldest report will be deleted automatically.

Input range	**1 - 100**
Default value	**20**

3.10 Subwindow Watch window

3.10.1 Watch window - Overview

Subwindow: **Workplace ▸ Watch window - 'Method name'**

The **Watch window** is a subwindow in the program part **Workplace** which is for the purpose of providing the user clearly and quickly with the most important information concerning his method and the devices associated with it. It consists of the following parts:

- *Device information*
  Display of the selected, current device information.
- *Messages*
  Display of the messages occurring during the method run.

3.10.2 Watch window - Device information

Subwindow: **Workplace ▸ Watch window - 'Method name'**

The device information display is located in the upper part of the **Watch window**. The user can configure which information is shown there *(see Chapter 3.10.4, page 190)*.

Note

The properties of the Watch window are method-specific and client-specific.

The device information displayed is for the method that is loaded in the workplace. Each user can structure the Watch window on his or her own computer according to his or her needs, even for methods that are used throughout the company in a client/server system. The properties remain in effect, the Watch window of a newly loaded method will always be shown with the most recent settings.

The display of the device information itself is however not configurable. As a general rule, the following applies:

- A simple status for the device/module will be shown in **black on gray** in an display field.
- Device values that are monitored are shown **black on gray** when the values fall within the limit values and **white on red** when the values fall outside them.

3.10.3 Watch window - Messages

Subwindow: **Workplace ▸ Watch window - 'Method name'**

A scrollable message field is located in the lower section of the **Watch window** which contains all messages concerning events occurring during the run of the current determination. Entries consist of messages that generate a database entry in the determination but which are not significant enough to result in the run being interrupted pending confirmation by the user.

Each message consists of **Date**, **Time** and **Message text**.

3.10.4 Watch window - Properties

Dialog window: **Workplace ▸ View ▸ Properties ▸ Properties Watch window ▸ Watch window - 'Method name'**

The dialog window **Watch window - 'Method name'** is opened by means of **View ▸ Properties ▸ Properties Watch window**. Here the instrument properties can be selected for the method which is to be displayed in the Watch window.

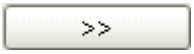
Available properties

The instrument properties available for the display are shown in tree-form for each instrument and can be selected with the cursor. Properties that are already displayed are disabled.

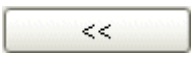
A **separator** is available at the end of the tree selection of the available properties with which the properties displayed can be structured in the Watch Window.

Displayed properties

Display of the instrument properties that are to be displayed in the **Watch Window**.



Adds selected property to the table.



Removes the selected property from the table.

Modifies the sequence of the properties displayed by moving the selected property up.

Modifies the sequence of the properties displayed by moving the selected property down.

[Decimal places]

Opens the dialog window **Decimal places - 'Property'** in which the number of decimal places shown can be selected for the selected property.

3.11 Subwindow time program

Subwindow: **Workplace ▸ Time program**

The subwindow Time program is identical with the window of the same name in the method *(see Chapter 5.7, page 395)*; it can however be edited.

The run of the time program is presented graphically by the colored marking of the command lines:

- When a command line is being carried out, it is marked in **red**. It will remain marked until the next command is executed.
- Command lines that have been processed are shown in **gray**.
- The tabs of (sub)programs in which commands are presently being executed, are marked with **red lettering**.
- The tabs of (sub)programs in which all commands have been executed, are marked with **gray lettering**.

4 Database

4.1 Database - General

4.1.1 Database - Definition

Program part: **Database**

Definition

The term **Database** is used in **MagIC Net** to refer to the program part in which the determinations saved in the databases can be displayed, managed, evaluated, reprocessed and printed out. The **determination databases** are also referred to as **databases**; they can, in contrast to the **configuration database**, be generated by the user and contain the determination data. Included among such determination data is the method data used for the determination, the measuring data generated during the determination and the results calculated from it.

Organization

In **Local Server Systems** (**MagIC Net Compact**, **MagIC Net Professional**) the databases are stored on the drives administered by the computer and are only available to those users registered on that computer who have the appropriate access rights.

In **Client Server Systems** (**MagIC Net multi**) the databases are stored on the drives managed centrally by the server and are globally available in the whole client/server system, i.e. all users with the appropriate access rights can use these databases.

4.1.2 Database - Desktop

Program part: **Database**

Database symbol

Clicking on the database symbol in the vertical bar on the left opens the program part **Database** while, at the same time the database symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of databases currently opened *(see Chapter 4.2.2, page 204)*.

Elements

The desktop of the program part **Database** comprises the following elements:

- Database-specific menu bar.
- Database-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

4.1.3 Database - Menu bar

4.1.3.1 Database - Main menus

Program part: **Database**

The menu bar in the program part **Database** includes the following main menu items:

- *File*
  Open and close databases, database management, printing.
- *Edit*
  Copy selected lines in the determination overview onto the clipboard, mark all lines.
- *View*
  Change the layout, load a view, save the view, modify the the subwindow properties.
- *Determinations*
  Search, filter, sign, delete determinations; overlay curves, calibration curves, reprocessing, etc.
- *Tools*
  Report templates, further templates.
- *Help*
  Open program help, display program information.

4.1.3.2 Database - Menu File

Program part: **Database**

Open…	Open a database *(see Chapter 4.2.1, page 203)*.
Close all	Close all open databases *(see Chapter 4.2.6, page 206)*.
Close	Close the database *(see Chapter 4.2.6, page 206)*.
Database manager...	Administration of the determination databases *(see Chapter 4.3.1, page 206)*.
Print ▸	
Determination overview…	PDF file output of the determination overview *(see Chapter 4.7.11, page 293)*.

Report...	PDF file output of the report *(see Chapter 4.7.12, page 294)*.
Logout...	Logout user *(see Chapter 2.2.3, page 24)*.
Exit	Exit the program.
1 'file name'	Open the selected database *(see Chapter 4.2.1, page 203)*. The last five databases opened are displayed as selection.

4.1.3.3 Database - Menu Edit

Program part: **Database**

Copy	Copy the selected lines in the determination overview to the clipboard.
Select all	Select all lines in the current set of determinations in the determination overview.

4.1.3.4 Database - Menu View

Program part: **Database**

Update	Update the determination overview.
Change layout...	Modify the layout of the loaded database view *(see Chapter 3.1.7.2, page 114)*.
Load view...	Load a saved database view *(see Chapter 3.1.7.3, page 115)*.
Save view...	Save the loaded database view *(see Chapter 3.1.7.4, page 115)*.
Split vertically	Split the database window vertically and display two databases side by side *(see Chapter 4.2.4, page 205)*.
Split horizontally	Split the database window horizontally and display two databases, one above the other *(see Chapter 4.2.5, page 205)*.
Unsplit	Undo the splitting of the database window *(see Chapter 4.2.3, page 205)*.
Properties ▸	
Column display	Define the column display for the subwindow **Determination overview** *(see Chapter 4.7.1.3, page 270)*.
Properties Results	Set the properties for the subwindow **Results** *(see Chapter 4.9.1, page 346)*.
Toolbar	Switch toolbar display on/off.

4.1.3.5 Database - Menu Determinations

Program part: **Database**

Comment...	Enter a comment on the selected determination *(see Chapter 4.7.3, page 275)*.
Search	Open the window **Search** for searching for determinations *(see Chapter 4.7.4, page 276)*.
Filter ▸	
Last filter	Use the last quick or special filter again *(see Chapter 4.7.6.2, page 281)*.
Quick filter	Quick filtering with the content of the selected table cell *(see Chapter 4.7.6.3, page 281)*.
Special filter...	Open the window **Special filter** for the definition of user-specific filters *(see Chapter 4.7.6.4, page 282)*.
Remove filter	Remove the current filter *(see Chapter 4.7.6.5, page 283)*.
Batch ▸	
New batch...	Create a new batch *(see Chapter 4.7.5.2, page 280)*.
Delete batch...	Delete the batch *(see Chapter 4.7.5.3, page 280)*.
Append to batch...	Attach the selected determinations to the current batch *(see Chapter 4.7.5.4, page 280)*.
Remove from batch...	Remove the selected determinations from the current batch *(see Chapter 4.7.5.5, page 281)*.
Sign ▸	
Signature 1...	Sign the selected determinations on level 1 *(see Chapter 2.3.3, page 27)*.
Signature 2...	Sign the selected determinations on level 2 *(see Chapter 2.3.4, page 28)*.
Show signatures...	Show all signatures for the focused determination *(see Chapter 4.7.7.4, page 290)*.
Delete signatures 2...	Delete signatures at level 2 of the focused determination *(see Chapter 2.3.5, page 30)*.
Send to...	Send the selected determinations per e-mail *(see Chapter 4.7.8, page 292)*.
Export...	Export the selected determinations *(see Chapter 4.7.9, page 293)*.

Import...	Import the selected determinations *(see Chapter 4.7.10, page 293)*.
Show method...	Show the method used for the focused determination *(see Chapter 4.7.13, page 296)*.
Show history	Show all versions of the focused determination in the determination overview *(see Chapter 4.7.14, page 296)*.
Make current	Make the old version selected in the history view the current version again *(see Chapter 4.7.15, page 296)*.
Detail overview...	Show the detail overview of results for the selected determinations *(see Chapter 4.7.16.2, page 297)*.
Overlay curves...	Overlay the curves of the selected determinations *(see Chapter 4.7.17, page 305)*.
Reprocess...	Reprocess the selected determinations *(see Chapter 4.7.18.1, page 310)*.
Complete...	Complete the selected determinations *(see Chapter 4.7.19, page 329)*.
Delete	Delete the selected determinations *(see Chapter 4.7.20, page 329)*.

4.1.3.6 Database - Menu Tools

Program part: **Database**

Report templates ▸	
New ▸	
Form report	Open the window **Report template** with an empty form report *(see Chapter 4.4.3, page 216)*. This menu item is disabled as long as the database is empty.
Tabular report	Open the window **Report template** with an empty tabular report *(see Chapter 4.4.3, page 216)*.
Open...	Open a report template to edit *(see Chapter 4.4.3, page 216)*. This menu item is disabled as long as the database is empty.
Manager...	Manage report templates *(see Chapter 4.4.1.1, page 214)*.
Templates ▸	
Control chart templates...	Manage templates for control charts *(see Chapter 4.5, page 256)*.

Export templates...	Manage export templates *(see Chapter 4.6.1, page 262)*.

4.1.3.7 Menu Help

Program parts: **Workplace / Database / Method / Configuration**

MagIC Net&Help	Open MagIC Net Help.
&About	Display information about the program and the installation.

4.1.4 Database - Toolbar

Program part: **Database**

Open...	Open a database *(see Chapter 4.2.1, page 203)*.
Close	Close the database *(see Chapter 4.2.6, page 206)*.
Database manager...	Administration of the determination databases *(see Chapter 4.3.1, page 206)*.
Logout...	Logout user *(see Chapter 2.2.3, page 24)*.
Copy	Copy the selected lines in the determination overview to the clipboard.
Update	Update the determination overview.
Change layout...	Modify the layout of the loaded database view *(see Chapter 3.1.7.2, page 114)*.
Load view...	Load a saved database view *(see Chapter 3.1.7.3, page 115)*.
Save view...	Save the loaded database view *(see Chapter 3.1.7.4, page 115)*.
Split vertically	Split the database window vertically and display two databases side by side *(see Chapter 4.2.4, page 205)*.
Split horizontally	Split the database window horizontally and display two databases, one above the other *(see Chapter 4.2.5, page 205)*.
Unsplit	Undo the splitting of the database window *(see Chapter 4.2.3, page 205)*.
Comment	Enter a comment on the selected determination *(see Chapter 4.7.3, page 275)*.

Search	Open the window **Search** for searching for determinations *(see Chapter 4.7.4, page 276)*.
Filter/Last filter	Use the last quick or special filter again *(see Chapter 4.7.6.2, page 281)*.
Filter/Quick filter	Quick filtering with the content of the selected table cell *(see Chapter 4.7.6.3, page 281)*.
Filter/Special filter...	Open the window **Special filter** for the definition of user-specific filters *(see Chapter 4.7.6.4, page 282)*.
Filter/Remove filter	Remove the current filter *(see Chapter 4.7.6.5, page 283)*.
Sign/Signature 1...	Sign the selected determinations on level 1 *(see Chapter 2.3.3, page 27)*.
Sign/Signature 2...	Sign the selected determinations on level 2 *(see Chapter 2.3.4, page 28)*.
Show method...	Show the method used for the focused determination *(see Chapter 4.7.13, page 296)*.
Show history	Show all versions of the focused determination in the determination overview *(see Chapter 4.7.14, page 296)*.
Make current	Make the old version selected in the history view the current version again *(see Chapter 4.7.15, page 296)*.
Detail overview...	Show the detail overview of results for the selected determinations *(see Chapter 4.7.16.2, page 297)*.
Overlay curves...	Overlay the curves of the selected determinations *(see Chapter 4.7.17, page 305)*.
Reprocess...	Reprocess the selected determinations *(see Chapter 4.7.18.1, page 310)*.
Delete	Delete the selected determinations *(see Chapter 4.7.20, page 329)*.
Report templates/ Open...	Open a report template to edit *(see Chapter 4.4.3, page 216)*.
MagIC Net Help	Open MagIC Net help.

4.1.5 Database - Subwindows

Program part: **Database**

Selection

The following subwindows can be displayed in the main window:

- *Determination overview*
  Overview of the determinations saved in the database. This subwindow is permanently on display.
- *Information*
  Display of information for the focused determination.
- *Results*
  Display of the results for the focused determination.
- *Curves 1...5*
  Display of curves for the focused determination.

Presentation

The subwindows can be enlarged or made smaller to suit by dragging the separating bar between the windows.

By clicking on the button ☐ above at the right, the subwindows can be maximized so that only one subwindow is displayed in the main window. The original view of all subwindows is restored when the ☐ button in the maximized subwindow is clicked on again.

If you change the view in the subwindows, these changes will remain in effect after the database is closed and reopened.

4.1.6 Database - Functions

Program part: **Database**

In the program part **Database**, the following functions can be carried out:

Views

- *Modify the layout of the database view*
- *Load a database view*
- *Save the database view*
- *Rename the database view*
- *Delete a database view*

Database manager

- *Create a new database*
- *Rename the database*
- *Edit the database properties*
- *Backup the database*
- *Restore the database*
- *Delete the database*

Determinations

- *Overview of functions*

Templates

- *Edit report templates*
- *Edit templates for control charts*
- *Edit export templates*

4.1.7 Views

4.1.7.1 Views - General

Program parts: **Workplace / Database / Configuration**

Definition

The term **View** defines the contents and design of the main window in the program parts **Workplace**, **Database** and **Configuration**. The following elements belong to a view:

- Number, arrangement, sequence and size of the subwindows.
- Representation within the individual subwindows, i.e. column sequence, column width, sorting and filter.

Functions

The following functions are possible for views:

- *Change layout*
  Define the number, arrangement and sequence of the subwindows for the current view.
- *Save view*
  Save current view.
- *Load view*
  Load a saved view.
- *Rename view*
  Rename a saved view.
- *Delete view*
  Delete a saved view.

Automatic save

If the corresponding option is activated in the program part **Configuration** under **Tools ▸ Options...** on the tab **Save** under **Save on closing**, then the current view will be saved automatically when the program is closed.

Automatic load

The standard procedure is that the view saved when the program is terminated will be loaded automatically the next time that the program is opened. As an alternative a standard view can be defined for each user

group that is loaded automatically the first time that the program part is opened.

The standard procedure is that the view with the following subwindow is opened with the very first program start:

- **Workplace**
  Run, **Live display 1**, **Report**, **Watch window**, **Time program**
- **Database**
  Determination overview, **Curves 1**, **Information**, **Results**
- **Configuration**
  Devices, **Columns**, **Eluents**, **Accessories**

Export/Import

Views can also be exported and imported. In this way these views can be exchanged between different client / server systems.

4.1.7.2 Change layout

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Change &layout... ▸ Change layout**

The symbol or the menu item **&View ▸ Change &layout...** opens the dialog window **Change layout**.

Select layout

Selection of a graphical symbol for the number, arrangement and sequence of the subwindows.

Selection	**'Selection of the possible combinations'**

Available subwindows

Displaying the subwindows that are still available for displaying the view.

Selection	**'Selection of the subwindows'**

Displayed subwindows

Displaying the subwindows that are shown in the view.

Selection	**'Subwindows'**

Add the selected subwindow to the view.

Remove the selected subwindow from the view.

Move the selected subwindow upward (modifies sequence).

Move the selected subwindow downward (modifies sequence).

4.1.7.3 Loading a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Load &view... ▸ Load view**

The symbol or the menu item **&View ▸ Load &view...** opens the dialog window **Load view**.

Name

Name of the view to be loaded.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Load]

Load the selected view.

4.1.7.4 Saving a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ &Save view... ▸ Save view**

The symbol or the menu item **&View ▸ &Save view...** opens the dialog window **Save view**.

Name

Name under which the view is to be saved.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Save]

Save the view under the given name. The saved views are globally valid and available for client/server systems.

4.1.7.5 Renaming a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Load &view... ▸ Load view ▸ [Rename] ▸ Rename view**

To be able to rename a view, either the dialog window **Load view** or **Save view** must be opened and the button **[Rename]** must be pressed down. Afterwards, the window **Rename view** opens.

Rename view '%1' to

Entry of a new name for the view.

Entry	**50 characters**

4.1.7.6 Deleting a view

Function: **Workplace / Database / Configuration ▸ &View ▸ Load/save view… ▸ [Delete]**

To delete a view, either the dialog window **Load view** or **Save view** must be opened and the button **[Delete]** must be pressed down. The delete procedure must then be confirmed.

4.2 Database display

4.2.1 Open database

Dialog window: **Database ▸ File ▸ Open… ▸ Open database**

The symbol or the menu item **File ▸ Open…** is used to open the **Open database** window, in which one of the databases to be opened available on the server (or on the local server) can be selected. In this window the names of all databases available are displayed, further information is loaded afterwards. All databases are thereby displayed, even if the user does not own the rights for reading.

Database table

The database table contains information concerning all determination databases. The table cannot be edited. With a click on the column title (Columns **Name**, **Number of records**, **Size**, **Last backup**, **Next backup**, **Comment**), the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of the database.

Number of records

Shows the number of data sets in the database.

Size

Shows the size of the database in KB.

Readable

Shows whether or not the database can read by the user currently logged in.

Editable

Shows whether or not the database can be edited by the user currently logged in.

Comment

Shows remarks about the database.

Opening the database

Database name

Name of the method to be opened. If a database is selected from the table, the name of the database will be entered automatically in this field. It can however also be entered manually.

Entry	**50 characters**

[Open]

Opens the selected database and shows its data sets in the Determination overview. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

4.2.2 Select database

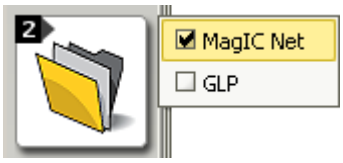
Program part: **Database**

The number of the currently opened databases is displayed in the left upper corner of the database symbol. If 2 or more databases are opened, then these databases, which can be displayed either next to one another or one below the other, can be selected with the aid of the database symbol.

No database is opened. **No database loaded** is displayed in the main window.

One database is opened and is displayed in the main window.

Two databases are opened. Normally only one database is displayed in the main window but the option exists of displaying two databases at once, either next to the another or one below the other.



A menu with the currently opened databases is displayed by clicking with either the left or right mouse button on the database symbol. The databases displayed in the main window are marked with a checkmark. Clicking on the desired database displays it in the main window in the place of the previously selected one.

4.2.3 Display single database

Menu item: **Database ▸ View ▸ Unsplit**

In the default settings, the most recently opened database is displayed singularly in the main window. If the display of two windows is enabled, then the symbol or the menu item **View ▸ Unsplit** can be used to switch back to the display of just one single database.

4.2.4 Display databases next to one another

Menu item: **Database ▸ View ▸ Split vertically**

With the symbol or the menu item **View ▸ Split vertically** two databases are displayed next to one another in the main window.

4.2.5 Display databases one below the other

Menu item: **Database ▸ View ▸ Split horizontally**

With the symbol or the menu item **View ▸ Split horizontally** two databases can be displayed one below the other in the main window.

4.2.6 Close database

Menu items: **Database** ▸ **File** ▸ **Close / Close all**

Close single database

With the symbol or the menu item **File** ▸ **Close** can be used to close the focused database.

Close all databases

All the opened databases are closed with the menu item **File** ▸ **Close all**.

4.3 Manage databases

4.3.1 Manage databases

Dialog window: **Database** ▸ **File** ▸ **Database manager…** ▸ **Database manager**

The symbol or the menu item **File** ▸ **Database manager…** is used to open the window **Database manager**, in which one user with corresponding access rights can administer databases.

Database table

The database table contains information concerning all determination databases. The table cannot be edited. With a click on the column title (Columns **Name**, **Number of records**, **Size**, **Last backup**, **Next backup**, **Comment**), the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of the database.

Number of records

Shows the number of data sets in the database.

Size

Shows the size of the database in KB.

Last backup

Shows the date and time of the last database backup.

Next backup

Shows the date and the time at which the next backup is to be carried out.

Comment

Shows remarks about the database.

Window menus and functions

The menu **[Edit]** beneath the database table contains the following menu items:

New…	Create new database *(see Chapter 4.3.2, page 207)*.
Delete	Delete the selected database *(see Chapter 4.3.4, page 208)*.
Rename…	Rename the selected database *(see Chapter 4.3.3, page 208)*.

[Properties]

Opens the window **Database manager** for editing the database selected in the table *(see Chapter 4.3.5.1, page 208)*.

[Backup]

Opens the window **Backup the database** for backing up the database selected in the table *(see Chapter 4.3.6, page 212)*.

[Restore:]

Opens the window **Restoration of databases** for restoring backed-up databases *(see Chapter 4.3.7, page 213)*.

[Exit]

Closes the window **Database manager.**

4.3.2 Create new database

Dialog window: **Database ▸ File ▸ Database manager… ▸ Database manager ▸ [Edit] ▸ New… ▸ New database**

The menu item **[Edit] ▸ New…** can be used to open the window **New database**, in which a name for the new database must be entered.

Name

Name of the new database.

Entry	**50 characters**
Default value	**New database #**

Note

The database name must be unambiguous in the whole Client/Server system.

Clicking on **[OK]** will open the window **Database properties** for editing the database properties.

4.3.3 Rename database

Dialog window: **Database ▸ File ▸ Database manager… ▸ Database manager ▸ [Edit] ▸ Rename... ▸ Rename database**

The menu item **[Edit] ▸ Rename...** is used to open the window **Rename database** for renaming the selected database.

Rename database 'Name' to

Entry of the new database name.

Entry	**50 characters**

Note

The database name must be unambiguous in the whole Client/Server system.

4.3.4 Delete database

Menu item: **Database ▸ File ▸ Database manager… ▸ Database manager ▸ [Edit] ▸ Delete**

The menu item **[Edit] ▸ Delete** is used to delete the selected database.

Note

Databases that are open cannot be deleted.

4.3.5 Database properties

4.3.5.1 Database properties - Overview

Dialog window: **Database ▸ File ▸ Database manager... ▸ Database manager ▸ [Properties] ▸ Properties - Database - 'Database name'**

The properties for a database are set on the following tabs:

- *General*
  General information about the database.
- *Access rights*
  Access rights to the database for user groups.
- *Backup*
  Definition of backup monitoring and automatic backups.
- *Monitoring*
  Defines database monitoring.

4.3.5.2 Database properties - General

Tab: **Database ▸ File ▸ Database manager... ▸ Database manager ▸ [Properties] ▸ Properties - Database - 'Database name' ▸ General**

General information about the database.

Comment

Freely definable remarks about the database.

Entry	**250 characters**

Number of records

Shows the number of data sets in the database.

Size

Shows the size of the database in KB.

Created

Shows the date and time of the creation of the database.

Created by

Full name of the user who created the database.

Modified

Shows the date and time of the last modification of the database properties.

Modified by

Shows the name of the user (abbreviation) who carried out the modifications.

4.3.5.3 Database properties - Access rights

Tab: **Database ▸ File ▸ Database manager... ▸ Database manager ▸ [Edit] ▸ Properties - Database -'Database name' ▸ Access rights**

Access rights to the database for user groups.

User group

Shows the user groups defined in the user manager.

Read

on | off (Default value: **on**)

Enables/disables the right to open the database. The database can only be displayed, but not modified (records cannot be deleted or reprocessed).

Edit

on | off (Default value: **off**)

Enables/disables the right to edit the database. Records can be revised or deleted.

Note

If access for editing is enabled, then access rights for reading will also automatically be enabled. If access for editing is disabled, then access rights for reading will also automatically be disabled.

4.3.5.4 Database properties - Backup

Tab: **Database** ▸ **File** ▸ **Database manager...** ▸ **Database manager** ▸ **[Properties]** ▸ **Properties - Database - 'Database name'** ▸ **Backup**

Definition of backup monitoring and automatic backups.

Backup monitoring

on | off (Default value: **off**)

Enables/disables the backup monitoring for the selected database. If the check box **Backup monitoring** is enabled, then the field **Next backup** in the database table will be marked in **red** when the interval time elapses.

Last backup

Shows the date and time of the last database backup.

Next backup

Date at which the next backup must take place. The date can be selected by pressing in the dialog window **Select date**.

Entry	**Date selection**
Default value	**Last backup + 1 month**

Interval

Entry of the interval for the backup monitoring. After each automatically or manually triggered backup, the interval entered here will be added automatically to the **Last backup** and the field **Next backup** will be automatically adjusted accordingly.

Input range	**1 - 999**
Default value	**1**
Selection	**day(s)** | **week(s)** | **month(s)** | **year(s)**
Default value	**month(s)**

Start backup automatically

on | off (Default value: **off**)

Automatic start of the backup for the database in the defined **Backup directory**.

Backup directory

Selection of a folder predefined in the **Program administration** for the automatic backup.

Selection	**Selection of the backup directory** | **Default backup directory**
Default value	**Default backup directory**

Note

Make sure that you have read and write access rights on the selected directory.

4.3.5.5 Database properties - Monitoring

Tab: **Database** ▸ **File** ▸ **Database manager...** ▸ **Database manager** ▸ **[Properties]** ▸ **Properties - Database - 'Database name'** ▸ **Monitoring**

Defines database monitoring.

Monitoring size

on | off (Default value: **off**)

Enables/disables size monitoring for the selected database. If this check box is activated then the field **Size** in the Database table will be shown in **red** when the limit value has been exceeded. A corresponding message also appears when the database is opened.

Maximum size

Maximum permitted database size in MB.

Input range	**1 - 2147483647 MB**
Default value	**500 MB**

Monitoring number of records

on | off (Default value: **off**)

Enables/disables the monitoring of the number of data sets for the selected database. If this check box is activated then the field **Number** in the Database table will be shown in **red** when the limit value has been exceeded. A corresponding message also appears when the database is opened.

Maximum number

Maximum permitted number of data sets for database.

Input range	**1 - 2147483647**
Default value	**1000**

4.3.6 Backup database manually

Dialog window: **Database** ▸ **File** ▸ **Database manager…** ▸ **Database manager** ▸ **[Backup]** ▸ **Database backup**

[Backup] is used to open the dialog window **Backup database**:

Backup target

Backup directory

Selection of a folder predefined in **Program administration** for the backup.

Selection	**Selection of the backup directory** | **Default backup directory**
Default value	**Default backup directory**

Note

Make sure that you have read and write access rights on the selected directory.

Backup name

Selection of an existing name for the backup file or entry of a new name. If an existing backup file is selected it will be overwritten.

Entry	**50 characters**
Default value	**Backup-##**

Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

[Start]

Starts manual database backup.

4.3.7 Restore database

Dialog window: **Database ▸ File ▸ Database manager… ▸ Database manager ▸ [Restore] ▸ Restoring databases**

[Restore] is used to open the dialog window **Restore databases**:

Backup directory

Selection of a directory predefined in the **Program administration** that contains the backed up databases.

Selection	**Selection of the backup directory** | **Default backup directory**
Default value	**Default backup directory**

Backup name

Selection of a backup file.

Selection	**Select backup files**

Backup date

Shows the time at which the database was backed up. If the backup file is located on a network drive, this information is not available.

Database name

Shows the name of the database. If the backup file is located on a network drive, this information is not available.

Number of records

Shows the number of data sets in the database. If the backup file is located on a network drive, this information is not available.

Size

Shows the size of the database in KB.

Save as

Name under which the database is to be restored.

Entry	**50 characters**
Default value	**New database ##**

[Start]

Start database recovery. After the start, a progress bar appears in the window. When the backup has been completed the dialog window closes automatically.

Note

Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be recovered under its old name.

4.4 Report templates

4.4.1 Manage report templates

4.4.1.1 Report template manager

Dialog window: **Database ▸ Tools ▸ Report templates ▸ Manager… ▸ Report template manager**

The menu item **Tools ▸ Report templates ▸ Manager…** is used to open the window **Report template manager**.

List of report templates

The list of report templates contains information about all the saved report templates. The table cannot be edited. With a click on the column title (Column **Name**, **Saved**, **Saved by**, **Comment**) the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of report template.

Saved

Date and time when the report template was saved.

Saved by

Short name of the user who saved the report template.

Comment

Comment on the report template.

Window menus

The menu **[Edit]** below the list of report templates contains the following menu items:

Rename…	Rename the selected report template *(see Chapter 4.4.1.2, page 215)*.
Copy	Copy the selected report template(s) *(see Chapter 4.4.1.3, page 215)*.
Delete…	Delete the selected report template(s) *(see Chapter 4.4.1.4, page 215)*.

Export...	Export the selected report template(s) *(see Chapter 4.4.1.5, page 215)*.
Import...	Import report templates *(see Chapter 4.4.1.6, page 216)*.

4.4.1.2 Rename report templates

Dialog window: **Database ▸ Tools ▸ Report templates ▸ Manager... ▸ Report template manager ▸ [Edit] ▸ Rename... ▸ Rename report template**

With the menu item **Edit ▸ Rename...** in the window **Report template manager**, the window **Rename report template** opens for renaming the selected report template.

Rename report template 'Name' to

Entry of the new name for the report template.

Entry	**50 characters**

Note

The name of the report template must be unambigous in the whole Client/Server system.

4.4.1.3 Copy report template

Menu item: **Database ▸ Tools ▸ Report templates ▸ Manager... ▸ Report template manager ▸ [Edit] ▸ Copy**

With the menu item **Edit ▸ Copy** in the window **Report template manager** the selected report templates are copied under the name **Copy of 'Report template name'**.

4.4.1.4 Delete report templates

Menu item: **Database ▸ Tools ▸ Report templates ▸ Manager... ▸ Report template manager ▸ [Edit] ▸ Delete...**

With the menu item **Edit ▸ Delete...** in the window **Report template manager** the selected report templates are deleted.

4.4.1.5 Export report templates

Dialog window: **Database ▸ Tools ▸ Report templates ▸ Manager... ▸ Report template manager ▸ [Edit] ▸ Export... ▸ Select directory for export**

With the menu item **Edit ▸ Export...** in the window **Report template manager** the selected report templates are each exported in a file with the name **'Name'.mrep**. The window **Select directory for export** opens in which the directory for export must be selected.

4.4.1.6 Import report templates

Dialog window: **Database ▸ Tools ▸ Report templates ▸ Manager… ▸ Report template manager ▸ [Edit] ▸ Import… ▸ Select files for import**

With the menu item **Edit ▸ Import…** in the window **Report template manager** the dialog window **Select files for import** opens in which the report templates to be imported must be selected. The report templates are then imported.

4.4.2 Creating new report templates

Menu item: **Database ▸ Tools ▸ Report templates ▸ New**

New form report

With the menu item **Tools ▸ Report templates ▸ New ▸ Form report** the program window **Report template - New form report** is opened with an empty report template, which can then be edited.

New tabular report

With the menu item **Tools ▸ Report templates ▸ New ▸ Tabular report** the program window **Report template - New tabular report** is opened with an empty report template, which can then be edited.

In the **Tabular report** the report section can be set with the mouse. For each data set one such report section will be filled with data and placed on the page row by row. In this way tabular reports from several determinations can be created.

4.4.3 Opening report templates

Dialog window: **Database ▸ Tools ▸ Report templates ▸ Open… ▸ Open report template**

With the symbol or the menu item **Tools ▸ Report templates ▸ Open…** the window **Open report template** is opened in which one of the globally available report templates can be selected and opened.

List of report templates

The list of report templates contains information about all the saved report templates. The table cannot be edited. With a click on the column title (Column **Name**, **Saved**, **Saved by**, **Comment**) the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of report template.

Saved

Date and time when the report template was saved.

Saved by

Short name of the user who saved the report template.

Comment

Comment on the report template.

Opening a report template

Name

Name of the report template to be opened. If a report template is selected from the table, the name will be entered automatically in this field. It can however also be entered manually.

Entry	**50 characters**

[Open]

Open the program window **Report template**, in which the selected report template is shown and can be edited.

4.4.4 Editing report templates

4.4.4.1 Report template - General

4.4.4.1.1 Report template - Overview

Program window: **Database** ▸ **Report template**

Which determination data and which other items (e.g. text fields, images, graphics elements) are to be produced in a report are defined in report templates. The templates can be created or edited in their own program window and then saved globally under a unique name. They are used for the automatic production of reports in determinations or for manual report production from the database.

- **Form report**
  In the Form report the report section always includes the whole area between the header and the footer. This means that for each determination at least one page will always be produced.
- **Tabular report**
  In the Tabular report the report section can be set with the mouse. For each data set one such report section will be filled with data and placed on the page row by row. In this way tabular reports can be created from several determinations.

4.4.4.1.2 Report template - Desktop

Program window: **Database** ▸ **Report template**

Elements

The desktop of the program window **Report template** has the following elements:

- *Menu bar*
- *General toolbar*
- *Module-specific toolbar*
- *Module bar*
- *Main window*

4.4.4.1.3 Report template - Menu bar

4.4.4.1.3.1 Report template - Main menu

Program window: **Database** ▸ **Report template**

The menu bar in the program window **Report template** has the following main menu items:

- *File*
  Save report template, page setup, page preview, close window.
- *Edit*
  Undo, redo, cut, copy, paste, delete, enter comment.
- *View*
  Update view, page navigation.
- *Insert*
  Insert pages.
- *Tools*
  Options.
- *Help*
  Open Program Help.

4.4.4.1.3.2 Report template - Menu File

Program window: **Database** ▸ **Report template**

Save	Save an opened report template *(see Chapter 4.4.4.2.11, page 230)*.
Save as	Save an opened report template under a new name *(see Chapter 4.4.4.2.11, page 230)*.
Page setup...	Set up the layout for the report template *(see Chapter 4.4.4.2.2, page 222)*.
Page preview	Set up the layout for the report template *(see Chapter 4.4.4.2.8, page 227)*.
Exit	Close the program window **Report template**.

4.4.4.1.3.3 Report template - Menu Edit

Program window: **Database** ▸ **Report template**

Undo:	Undo the last action.
Restore:	Restore the undone action.
Cut	Cut selected items and copy them to the clipboard *(see Chapter 4.4.4.2.6, page 226)*.
Copy	Copy the selected items to the clipboard *(see Chapter 4.4.4.2.6, page 226)*.
Insert	Insert marked items from the clipboard *(see Chapter 4.4.4.2.6, page 226)*.
Delete	Delete the marked items *(see Chapter 4.4.4.2.6, page 226)*.
Comment	Enter comments on the report template *(see Chapter 4.4.4.2.9, page 228)*.

4.4.4.1.3.4 Report template - Menu View

Program window: **Database** ▸ **Report template**

Update	Update the view.
First page	Show the first page of the report template *(see Chapter 4.4.4.2.4, page 225)*.
Previous page	Show the previous page of the report template *(see Chapter 4.4.4.2.4, page 225)*.
Next page	Show the next page of the report template *(see Chapter 4.4.4.2.4, page 225)*.
Last page	Shows the last page of the report template *(see Chapter 4.4.4.2.4, page 225)*.

4.4.4.1.3.5 Report template - Menu Insert

Program window: **Database** ▸ **Report template**

Page before	Insert a new page in front of the shown page *(see Chapter 4.4.4.2.4, page 225)*.
Page after	Inserts a new page after the shown page *(see Chapter 4.4.4.2.4, page 225)*.

4.4.4.1.3.6 Report template - Menu Tools

Program window: **Database** ▸ **Report template**

Options...	Set options for the report template *(see Chapter 4.4.4.2.10, page 229)*.

4.4.4.1.3.7 Report template - Menu Help

Program window: **Database** ▸ **Report template**

MagIC Net Help	Open MagIC Net Help.

4.4.4.1.4 Report template - General toolbar

Program window: **Database** ▸ **Report template**

Save	Save an opened report template *(see Chapter 4.4.4.2.11, page 230)*.
Page preview	Set up the layout for the report template *(see Chapter 4.4.4.2.8, page 227)*.
Print (PDF)...	Show the report template with the data of the selected determination as a PDF-file.
Undo:	Undo the last action.
Restore	Restore the undone action.
Cut	Cut selected items and copy them to the clipboard *(see Chapter 4.4.4.2.6, page 226)*.
Copy	Copy the selected items to the clipboard *(see Chapter 4.4.4.2.6, page 226)*.
Insert	Insert marked items from the clipboard *(see Chapter 4.4.4.2.6, page 226)*.
Delete	Delete the marked items *(see Chapter 4.4.4.2.6, page 226)*.
100 %	Select zoom level *(see Chapter 4.4.4.2.7, page 227)*.
Grid	Switch the grid display on and off *(see Chapter 4.4.4.2.10, page 229)*.
Snap to grid	Switch snap at grid on and off *(see Chapter 4.4.4.2.10, page 229)*.

4.4.4.1.5 Report template - Module-specific toolbar

Program window: **Database** ▸ **Report template**

Depending on the module selected in the report template, other symbols and input fields are shown below the general toolbar, with which the properties of these modules can be directly edited *(see Chapter 4.4.4.1.6, page 221)*.

4.4.4.1.6 Report template - Module bar

Program window: **Database** ▸ **Report template**

Select modules	If this option is enabled then modules in the report template can be selected, reduced/enlarged and moved *(see Chapter 4.4.4.2.6, page 226)*.
Text field	If this option is enabled then **text fields** can be inserted in the report template *(see Chapter 4.4.4.3.1, page 231)*.
Data field	If this option is enabled then **data fields** can be inserted in the report template *(see Chapter 4.4.4.3.2, page 232)*.
Date field	If this option is enabled then **date fields** can be inserted in the report template in which the actual date is entered *(see Chapter 4.4.4.3.3, page 234)*.
Time field	If this option is enabled then **time fields** can be inserted in the report template in which the actual time is entered *(see Chapter 4.4.4.3.4, page 236)*.
Page number	If this option is enabled then fields can be inserted in the report template in which the **page number** is entered *(see Chapter 4.4.4.3.5, page 237)*.
Number of pages	If this option is enabled then fields can be inserted in the report template in which the **number of pages** is entered *(see Chapter 4.4.4.3.6, page 239)*.
Fixed report	If this option is enabled then **fixed reports** can be inserted in the report template *(see Chapter 4.4.4.3.7, page 241)*.
Group field	If this option is enabled then **group fields** can be inserted in the report template *(see Chapter 4.4.4.3.8, page 242)*.
Result table	If this option is enabled then **result tables** can be inserted in the report template *(see Chapter 4.4.4.3.9, page 243)*.
Single result	If this option is enabled then **single results** can be inserted in the report template *(see Chapter 4.4.4.3.10, page 245)*.
Curve and result table	If this option is enabled then **curves and result tables** can be inserted in the report template *(see Chapter 4.4.4.3.11, page 246)*.

Image	If this option is enabled then **images** can be inserted in the report template *(see Chapter 4.4.4.3.12, page 247)*.
Line	If this option is enabled then **lines** can be inserted in the report template *(see Chapter 4.4.4.3.13, page 249)*.
Rectangle	If this option is enabled then **rectangles** can be inserted in the report template *(see Chapter 4.4.4.3.14, page 250)*.
Curve	If this option is enabled then **curves** can be inserted in the report template *(see Chapter 4.4.4.3.15, page 251)*.
Calibration curve	If this option is enabled then **calibration curves** can be inserted in the report template *(see Chapter 4.4.4.3.16, page 252)*.

4.4.4.2 Report template - Functions

4.4.4.2.1 Report template - Function overview

Program window: **Database** ▸ **Report template**

In the program window **Report template** the following functions can be executed:

- *Page setup*
- *Define sections in main window*
- *Insert report pages*
- *Insert modules*
- *Edit modules*
- *Zooming*
- *Show page preview*
- *Enter comment on report template*
- *Define options for report template*
- *Save report template*

4.4.4.2.2 Report template - Page setup

Dialog window: **Report template** ▸ **File** ▸ **Page setup…** ▸ **Page setup**

With the menu item **File** ▸ **Page setup…** in the window **Report template** the dialog window **Page setup** opens in which the report format settings can be made.

General

Preferences

Selection	**Apply to current page** | **Apply to all pages**
Default value	**Apply to current page**

Apply to current page
The page settings are only applied for the currently selected report page.

Apply to all pages
The page settings are applied for all report pages.

Paper format

Paper format

Selection of the page format. The width and height of the paper can be defined with **User-defined**.

Selection	**A4** | **Letter** | **Legal** | **User-defined**
Default value	**A4**

Width

Width of the page format. This parameter can only be edited for **Page format**= **User-defined**

Input range	**0.0 - 499.0 mm**
Default value	**210.0 mm**

Height

Height of the page format. This parameter can only be edited for **Page format**= **User-defined**

Input range	**0.0 - 499.0 mm**
Default value	**297.0 mm**

Orientation

Selection of the page format.

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Page margins

Top

Upper page margin.

Input range	**0.0 - 499.0 mm**
Default value	**15.0 mm**

Bottom

Lower page margin.

Input range	**0.0 - 499.0 mm**
Default value	**15.0 mm**

Left

Left-hand page margin.

Input range	**0.0 - 499.0 mm**
Default value	**20.0 mm**

Right

Right-hand page margin.

Input range	**0.0 - 499.0 mm**
Default value	**20.0 mm**

Layout

Header

Height of header.

Input range	**0.0 - 499.0 mm**
Default value	**15.0 mm**

Footer

Height of footer.

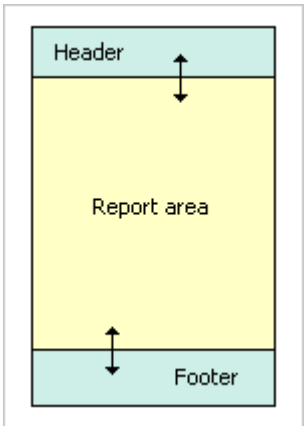
Input range	**0.0 - 499.0 mm**
Default value	**15.0 mm**

4.4.4.2.3 Report template - Defining sections

Program window: **Database** ▸ **Report template**

Define sections for form report

The header, footer and report sections can be enlarged and reduced with the left mouse button.



4.4.4.2.4 Report template - Inserting pages

Menu item: **Report template ▸ Insert ▸ Page before/Page after**

Inserting page before

With the menu item **Insert ▸ Page before** in the program window **Report template** a new empty report report page is inserted before the report page shown.

Inserting page after

With the menu item **Insert ▸ Page after** in the program window **Report template** a new empty report report page is inserted after the report page shown.

Navigating

In report templates with several pages the navigation bar can be used to switch to the required page.

Jumps to first page.

Jumps to previous page.

Jumps to next page.

Jumps to last page.

4.4.4.2.5 Report template - Inserting modules

Program window: **Database ▸ Report template**

In order to insert a module in a report template the corresponding symbol must be selected on the module bar and then placed on the report template by creating a field with the left mouse button. The Properties window of the corresponding module then opens automatically.

Form report

The following modules can be inserted in a form report:

- **Header**
  Text field, *Data field*, *Date field*, *Time field*, *Page number*, *Number of pages*, *Image*, *Line*, *Rectangle*, *Curve*, *Calibration curve*
- **Report section**
  Text field, *Data field*, *Date field*, *Time field*, *Fixed report*, *Group field*, *Image*, *Line*, *Rectangle*, *Result table*, *Single result*, *Curve + Result table*, *Curve*, *Calibration curve*, *Group Calibration curve*

- **Footer**
  Text field, *Data field*, *Date field*, *Time field*, *Page number*, *Number of pages*, *Image*, *Line*, *Rectangle*, *Curve*, *Calibration curve*

Tabular report

The following modules can be inserted in a tabular report:

- **Header**
  Text field, *Date field*, *Time field*, *Page number*, *Number of pages*, *Image*, *Line*, *Rectangle*
- **Report section**
  Text field, *Data field*, *Date field*, *Time field*, *Group field*, *Image*, *Line*, *Rectangle*,
- **Footer**
  Text field, *Date field*, *Time field*, *Page number*, *Number of pages*, *Image*, *Line*, *Rectangle*

4.4.4.2.6 Report template - Editing modules

Program window: **Database** ▸ **Report template**

Enable selection

This symbol in the Module bar must be switched on in order to be able to select modules in a report template for editing.

Select a single module

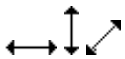
Single modules are selected with a click of the left mouse button. This automatically shows the corresponding properties of the module below the toolbar.

Select several modules

Several modules are selected by drawing a frame around the required modules with the left mouse button.

Moving, reducing, enlarging modules

When this cursor symbol appears then the selected modules can be moved about on the report template with the left mouse button pressed down.



When one of these cursor symbols appears then the selected modules can be reduced and enlarged respectively on the report template with the left mouse button pressed down.

Cutting, copying, pasting, deleting modules

Cut the selected modules and copy them to the clipboard.

Copy the selected modules to the clipboard.

Paste modules from the clipboard.

Deletes the selected module.

Edit module properties

Open the properties window for the selected module. Alternatively the properties can also be edited directly below the toolbar.

4.4.4.2.7 Report template - Zoom

Program window: **Database** ▸ **Report template**

With this list box on the toolbar the required zoom step for showing the report template can be selected in steps of **25%** from **25%** to **400%**.

4.4.4.2.8 Report template - Page preview

Preview window: **Report template** ▸ **File** ▸ **Page preview** ▸ **Report preview**

With the symbol or the menu item **File** ▸ **Page preview** in the program window **Report template** the window **Report preview** opens in which a page preview of the report template is shown with the data of the determinations selected in the determination overview.

Functions

Produces displayed report as PDF-file.

Selects the required zoom step for displaying the report preview, range **25%** to **400%** in steps of **25%**.

Select report page

In report templates with several pages the navigation bar **Page** can be used to switch to the required page.

Jumps to first page.

Jumps to previous page.

Jumps to next page.

Jumps to last page.

Selecting determination

If several determinations have been selected for the report display then the navigation bar **Determination** can be used to switch to the required determination.

Jumps to first determination.

Jumps to previous determination.

Jumps to next determination.

Jumps to last determination.

4.4.4.2.9 Report template - Comment

Dialog window: **Report template** ▸ **Edit** ▸ **Comment** ▸ **Comment**

With the symbol or the menu item **Edit** ▸ **Comment** in the program window **Report template** the window **Comment on report template** opens in which comments on the opened report template can be entered.

Comment

Enter comment on the report template that is shown in the List of report templates.

Entry	**1000 characters**

4.4.4.2.10 Report template - Options

Dialog window: **Report template ▸ Tools ▸ Options...**

With the menu item **Tools, Options** in the program window **Report templates** the window **Options for report templates** opens in which various settings for the report template can be defined.

Unit

Unit

Select the size unit for the report template.

Selection	**mm** | **cm** | **inch**
Default value	**mm**

Grid

X distance

Grid distance in X-direction.

Input range	**1.0 - 100.0 mm**
Default value	**5.0 mm**

Y distance

Grid distance in Y-direction.

Input range	**1.0 - 100.0 mm**
Default value	**5.0 mm**

Display grid

on | off (Default value: **off**)

Enable/Disable the grid display on the report template.

Snap at grid

on | off (Default value: **off**)

Enable/Disable snapping at grid on the report template.

Default font

Font

Select the default font for the report templates.

Selection	**Arial** | **Windows fonts**
Default value	**Arial**

4.4.4.2.11 Report template - Save

Dialog window: **Report template ▸ File ▸ Save/Save as ▸ Save report template**

With the symbol or the menu item **File ▸ Save** an existing opened report template will be saved again under its own name without opening the window **Save report template**.

When saving a newly created report template with the menu item **File ▸ Save** or when saving an existing report template with the menu item **File ▸ Save as** the window **Save report template** opens in which a name for the report template can be entered or selected.

List of report templates

The list of report templates contains information about all the saved report templates. The table cannot be edited. With a click on the column title (Column **Name**, **Saved**, **Saved by**, **Comment**) the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of report template.

Saved

Date and time when the report template was saved.

Last saved by

Short name of the user who saved the report template.

Comment

Comment on the report template.

Save report template

Name

Name under which the report template is to be saved.

Entry	**50 characters**

Note

The name of the report template must be unambiguous in the whole Client/Server system.

[Save]

Save the report template under the required name.

4.4.4.3 Report template - Modules

4.4.4.3.1 Report template - Text field

Program window: **Database** ▸ **Report template**

Text fields are used for showing any texts in the report.

Insert

In order to insert a text field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of image field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of image field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

Switches line break on/off for multi-line text fields.

Fills the field with dots.

Text

Entry of text for the text field.

4.4.4.3.2 Report template - Data field

Program window: **Database** ▸ **Report template**

Data fields are used for showing determination data in a report.

Insert

In order to insert a data field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of data field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of data field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

Switches line break on/off for multi-line data fields.

Fills the field with dots.

Prefix

Text placed in front of the data field contents.

Entry	**50 characters**

Data field

Shows path and name of selected data field (the field cannot be edited directly). With a window opens for selecting the data field in which all the available fields for the determination overview are shown in a tree structure. With a double-click on the required field the path and name of the data field are entered.

Suffix

Text placed after the data field contents.

Entry	**50 characters**

Preview

Shows a formatted example of text.

4.4.4.3.3 Report template - Date field

Program window: **Database** ▸ **Report template**

Date fields are used for showing the current date in a report.

Insert

In order to insert a date field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of date field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of date field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

Fills the field with dots.

Prefix

Text placed in front of the date field contents.

Entry	**50 characters**

Suffix

Text placed after the date field contents.

Entry	**50 characters**

Sample

Shows the formatted date.

4.4.4.3.4 Report template - Time field

Program window: **Database** ▸ **Report template**

Time fields are used for showing the actual time in the report.

Insert

In order to insert a time field in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of time field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of time field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

Fills the field with dots.

Prefix

Text placed in front of the contents of the time field.

Entry	**50 characters**

Suffix

Text to be placed after the contents of the time field.

Entry	**50 characters**

Preview

Shows the formatted time.

4.4.4.3.5 Report template - Page number

Program window: **Database** ▸ **Report template**

The actual page number in the report is produced in a page number field.

Insert

In order to insert page number field into a report template the corresponding symbol must be selected on the Module bar and then placed in the header or footer of the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of the page number field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of the page number field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

Fills the field with dots.

Prefix

Text placed in front of the page number field.

Entry	**50 characters**

Suffix

Text placed after the page number field.

Entry	**50 characters**

Preview

Shows the formatted page number.

4.4.4.3.6 Report template - Number of pages

Program window: **Database** ▸ **Report template**

This field shows the total number of pages in the report.

Insert

In order to insert a number of pages field into a report template, the corresponding symbol must be selected on the Module bar and then placed in the header or footer of the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of the field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of the field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Left-justified.

Centered.

Right-justified.

Fills the field with dots.

Prefix

Text placed in front of the field contents.

Entry	**50 characters**

Suffix

Text placed after the field contents.

Entry	**50 characters**

Preview

Shows the formatted number of pages.

4.4.4.3.7 Report template - Fixed report

Program window: **Database** ▸ **Report template**

Fixed reports are used for producing predefined part-reports of the determination in the report.

Inserting

In order to insert a fixed report in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left mouse button.

Properties

X pos.

Shows the predefined x-position for the fixed report.

Y pos.

y-position within the permitted area.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the fixed report.

Height

Height of fixed report.

Input range	**0.0000 - (max. page height) mm**

Fixed report

Selection of a predefined fixed report.

Selection	**Analyses** | **Integration parameters** | **Calibration parameters** | **Components** | **Messages** | **Method properties** | **Method parameters** | **Sample data** | **Result definitions** | **Spectrum parameters** | **Standards** | **Start parameters** | **Statistics data (short)** | **Statistics data (long)** | **Columns** | **Signature list Determinations** | **Signature list Methods** | **Common variables used** | **Devices used** | **Time program** | **Monitoring report**
Default value	**Analyses**

4.4.4.3.8 Report template - Group field

Program window: **Database** ▸ **Report template**

A group field is for the purpose of grouping together a variety of fields in the report template. All of the fields gathered together in a group field can be moved together as a group. The group field prevents a page break inside the group field.

The group field always extends across the entire width of a page; only the upper edge (Y value) and the height of the field can be configured.

Note

The following fields, which do not permit page break controls, cannot be inserted into a group field.

- Fixed report
- Result table
- Curve
- Calibration curve

Insert

In order to insert group field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the fixed report.

Height

Height of the field

Input range	**0.0000 - (max. page height) mm**

4.4.4.3.9 Report template - Result table

Program window: **Database** ▸ **Report template**

Result tables are used for producing determination results in tabular format in the report.

Inserting

In order to insert a result table in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x position for the field.

Y pos.

Y position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the field.

Height

Height of the field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Analysis

Name of the analysis for which the results are to be produced.

Entry	**40 characters**
Selection	**All**
Default value	**All**

All
Result tables are produced for all analyses.

Available results

Shows all the results that can be shown as columns in the result table.

Displayed results

Result

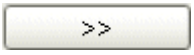
Shows all the results that will be shown as columns in the result table.

Decimal places

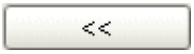
Number of decimal places for displaying the results.

[Decimal places]

Opens the dialog window **Decimal places**, in which the number of decimal places for the result can be selected.



Adds the selected column to the table.



Removes the selected column from the table.

Modifies the sequence of displayed columns by moving the selected column up.

Modifies the sequence of displayed columns by moving the selected column down.

Unidentified peaks

Show unidentified peaks

on | off (Default value: **off**)

Selection as to whether non-identified peaks are to be displayed in the result table or not.

4.4.4.3.10 Report template - Single result

Program window: **Database** ▸ **Report template**

Single result fields are used for producing user-defined single results in the report.

Insert

In order to insert a single-result field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the field.

Height

Height of the field.

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Bold.

Italic.

Underlined.

Fills the field with dots.

Prefix

Text placed in front of the single result field contents.

Entry	**50 characters**

Single result

Enters the name of the user-defined single result that is to be produced.

Entry	**50 characters**
Selection	**All**
Default value	**All**

All
All user-defined single results will be produced one above the other.

Suffix

Text placed after the single result field contents.

Entry	**50 characters**

Sample

Shows a formatted example of text.

4.4.4.3.11 Report template - Curves + Result table

Program window: **Database** ▸ **Report template**

Insert

In order to insert a curve and result table field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

General properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the fixed report.

Height

Height of the field

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Analysis

Name of the analysis for which the curves and results are to be produced.

Entry	**40 characters**
Selection	**All**
Default value	**All**

All
Curves and result tables are produced for all analyses.

Properties for curve display

Curve

The properties for the curve display are selected with this symbol (parameter description *see Report template - Curve field*).

Properties for result display

Result

The properties for the display of the result tables are selected with this symbol (parameter description *see Report template - Result table*).

4.4.4.3.12 Report template - Image

Program window: **Database** ▸ **Report template**

An image field is used for including any external graphics on the report template. The file formats ***.jpg** and ***.gif** are supported.

Insert

In order to insert an image into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of image field.

Input range	**0.0000 - (max. page width) mm**

Height

Height of image field.

Input range	**0.0000 - (max. page height) mm**

Graphics file

Shows path and name of the selected graphics file (the field cannot be edited directly). With a window opens for selecting the graphics file. The path and name of the graphics file are then entered.

Size

Entry how the image is to be displayed.

Selection	**original** | **proportional** | **non-proportional**
Default value	**original**

original
Original size.

proportional
Proportional enlargement or diminishment.

non-proportional
Non-proportional enlargement or diminishment.

4.4.4.3.13 Report template - Line

Program window: **Database** ▸ **Report template**

Any line can be inserted in the report template.

Insert

In order to insert a line in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Length

Length of the line.

Input range	**0.0 - (max. page width) mm**

Angle

Angle of the line.

Input range	**0 - 360.000 °**

Thickness

Thickness of the line.

Input range	**0.1 - 10.0 mm**
Default value	**0.5 mm**

Selection of the line color.

Selection of the type of line.

4.4.4.3.14 Report template - Rectangle

Program window: **Database** ▸ **Report template**

Any rectangle can be inserted in the report template.

Insert

In order to insert a rectangle into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Input range	**0.0000 - (max. page width) mm**

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Width of the rectangle.

Input range	**0.0000 - (max. page width) mm**

Height

Height of the rectangle.

Input range	**0.0000 - (max. page height) mm**

Thickness

Thickness of the line for the rectangle.

Input range	**0.1 - 10.0 mm**
Default value	**0.5 mm**

Selection of the line color.

Selection of the type of line for the rectangle.

Switches the fill color on and off.

Selection of the fill color.

4.4.4.3.15 Report template - Curve field

Program window: **Database** ▸ **Report template**

Insert

In order to insert a curve in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x-position for the curve field.

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the curve field.

Height

Height of curve field.

Input range	**0.0000 - (max. page height) mm**

Analysis

Name of the analysis for which the curve is to be produced.

Entry	**40 characters**
Selection	**All**
Default value	**All**

All
Curves are produced for all analyses.

Curve display

Definition of the curve display.

Selection	**from database** | **user-defined**
Default value	**from database**

from database
The curve is displayed using the settings that have been placed in the database (with the exception of the background color, which is always white). The tabs for configuring the display are disabled.

user-defined
The display of the curve in the report can be configured by the user.

Axes

Parameters *see Properties - Axes*.

Chromatogram

Parameters *see Properties - Chromatogram*.

Display

Parameters *see Properties - Display*.

4.4.4.3.16 Report template - Calibration curve field

Program window: **Database** ▸ **Report template**

Insert

In order to insert calibration curve field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

General properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Input range	**0.0000 - (max. page height) mm**

Width

Shows the predefined width of the fixed report.

Height

Height of the field

Input range	**0.0000 - (max. page height) mm**

Selection of the available Windows fonts.

Font size in pt.

Color selection.

Analysis

Entry of the name of the analysis for which the calibration curve is to be produced.

Entry	**40 characters**
Selection	**All**
Default value	**All**

All
Calibration curves are produced for all analyses.

Components

Entry of the name of the component for which the calibration curve is to be produced.

Entry	**40 characters**
Selection	**All**
Default value	**All**

All
Calibration curves are produced for all components.

Curve display

Parameter description *see Report template - Curve field* .

4.4.4.3.17 Report template - Spectra + Maxima table

Program window: **Database** ▸ **Report template**

4.4.4.3.17.1 General properties

Program window: **Database** ▸ **Report template**

Inserting

In order to insert a spectrum and maxima table field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left mouse button.

General properties

The parameters **X pos.**, **Y pos.**, **Width** and **Height** as well as the parameters for font, font size and color are described in the report module *Report template - Curves + Result table , p. 246*.

Analysis

Selection **All** or manual entry of the analysis name.

Entry	**40 characters** Out of all analyses of the determination which have the entered name, the spectra are to be put out.
Selection	**All**
Default value	**All**

All
Out of all analyses of the determination the spectra are to be put out.

Spectrum

Selection **All** or manual entry of a spectrum name.

Entry	**40 characters** Out of the selected analyses all spectra which have the entered name are put out.
Selection	**All**
Default value	**All**

All
Out of the selected analyses all spectra are put out.

The parameter **Curve view** is described in the report module *Report template - Curve field , p. 251*.

Properties for the display of spectra

Spectra

The properties for the display of spectra are selected with this symbol (parameter description *see Properties for the display of spectra*).

Properties for the display of maxima

Maxima

The properties for the display of the maxima table are selected with this symbol (parameter description *see Properties for the display of maxima tables*).

4.4.4.3.17.2 Properties for the display of spectra

Program window: **Database** ▸ **Report template**

Axes

Parameter *see Properties - Axes*.

Spectrum

Parameter *see Properties - Spectrum*.

Display

Parameter *see Properties - Display*.

4.4.4.3.17.3 Properties for the display of maxima tables

Program window: **Database** ▸ **Report template**

Available results

Display of all the results that can be shown as columns in the maxima table.

Displayed results

Parameter *see Displayed results*.

4.4.4.3.18 Report template - Cyclovoltammograms

Program window: **Database** ▸ **Report template**

4.4.4.3.18.1 General properties

Program window: **Database** ▸ **Report template**

Inserting

In order to insert a cyclovoltammogram field into a report template, the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left mouse button.

General properties

The parameters **X pos.**, **Y pos.**, **Width** and **Height** are described in the report module *Report template - Curve field , p. 251*.

Analysis

Selection **All** or manual entry of the analysis name.

Entry	**40 characters** Out of all analyses of the determination which have the entered name, the cyclovoltammograms are to be put out.

Selection	**All**
Default value	**All**

All
Out of all analyses of the determination the cyclovoltammograms are to be put out.

Cyclovoltammogram

Selection **All** or manual entry of the cyclovoltammogram name.

Entry	**40 characters** Out of the selected analyses all cyclovoltammograms which have the entered name are put out.
Selection	**All**
Default value	**All**

All
Out of the selected analyses all cyclovoltammograms are put out.

The parameter **Curve view** is described in the report module *Report template - Curve field , p. 251*.

4.4.4.3.18.2 Properties for the display of cyclovoltammograms

Program window: **Database ▸ Report template**

Axes

Parameter *see Properties - Axes*.

Display

Parameter *see Properties - Display*.

4.5 Control chart templates

4.5.1 Managing control chart templates

Menu item: **Database ▸ Tools ▸ Templates ▸ Control chart templates... ▸ Control chart templates**

With the menu item **Tools ▸ Templates ▸ Control chart templates...**, the dialog window **Control chart templates** opens in which the globally available templates for control charts can be managed.

Template table

The table with the defined templates cannot be edited, although it can be sorted according to the selected column in increasing or decreasing sequence by clicking on the column title

Template name

Shows the name of the template.

Comment

Shows the comments about the template.

Functions

[New]

Create new template. The dialog window **Properties - Control chart template** opens in which the properties for the new template can be defined.

[Properties]

The dialog window **Properties - Control chart template** opens, in which the properties of the template selected in the table can be edited.

[Delete]

Delete template.

[Copy]

Copies the template and saves it under the name **Copy of...**.

4.5.2 Editing control chart templates

4.5.2.1 Control chart template - Properties

Dialog window: **Database ▸ Tools ▸ Templates ▸ Control chart templates... ▸ Control chart templates ▸ [Properties] ▸ Properties - Control chart templates**

Template name

Name for the control chart template which is saved in the configuration database per client.

Entry	**50 characters**

Result table

Table with the results for which a control chart is defined.

The most important properties of the control chart of the selected result are displayed next to the table on the right.

[Edit]

Opens the menu for editing the control charts of the single results.

New	Add new result to the template.
Properties	Edit properties of the selected result.
Delete	Delete the selected result.

Result properties overview

Displays the most important properties of the control chart of the selected result in the table.

Warning limits

Displays the defined warning limits.

Intervention limits

Displays the defined intervention limits.

Statistics

Displays the defined statistical data.

Comment

Entry of comment on the control chart template.

Comment

Comment on control chart.

Entry	**1000 characters**

4.5.2.2 Control chart template - Result properties

Dialog window: **Database ▸ Tools ▸ Templates ▸ Control chart templates... ▸ Control chart templates ▸ [Properties] ▸ Properties - Control chart templates ▸ [Edit] ▸ Properties ▸ Control chart - Result properties**

Result

Display of the result variable whose control chart is being edited. opens the dialog window **Select result**, in which all results of the determination which is in focus in the determination overview are available.

Label

Freely definable designation for the control chart of the result; the rider of the control chart in the window **Detailed overview - Control chart** is labeled with this *(see Chapter 4.7.16.4, page 300)*.

Entry	**50 characters**
Default value	**empty**

4.5.2.3 Control chart template - Graphics parameters

Tab: **Database** ▸ **Tools** ▸ **Templates** ▸ **Control chart templates...** ▸ **Control chart templates** ▸ **[Properties]** ▸ **Properties - Control chart template** ▸ **[Edit]** ▸ **Properties** ▸ **Control chart - Result properties** ▸ **Graphics parameters**

Y axis

Scaling

Selection	**Automatic** | **Manual**
Default value	**Automatic**

Automatic
Automatic scaling of the Y axis.

Manual
Manual scaling of the Y axis with the values of **Minimum** and **Maximum.**

Minimum

Minimum value for manual scaling.

Input range	**$-1 \cdot 10^{99}$ - $1 \cdot 10^{99}$**
Default value	**0**

Maximum

Maximum value for manual scaling.

Input range	**$-1 \cdot 10^{99}$ - $1 \cdot 10^{99}$**
Default value	**1000**

Background

Background color

Background color for the control chart. Clicking on the symbol ... opens the dialog window **Select color** for the selection of the background color *(see Chapter 2.6.13, page 105)*.

.

Measured values

Link measured values

on | off (Default value: **off**)

If this option is enabled then the measured value points will be joined together with a black line.

4.5.2.4 Control chart template - Limit values

Tab: **Database ▸ Tools ▸ Templates ▸ Control chart templates... ▸ Control chart templates ▸ [Properties] ▸ Properties - Control chart template ▸ [Edit] ▸ Properties ▸ Control chart - Result properties ▸ Limit values**

Definition of warning and intervention limits to be shown on the control chart.

Warning limits

Warning limits are always in **orange** on the control chart.

Selection	**Fixed value** | **Mean value ± standard deviation** | **Mean value ± 2× standard deviation** | **Mean value ± 3× standard deviation**

Fixed value
Fixed value of the warning limit.

Mean value ± standard deviation
Mean value **±** Standard deviation as a value of the warning limit.

Mean value ± 2× standard deviation
Mean value **±** 2**×**Standard deviation as a value of the warning limit.

Mean value ± 3× standard deviation
Mean value **±** 3**×**Standard deviation as a value of the warning limit.

Lower limit

Lower warning limit. Only editable for the value of the warning limit **fixed value**.

Input range	**$-1.0 \cdot 10^{99}$ - $1.0 \cdot 10^{99}$**
Default value	**0**

Upper limit

Upper warning limit. Only editable for the value of the warning limit **fixed value**.

Input range	**$-1.0 \cdot 10^{99}$ - $1.0 \cdot 10^{99}$**
Default value	**1**

Intervention limits

Intervention limits are displayed in **red** on the control chart.

Selection	**Fixed value** | **Mean value ± standard deviation** | **Mean value ± 2× standard deviation** | **Mean value ± 3× standard deviation**

Fixed value
Fixed value of the intervention limit.

Mean value ± standard deviation
Mean value± of the standard deviation as a value of the intervention limit.

Mean value ± 2× standard deviation
Mean value± 2×standard deviation as a value of the intervention limit.

Mean value ± 3× standard deviation
Mean value± 3×standard deviation as a value of the intervention limit.

Lower limit

Lower intervention limit. Only editable for the value of the intervention limit **fixed value**.

Input range	**$-1.0 \cdot 10^{99}$ - $1.0 \cdot 10^{99}$**
Default value	**0**

Upper limit

Upper intervention limit. Only editable for the value of the intervention limit **fixed value**.

Input range	**$-1.0 \cdot 10^{99}$ - $1.0 \cdot 10^{99}$**
Default value	**1**

4.5.2.5 Control chart template - Statistics

Tab: **Database ▸ Tools ▸ Templates ▸ Control chart templates... ▸ Control chart templates ▸ [Properties] ▸ Properties - Control chart template ▸ [Edit] ▸ Properties ▸ Control chart - Result properties ▸ Statistics**

Definition of the display of statistics data on the control chart.

Showing the statistics data

on | off (Default value: **on**)

If this option is enabled then below the graph the statistical data for **Mean value**, **Standard deviation**, **Number of measuring points** and **Minimum and maximum values** will be shown.

Draw in mean value

on | off (Default value: **on**)

If this option is enabled then the **Mean value** will be shown on the control chart as a continuous line in the color of the measured value.

Draw in standard deviation

on | off (Default value: **on**)

If this option is enabled then the two values **Mean value + Absolute standard deviation** and **Mean value - Absolute standard deviation** will be shown on the control chart as dotted lines in the color of the measured value.

4.6 Export templates

4.6.1 Managing export templates

Dialog window: **Database ▸ Tools ▸ Templates ▸ Export templates... ▸ Export templates**

With the menu item **Tools ▸ Templates ▸ Export templates**, the dialog window **Export templates** is opened in which the globally available templates for manual or automatic export of determination data can be managed.

Template table

The table with the defined templates cannot be edited, although it can be sorted according to the selected column in increasing or decreasing order by clicking on the column title.

Name

Shows the name of the export template.

File type

Shows the file format of the export template for data export.

Comment

Shows the comment on the export template.

Functions

[New]

Create a new export template. The dialog window **Export template** opens in which the properties for the new template can be defined.

[Properties]

Open the dialog window **Export template** in which the properties of the template selected in the table can be edited.

[Delete]

Delete the selected export template.

[Copy]

Copy the selected export template and save it under the name **Copy of...**.

4.6.2 Editing export templates

4.6.2.1 Export template - Properties

Dialog window: **Database ▸ Tools ▸ Templates ▸ Export templates... ▸ Export templates ▸ [Properties] ▸ Export template 'Name'**

[Properties] is used to open the dialog window **Export template 'Name'** in which the properties of the selected export template can be edited.

Name

Name of the export template.

Entry	**50 characters**

Comment

Freely definable comment on the export template.

Entry	**250 characters**

Target directory

Entry or selection (with) of the path for the directory in which the export file is to be saved.

Entry	**1000 characters**

File type

Selection of the file format for data export:

Selection	***.idet (MagIC Net format)** | ***.csv (comma separated)** | ***.slk (SLK format)** | ***.xml (XML format)** | ***.cdf (AIA format)** | ***.txt (measuring point list)**
Default value	***.idet (MagIC Net format)**

***.idet (MagIC Net format)**
Program-specific data exchange format that can only be imported into other MagIC Net databases.

***.csv (comma separated)**
Data exchange format with unformatted text that can be imported into other PC programs (e.g. Excel, Access).

***.slk (SLK format)**
Data exchange format with formatted text that can be imported into other PC programs (e.g. Excel).

***.xml (XML format)**
Data exchange format with XML code that can be imported into corresponding PC programs.

***.cdf (AIA format)**
Data exchange format for AIA chromatogram data that can be imported into corresponding PC programs.

***.txt (measuring point list)**
Data exchange format for the measuring point list that can be imported into corresponding PC programs. The text file contains a header with date/time of the determination, Ident and determination ID, then the measuring point lists of the analyses will be listed one after the other. For each measuring point list, the analysis name, the number of measuring points and the units of time and measured value will be listed at the head. If the determination contains analyses using the *(see Chapter 7.11, page 968)*, UV/VIS spectra may additionally be defined. In this case the spectrum data is output afterwards: the name of the spectrum has the format **Analysis name/Spectrum name**. The output of spectra is alphabetically sorted according to the spectrum name.

[Select fields]

Opens the dialog window **Select fields** in which the required fields for the export can be selected, arranged in the required sequence and renamed.

Note

Field selection is only possible for the file types ***.csv** and ***.slk**. With ***.idet** and ***.xml** always all fields will be exported.

[Options]

Opens the dialog window **Options**, in which the separators can be defined.

Note

The options can only be set for the data types ***.csv** and ***.txt**.

File name

One of the following options can be selected for the definition of the name of the export file:

Selection	**Determination ID** | **Sample identification** | **Request on each export** | **Fixed file name (append data)**
Default value	**Determination ID**

Determination ID
If this option is selected then the name of the export file will be formed from the unambiguous **Determination ID**, the **Computer name**, the date stamp **-YYYYMMDD-HHMMSS** and the suffix for the format.

Sample identification
If this option is selected then the name of the export file will be formed from the selected sample identification (**Ident**, **Info 1…4** or **Value 1…4**), the **Computer name**, the date stamp **-YYYYMMDD-HHMMSS** and the suffix for the format. If the generated name already exists in the directory then a version number will additionally be appended to the date.

Request on each export
If this option is selected then the name of the export file will be requested at each export. In addition to the entered name the **Computer name** and the date stamp **-YYYYMMDD-HHMMSS** will be added automatically.

Fixed file name (append data)
If this option is selected then the name of the export file will be formed from the name entered here and the suffix for the format. If the file is already present in the directory then the data will be appended to this file.

Note

The option **Fixed file name** can only be selected for the file type ***.csv (comma separated)** or ***.slk (SLK format)**.

4.6.2.2 Export template - Selecting fields

Dialog window: **Database** ▸ **Tools** ▸ **Templates** ▸ **Export templates...** ▸ **Export templates** ▸ **[Properties]** ▸ **Export template** ▸ **[Select fields]** ▸ **Select fields**

With **[Select fields]** in the Properties window for export templates the dialog window **Select fields** opens in which the fields for data export for the file types ***.csv** and ***.slk** can be selected.

Available fields

Display of all the fields that can be exported.

Selected fields

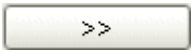
Display of all the fields that will be exported.

Default name

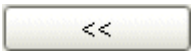
Non-editable name of the field to be exported.

Displayed name

Field name editable by the user for the exported field. The **Default name** is entered as default. If the field name is deleted then the **Default name** appears again.



Add the selected field.



Remove the selected field.

Change the sequence of the exported fields by moving the selected field upwards.

Change the sequence of the exported fields by moving the selected field downward.

4.6.2.3 Export template - Options for CSV format

Dialog window: **Database** ▸ **Tools** ▸ **Templates** ▸ **Export templates...** ▸ **Export templates** ▸ **[Properties]** ▸ **Export template** ▸ **[Options]** ▸ **Options for CSV format**

With **[Options]** in the Properties window for export templates, the dialog window **Options for CSV format** opens in which the separators can be defined.

Field separator

Selection of the field separator.

Selection	**;** | **,** | **Tab**
Default value	**;**

Record separator

Selection of the data set separator (**CR** = Carriage return, **LF** = Line feed).

Selection	**CR/LF** | **CR** | **LF**
Default value	**CR/LF**

Header

on | off (Default value: **on**)

If this check box is activated, the column headers are exported at the beginning of the export file.

4.6.2.4 Export template - Options for measurement point list

Dialog window: **Database ▸ Tools ▸ Templates ▸ Export templates... ▸ Export templates ▸ [Properties] ▸ Export template ▸ [Options] ▸ Options for measuring point list**

With **[Options]** in the Properties window for export templates, the dialog window **Options for measuring point list** opens in which the separators can be defined.

Field separator

Selection of the field separator.

Selection	**;** | **,** | **Tab**
Default value	**;**

4.6.2.5 Export template - Request at file export

Dialog window: **Database ▸ Tools ▸ Templates ▸ Export templates... ▸ Export templates ▸ [Properties] ▸ Export template**

If in the properties of the export template under **File name** the option **Request on each export** has been selected *(see Chapter 4.6.2.1, page 263)*, then before the export of a determination the dialog **File export** is displayed. If several determinations have been selected to be exported, then this dialog will be displayed for each determination.

Target directory

Display of the target directory for the export file, which has been defined in the properties of the export template used *(see Chapter 4.6.2.1, page 263)*.

File name

Entry of the name under which the export file is to be saved in the **Target directory**. During creating the file the user name as well as the current time stamp are automatically attached to the name entered.

[OK]

The export of the corresponding determination is carried out to the indicated file.

[Cancel]

The export of *the corresponding determination* is canceled. If several determinations have been selected to be exported, then the dialog **File export** will be displayed for the next determination.

[Cancel all]

The export of *all selected determinations* is canceled.

4.6.3 XML export

4.6.3.1 XML export - Overview

Dialog window: **Database ▸ Tools ▸ Templates ▸ Export templates... ▸ Export templates ▸ [Properties] ▸ Export template**

General

An XML export file with all determination data can be created when an XML report template is used at the export of the determinations.

Structure

An XML export file is constructed as follows:

<?xml version="1.0" encoding="ISO-8859-1" ?>	
–<DeterminationReport>	**Determination report**
<xmlCreator val=""/>	Program name
<xmlCreatorVersion val=""/>	Program version
<xmlCreatorBuildNo val=""/>	Build number
<subtype val=""/>	
+ <Determination>	Determination data
+ <Method>	Method data
+ <Sample>	Sample data
+ <Comvars dynamic="">	Common variables
+ <Analyses dynamic="">	Component results
+ <SingleResults>	Single results
+ <ResultMonitoring dynamic="">	Monitored results
+ <MethodParams>	Method parameters
+ <Statistics>	Statistics results
+ <Devices dynamic="">	Device data
+ <MethAnalyses dynamic="">	Analysis data
+ <Columns dynamic="">	Columns data
–<System>	System data
<userName val="" />	User name (abbreviation)
<userNameFull val="" />	User name (full name)
<clientName val="" />	Client name

<progVersion val="" />	Program version - Build number
<licenseRoot val="" />	License code
</System>	
</DeterminationReport>	

Note

dynamic= means that the following nodes can appear more than once.

4.7 Subwindow - Determination overview

4.7.1 Determination overview - General

4.7.1.1 Determination overview - Overview

Subwindow: **Database** ▸ **Determination overview**

General

The subwindow **Determination overview** shows selected data for the determinations contained in the open database in tabular form. It is always shown in the program part **Database**, i.e. it cannot be removed from the Database view. The subwindow can be enlarged and reduced as required; it can also be maximized.

Elements

The subwindow **Determination overview** includes the following tools:

- *Determination table*
- *Filter selection*
- *Navigation bar*

4.7.1.2 Determination overview - Table

Subwindow: **Database** ▸ **Determination overview**

Data display

In the determination table the information about the determinations defined under **Column display** is shown. If the contents of a field is larger than the column width then the whole contents will be shown as a **tooltip** if the mouse cursor is kept on the field.

If the value of a result is monitored and lies within the limits defined, then it will be shown in **green**. If it is outside these limits then the value will be shown in **red**.

Note

Lines that contain red entries will also show the line number with a red background.

Updating

As long as the program part **Database** remains open modifications in the determination table, caused by running determinations or by other users (addition, editing or deletion of data sets), will not be shown automatically. The table must either be updated with **View ▸ Update** or newly sorted or filtered. Each switch from a different program part to the program part **Database** automatically updates the determination table.

Table view

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width.
- **Double-click on the border between column titles**
  Sets the optimal column width.
- **Drag the column title**
  Moves the column to the required location.

Data record selection and table navigation

The determinations selected in the table are shown in **yellow**, the focused determination whose data is shown in the other Subwindows is indicated by an arrow in front of the line number. There are various opportunities for data set selection in the table.

In the determination table it is not possible to show more than 200 determinations at once. If more than 200 data sets are present in the database then the Navigation bar must be used to switch to further sets of determinations.

4.7.1.3 Determination overview - Column display

Dialog window: **Database ▸ View ▸ Properties ▸ Column display… ▸ Column display**

View ▸ Properties ▸ Column display… opens the dialog window **Column display**. Here you can define the columns that are to be shown in the determination table.

Available columns

Shows all the fields that can be shown as columns in the determination table.

Displayed columns

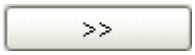
Shows all the fields that will be shown as columns in the determination table.

Default name

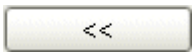
Non-editable name of the field that is displayed as column.

Displayed name

Editable name (by double click) of the column displayed in the determination overview.



Adds the selected column to the table.



Removes the selected column from the table.

Move selected column upwards.

Move selected column downwards.

4.7.1.4 Determination overview - Filter selection

Subwindow: **Database** ▸ **Determination overview**

Filter

Selection of the filter according to which the Determination table is to be filtered:

Selection	**All determinations** | **All determinations of a multiple injection** | **Quick filter** | **Temporary filter** | **Filter name**
Default value	**All determinations**

All determinations
The table is shown unfiltered.

All determinations of a multiple injection
The table is filtered so that all determinations are shown that are linked statistically with the selected determination as part of a multiple injection.

Quick filter
The table is filtered according to the last defined **Quick filter**

Temporary filter
The table is filtered according to the last defined, not saved **Special filter**.

Filter name
The table is filtered according to the selected and saved **Special filter**.

4.7.1.5 Determination overview - Batch selection

Subwindow:Database ▸ Determination overview

Batch

Selection of the batch, the determinations of which are to appear in the determination table.

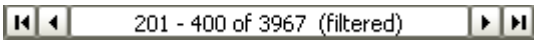
Selection	**No batch selected** | **Batch name**
Default value	**No batch selected**

No batch selected
The table is shown unfiltered.

Batch name
The table is filtered according to the selected and saved **batch**.

4.7.1.6 Determination overview - Navigation bar

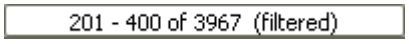
Subwindow: **Database ▸ Determination overview**



The navigation bar shown below the determination table is used for navigation in extensive tables in which all the determinations cannot be shown at once. It contains the following tools:

Jump to the first set of determinations in the table.

Jump back to the previous set of determinations in the table.



Display the selected set **#### - ####** of determinations in the table. If the table has not been filtered then the total number of all determinations will be shown. If the table has been filtered the total number of filtered determinations is shown with **(filtered)**.

Jump further to the next set of determination in the table.

Jump to the last set of determinations in the table.

4.7.1.7 Determination overview - Table navigation

Subwindow: **Database ▸ Determination overview**

In the determination table navigation can be carried out with the mouse and the vertical and horizontal scroll bars. The following possibilities are also provided by the keyboard:

[↑]

Moves the line cursor up by one field.

[↓]

Moves the line cursor down by one field.

[Ctrl] [End]

Jumps to the last determination in the current set.

[Ctrl] [Home]

Jumps to the first determination in the current set.

[Page Up]

Pages backward within the current set.

[Page Down]

Pages forward within the current set.

[Alt] [End]

Jumps to last determination (of all).

[Alt] [Home]

Jumps to first determination (of all).

[Alt] [↑]

Jumps to first data set of previous set.

[Alt] [↓]

Jumps to first data set of next set.

In the determination table it is not possible to show more than 200 determinations at once. If more than 200 determinations are present in the database then the Navigation bar must be used to switch to further sets of determinations.

4.7.1.8 Determination overview - Data record selection

Subwindow: **Database ▸ Determination overview**

The determinations selected in the table are shown in **yellow**, the focused determination whose data is shown in the other Subwindows is indicated by an arrow in front of the line number. When a database is opened the first determination is always selected and focused.

The following possibilities are available for the selection of determinations in the determination table:

- **Single determinations**
  Single determinations are selected by clicking on them with the mouse within the line (including line number). This determination, whose data is shown in the other opened subwindows, is now focused and receives an arrow in front of the line number.
- **Several determinations in sequence**
  In order to select several determinations in sequence the required range can be selected with the left mouse button pressed down. It is also possible to select a range with a click on the first determination and **[Shift] & click** on the last determination. The last determination to be selected receives the focus.
- **Several determinations not in sequence**
  In order to select several determinations not in sequence the individual determinations must be selected with the **Ctrl key** and the left mouse button. The last determination to be selected receives the focus.
- **All determinations**
  With **[Ctrl] [A]** or by clicking on the uppermost left-hand table field all the filtered determinations within the current set of determinations are selected. The focus is retained.

4.7.1.9 Determination overview - Functions

Subwindow: **Database ▸ Determination overview**

With the determinations selected in the Determination table the following functions can be carried out:

Editing determinations

- *Enter determination comment*
- *Sign determinations*
- *Export determinations*
- *Import determinations*
- *Send determinations to*
- *Reprocess determinations*
- *Complete determinations*
- *Delete determinations*

Search and filter determinations

- *Search determinations*
- *Filter determinations*
- *Create determination batch*

Other functions

- *Update determination overview*
- *Display determinations method*
- *Determinations - Display history*
- *Display detailed overview*
- *Overlay curves*
- *Print determination overview*
- *Print determination report*

4.7.2 Update determination overview

Menu item: **Database** ▸ **View** ▸ **Update**

The menu item **View** ▸ **Update** or the symbol is used to update the determination table.

Note

The determination table is updated automatically when the database is opened and when a change is made from another program part to the program part **Database**, but afterwards only when the table is newly sorted or filtered.

4.7.3 Determination comment

Dialog window: **Database** ▸ **Determinations** ▸ **Comment…** ▸ **Determination comment**

With the menu item **Determinations** ▸ **Comment…** or the symbol the dialog window **Determination comment** opens in which new comments on the selected determination can be entered an existing comment can be edited.

Comments entered this way appear automatically as a Tooltip text when the cursor line is kept on the number field of a line in the determination table for more than 1 second. In addition, it is also displayed in the subwindow **Information**.

4.7.4 Searching for determinations

Dialog window: **Database** ▸ **Determinations** ▸ **Search...** ▸ **Search - Database**

With the menu item **Determinations** ▸ **Search...** or the symbol the dialog window **Search - Database** for searching for determinations is opened.

Search in

Selection of the data field to be searched in.

Selection	**All fields** | **'Field name'**

All fields
It is being searched in all fields of the database.

'Field name'
It is being searched in the selected field only. Available are always the 10 most recently selected fields.

[More...]

Open the dialog window **Search – Field selection**. All fields are listed in tree-form. A field can be included in the search by marking it and then closing the dialog with **[OK]**.

Details

Analysis

Selection of the analysis to be searched in. This field is only displayed for **Search in** = **component result** .

Entry	**64 characters**
Selection	**All** | **'Analysis name'**

All
It is being searched in all analyses.

'Analysis name'
It is being searched in the selected analysis only. Available are always the 10 most recently selected analyses.

Component

Selection of the component to be searched in. This field is only displayed for **Search in** = **component result** .

Entry	**64 characters**
Selection	**All** | **'Component name'**

All
It is being searched in all components.

'Component name'
It is being searched in the selected component only. Available are always the 10 most recently selected components.

Result name

Selection of the result field to be searched in. This field is only displayed for **Search in** = **component result** or **Search in** = **single result** .

Entry	**64 characters** By entering the result name it can be searched in user-defined results.
Selection	**'Result name'**

'Result name'
It is being searched in the selected result field only. Available are always the 10 most recently selected results as well as the component results calculated by default.

Search options

Type

Selection of the format type for the fields for which several types are possible. With fields with a fixed type only this one will be displayed.

Selection	**Text** | **Date** | **Number**
Default value	**Text**

Operator

Selection of the relational operator for the search condition.

for fields of the type = Text

Selection	**=** | **<>** | **empty** | **not empty**
Default value	**=**

for fields of the type = Date

Selection	**=** | **<>** | **<** | **<=** | **>** | **>=** | **empty** | **not empty** | **invalid** | **outside limits** | **Today**
Default value	**=**

invalid
It is being searched for values with the entry **invalid** .

outside limits
It is being searched for values which exceed the limit values defined for the selected fields (values presented in red).

Today
It is being searched for the current date. In addition, a range of days can also be defined in the field **Search word** in which, starting from the current date, the search is to be carried out.

for fields of the type = Number

Selection	**=** | **<>** | **<** | **<=** | **>** | **>=** | **empty** | **not empty** | **invalid** | **outside limits**
Default value	**=**

invalid
It is being searched for values with the entry **invalid** .

outside limits
It is being searched for values which exceed the limit values defined for the selected fields (values presented in red).

Search word

Enter a search word for searching the selected data field. For fields of the **Type** = **Date** the date can be selected by pressing on **[...]** in the dialog window **Select date**.

for fields of the type = Text

Entry	**256 characters** Definition of a text expression as search word. The last 10 search words are saved and can be selected. The following wildcards can be used in the search word:
Selection	**^?** | **^#** | **^$** | **^***

^?
Wildcard for any character.

^#
Wildcard for any number.

^$
Wildcard for any letter.

^*
Wildcard for any character string.

for fields of the type = Date

Entry	**all possible date values** Definition of a date as search word. The last 10 search words are saved and can be selected.

for fields of the type = Date and Operator = Today

Input range	**-9999 - 9999**
Default value	**0** Definition of a numerical value as range of days in which, starting from the current date, the search is to be carried out. The last 10 search words are saved and can be selected.

for fields of the type = Number

Entry	**all possible numerical values** Definition of a numerical value as search word. The last 10 search words are saved and can be selected.

Search direction

Selection of the search direction.

Selection	**Total** | **Downward** | **Upward**
Default value	**Total**

Total
It is being searched down to the end of the database and then again from above down to the selected data record.

Downward
It is being searched to the end of the databse.

Upward
It is being searched to the beginning of the databse.

Match case

on | off (Default value: **off**)

If this option is enabled, then differentiation will be made between upper and lower case letters during searches in **Text**-type fields.

Search for whole word only

on | off (Default value: **off**)

If this option is enabled, then the field contents must be identical with the search word during searches in **Text**-type fields (no part-search).

[Search next]

Search next occurrence of the search word.

4.7.5 Determinations - Batch

4.7.5.1 Batch - Overview

Subwindow: **Database ▸ Determination overview**

A **Batch** is a selection of determinations that can be combined at will and that can be saved under a single name and also selected again under this name. A batch can include a maximum of 500 determinations.

The following possibilities exist for loading and managing batches in the Determination table:

- *Select batch*
- *Create batch*
- *Delete batch*

- *Attach determinations to batch*
- *Remove determinations from batch*

4.7.5.2 Creating batch

Dialog window: **Database ▸ Determinations ▸ Batch ▸ New batch... ▸ New batch**

The dialog window **New batch** for the creation of a new batch is opened with the menu item **Determinations ▸ Batch ▸ New batch**.

Batch name

Name of the batch.

Entry	**64 characters**

4.7.5.3 Deleting batch

Dialog window: **Database ▸ Determinations ▸ Batch ▸ Delete batch... ▸ Delete batch**

The dialog window **Delete batch** is opened with the menu item **Determinations ▸ Batch ▸ Delete batch...** for the deletion of a batch.

Batch name

Selection of the batch that is to be deleted.

Selection	**'Batch name'**

4.7.5.4 Attaching determinations to batch

Dialog window: **Database ▸ Determinations ▸ Batch ▸ Attach to batch... ▸ Attach to batch**

The dialog window **Attach to batch** opens with the menu item **Determinations ▸ Batch ▸ Attach to batch...** for the inclusion of determinations to an existing batch

Batch name

Selection of the batch to which the determinations are to be attached.

Selection	**'Batch name'**

Selection

Selection of the determinations that are to be added to the batch.

Selection	**Selected determinations** | **All filtered determinations**

Selected determinations
The data sets selected in the Determination overview are added to the batch.

All filtered determinations
The data sets filtered in the Determination overview are added to the batch.

4.7.5.5 Removing determinations from batch

Dialog window: **Database ▸ Determinations ▸ Batch ▸ Remove from batch**

The determinations selected in the determination table are removed from the loaded batch by means of the menu item **Determinations ▸ Batch ▸ Remove from batch**.

4.7.6 Filter determinations

4.7.6.1 Filter determinations - Overview

Subwindow: **Database ▸ Determination overview**

The following possibilities exist for filtering determinations in the Determination table:

- *Search filter selection in the filter list*
- *Quick filter*
- *Special filter*
- *Last filter*
- *Remove filter*

4.7.6.2 Determinations - Last filter

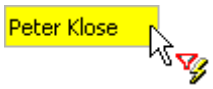
Menu item: **Database ▸ Determinations ▸ Filter ▸ Last filter**

With the menu item **Determinations ▸ Filter ▸ Last filter** or the symbol the most recently used filter will be activated.

4.7.6.3 Determinations - Quick filter

Menu item: **Database ▸ Determinations ▸ Filter ▸ Quick filter**

With the menu item **Determinations ▸ Filter ▸ Quick filter** or the symbol a quick filtering for the content of the selected tabular field can be carried out. After this function has been selected the field in the determination table in which the cursor is located will be shown with a colored background during navigation. At the same time the following special filter symbol appears:



By double-clicking with the left mouse button set the content of the selected field as filter criterion and apply directly on the table.

Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

4.7.6.4 Determinations - Special filter

Dialog window: **Database** ▸ **Determinations** ▸ **Filter** ▸ **Special filter…** ▸ **Special filter - Database "Database name"**

With the menu item **Determinations** ▸ **Filter** ▸ **Special filter...** or the symbol the dialog window **Special filter - Database** opens for defining user-specific filters.

Filter

Selects the filter to be loaded for processing.

Selection	**'Filter name'** | **New filter**
Default value	**New filter**

'Filter name'
The saved filter is loaded.

New filter
An empty table with the name **New filter** is loaded.

[Save filter]

Opens the dialog window **Save filter** in which the filter criteria entered in the table can be saved as a special filter under the required name.

[Delete filter]

Deletes the special filter that is currently loaded.

Table view

The overview table shows all the defined filter criteria and cannot be directly edited. The filter conditions will be numbered automatically in sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width
- **Double-click on the border between column titles**
  Sets the optimal column width

If the contents of a field is larger than the column width then the whole contents will be shown as a **tooltip** if the mouse cursor is kept on the field.

For the meaning of the columns, *see Edit filter criterion*.

Functions

The menu **[Edit]** beneath the filter table contains the following menu items:

Edit line	Open the dialog window **Edit filter criterion** in which the filter criterion of the line selected in the table can be edited.
Insert new line	Inserts a new empty line above the line selected in the table. The dialog window **Edit filter criterion** opens automatically.
Cut lines	Transfer selected lines to clipboard.
Copy lines	Copies selected lines to the clipboard.
Paste lines	Insert lines from the clipboard above the selected line.
Delete lines	Deletes the selected lines.

[Apply filter]

Applies filter criteria to Determination table.

4.7.6.5 Determinations - Delete filter

Menu item: **Database ▸ Determinations ▸ Filter ▸ Remove filter**

With the menu item **Determinations ▸ Filter ▸ Delete filter** or the symbol the most recently used filter will be deleted and all determinations will be displayed.

4.7.6.6 Determinations - Save filter

Dialog window: **Database ▸ Determinations ▸ Filter ▸ Special filter... ▸ Special filter - Database "Database name" ▸ [Save filter] ▸ Save filter**

With the button **[Save filter]** in the dialog window **Special filter - Database "Database name"** the dialog window **Save filter** opens for saving a special filter.

All the saved special filters are shown in the upper field.

Filter name

Name under which the special filter is to be saved.

Entry	**50 characters**

[Save]

Saves filter under given name.

Note

The filters are saved globally in the configuration database and are therefore available for all clients.

4.7.6.7 Determinations - Edit filter condition

Dialog window: **Database ▸ Determinations ▸ Filter ▸ Special filter ▸ Special filter - Database "Database name" ▸ [Edit] ▸ Edit line ▸ Edit filter criterion 'Filter name'**

With the command **Edit ▸ Edit line** in the dialog window **Special filter - Database "Database name"** the dialog window **Edit filter criterion #** opens, in which the filter criterion selected in the filter table can be edited.

Link

Selection of the logic operator with the previous filter criterion.

Selection	**AND** | **OR**
Default value	**AND**

AND
Logical "AND" link

OR
Logical "OR" link

Field

Selection of a data field for which a condition is to be formulated.

Selection	**'Field name'** Filtering is carried out only for the selected field. The 10 most recently selected fields are always available for selection.

[Other...]

Open the dialog window **Filter - Field selection**. Herein all fields that can be used for filtering are listed in tree-form. A field can be adopted by marking it and then closing the dialog with **[OK]**.

Details

Analysis

Selects the analysis for which filtering is to be carried out.

Only for field = component result.

Entry	**64 characters**
Selection	**All** | **'Analysis name'**

All
Filtering is performed for all analyses.

'Analysis name'
Filtering is done only for the analysis selected. The 10 most recently selected fields are always available for selection.

Component

Selects the component for which filtering is to be carried out.

Only for field = component result.

Entry	**64 characters**
Selection	**All** | **'Component name'**

All
Filtering is done for all components.

'Component name'
Filtering is done only for the components selected. The 10 most recently selected fields are always available for selection.

Result name

Selects the result field for which the filtering is to be carried out.

Only for field = "component result" or "single result"

Entry	**64 characters** Filtering can be carried out for user-defined results by entering the result name.
Selection	**'Result name'**

'Result name'
Filtering is carried out only for the selected result field. The 10 most recently selected fields are always available for selection, as are all component results calculated in the default settings.

Condition

Type

Selection of the type of format for fields in which several types are possible. For fields with a fixed type only this type will be shown.

Selection	**Text** | **Number** | **Date**
Default value	**Text**

Operator

Selection of the comparison operator for the filter criterion.

Only for fields of the type = text

Selection	**=** | **<>**
Default value	**=**

Only for fields of the type = date

Selection	**=** | **<>** | **<** | **<=** | **>** | **>=** | **Today**
Default value	**=**

Today
A search is made for the current date. In addition, a range of days can also be defined the field **Comparison value** in which, starting from the current date, the filtering is to be carried out.

For fields of the type = number

Selection	**=** | **<>** | **<** | **<=** | **>** | **>=** | **empty** | **not empty** | **invalid** | **out of limits**
Default value	**=**

invalid
Filtering is carried out for values with the entry **invalid**.

out of limits
Values that are out of the defined limits for the selected fields will be filtered for (values shown in red).

Comparative value

Selection or entry of the comparative value for the filter criterion. For fields where **Type** = **Date**, the date can be selected by pressing **[...]** in the dialog window **Select date**.

Only for fields of the type = text

Entry	**256 characters** Definition of a text expression as comparison value. ***** can be used as a wildcard for any sequence of characters if the option **Use asterisk (*) as wildcard** is enabled.

Only for fields of the type = date

Entry	**all possible date values** Definition of a date as comparison value.

For fields of the type = date and operator = today.

Input range	**-9999 - 9999**
Default value	**0** Definition of a numerical value as a range in days in which, starting from the current date, the filtering is to be carried out.

For fields of the type = number

Entry	**all possible numerical values** Definition of a numerical value as comparison value.

Match case

on | off (Default value: **off**)

If this check box is activated then upper/lower case will be differentiated when filtering **Text**-type fields.

Use asterisk (*) as wildcard

on | off (Default value: **off**)

If this check box is activated then when filtering **Text**-type fields the asterisk ***** can be used as a wildcard for any character strings.

4.7.7 Signing determinations

4.7.7.1 Rules for electronic signatures

Program parts: **Method / Database**

In MagIC Net, methods and determination can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**
  Methods and determinations can be signed at two levels (Signature Level 1 and Signature Level 2) by entering the user name and password.
- **Multiple signing**
  Methods and determinations can be signed several times at each level. All signatures are saved and documented in the Audit Trail.
- **Signing at Level 1**
  If Level 2 has been signed then no more signatures are possible at Level 1.
- **Signing at Level 2**
  Level 2 can only be signed if signatures already exist at Level 1.
- **Different users**
  The same user may only sign on either Level 1 or Level 2.
- **Reason and comment**
  Each signature must be accompanied by a reason selected from predefined default reasons. Additionally, a further comment can be entered.
- **Saved data**
  For each signature, signature date, user name, full name, reason and comments are saved.
- **Deleting signatures 1**
  Signatures at Level 1 are automatically deleted again when creating a new version.
- **Deleting signatures 2**
  Signatures at Level 2 can only be deleted by users who have the appropriate rights.
- **Signing methods**
  Methods can only be signed individually.

- **Signature options**
  The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

4.7.7.2 Signature Level 1

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ Signature &1... ▸ Signature Level 1**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Signature &1... ▸ Signature Level 1**

In the window **Signature Level 1**, methods or determinations can be signed at level 1.

Note

Methods or determinations which have been signed at level 1 can be modified and deleted. If the modified method or determination is saved as a new version then all existing signatures will be deleted automatically, i.e. the method or determination must be signed again.

Info

Display of information for signing and deleting signatures. The following messages are possible:

Selection	**Signature possible** | **Signature 1 not possible (signature 2 exists)** | **Signature not possible (accessed by other client)**

Signature possible
The selected method or determination can be signed.

Signature 1 not possible (signature 2 exists)
The selected method or determination can no longer be signed at level 1 as it has already been signed at level 2.

Signature not possible (accessed by other client)
The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 1**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Sign]

Sign the method or determination. The window remains open.

Note

Methods or determinations can only be signed at level 1 if the user belongs to a user group with the corresponding authorization.

4.7.7.3 Signature Level 2

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ Signature &2... ▸ Signature Level 2**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Signature &2... ▸ Signature Level 2**

In the window **Signature Level 2**, methods or determinations can be signed at level 2.

Note

Methods or determinations signed at level 2 are **locked**, i.e. they can neither be modified nor deleted. In order to be able to edit such methods or determinations again, the signatures on level 2 must first be deleted.

Info

Information for signing and deleting signatures is displayed in this box. The following messages are possible:

Selection	**Signature possible** | **Signature 2 not possible (signature 1 missing)** | **Signature not possible (accessed by other client)**

Signature possible
The selected method or determination can be signed.

Signature 2 not possible (signature 1 missing)
The selected method or determination cannot be signed at level 2 as it has not yet been signed at level 1.

Signature not possible (accessed by other client)
The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 2**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Sign]

Sign the method or determination. The window remains open.

Note

Methods or determinations can only be signed at level 2 if the user belongs to a user group with the corresponding authorization.

4.7.7.4 Display determination signatures

Dialog window: **Database ▸ Determinations ▸ Sign ▸ Display signatures... ▸ Signatures - Determination 'Determination ID'**

With the menu item **Determinations ▸ Sign ▸ Show signatures...** the window **Signatures - Determination 'Determination ID'** opens with a table in which information about all the signatures for the selected determination is shown.

Signature

Shows at which level the determination has been signed (**Level 1** or **Level 2**).

Signature date

Date and time at which the determination was signed.

User

Short name of the user who signed the determination.

Full name

Full name of the user who signed the determination.

Reason

Reason for signature.

Signature comment

Comment on the signature.

4.7.7.5 Delete signatures level 2

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ &Delete signatures 2... ▸ Delete Signatures Level 2**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Delete signatures 2... ▸ Delete Signatures Level 2**

In the window **Delete Signatures Level 2**, all signatures on level 2 for the selected method or determination can be deleted.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 2**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Delete]

Delete signatures 2.

Note

Signatures 2 can only be deleted if the user belongs to a user group with the corresponding authorization.

4.7.8 Sending determinations to

Dialog window: **Database** ▸ **Determinations** ▸ **Send to...**

The menu item **Determinations ▸ Send to...** opens the dialog window **Send determinations per E-mail**.

Selection	**Determination ID** | **Sample identification** | **Name**
Default value	**Determination ID**

Determination ID
The name of the export file is formed out of an unambiguous determination ID, the computer name, the date stamp -**YYYYMMDD-HHMMSS** and the suffix for the format.

Sample identification
Selection of the sample identification. The name of the export file is formed out of this ID, the computer name, the date stamp **YYYYMMDD-HHMMSS** and the suffix for the format. If the created name exists already in the directory, a version number will be appended additionally to the date.

Name
Name under which the export file of a determination is saved as an attachment to the E-mail message. If more than one determination is selected, then a sequential number will be added to this name for each determination.

After confirmation of the file name with **[OK]**, the standard Windows E-mail Client will open with an empty message and the export files of the selected determinations will automatically be added as an attachment in the format ***.idet**.

4.7.9 Exporting determinations

Dialog window: **Database ▸ Determinations ▸ Export... ▸ Export determinations**

Click on menu item**Determinations ▸ Export...** to open the dialog window **Export determinations** for exporting the selected determinations.

Selection

Selection of determinations for export.

Selection	**All selected data records** | **All filtered data records**
Default value	**All selected data records**

All selected data records
All those determinations are exported that have been selected (marked) in the determination table.

All filtered data records
All those determinations from the whole determination table are exported that correspond to the set filter.

Export template

Selection of the Export template for data export.

Selection	**'Export template'**

4.7.10 Importing determinations

Dialog window: **Database ▸ Determinations ▸ Import... ▸ Import determinations**

With the menu item **Determinations ▸ Import...** the dialog window **Import determination** opens, in which the determinations to be imported must be selected. These determinations are then imported into the open Database.

Note

Exported determinations can be imported in the file format ***.idet** and ***.cdf**.

4.7.11 Determination overview - Print

Dialog window: **Database ▸ File ▸ Print ▸ Determination overview… ▸ Print determination overview (PDF)**

The Menu item **File ▸ Print ▸ Determination overview...** opens the dialog window **Print determination overview (PDF)**.

Selection

Selection	**Selected determinations** | **All filtered determinations**
Default value	**Selected determinations**

Selected determinations
If this option is selected, then a list with all determinations that are selected (marked) in the determination table will be produced.

All filtered determinations
If this option is selected, then a list with all the determinations in the determination table that meet the filter criterion will be produced.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
If this option is selected then the determination table will be produced in portrait format.

Landscape
If this option is selected then the determination table will be produced in landscape format.

[OK]

The determination table is produced in the required format as a PDF file and opened directly with Acrobat Reader; it can then be printed out and/or saved.

4.7.12 Determinations - Print report

Dialog window: **Database ▸ File ▸ Print ▸ Report... ▸ Report output**

The menu item **File ▸ Print ▸ Report...** opens the dialog window **Report output**.

Selection

Selection	**Selected determinations** | **All filtered determinations**
Default value	**Selected determinations**

Selected determinations
If this option is selected, then the reports will be produced for all determinations that are selected (marked) in the determination table.

All filtered determinations
If this option is selected, then the reports will be produced for all the determinations in the determination table that meet the filter criterion.

Report type

Selection	**Original report(s)** | **Report template**
Default value	**Original report(s)**

Original report(s)
If this option is selected then the reports produced during the determination will appear at the **Output target** defined below.

Report template
If this option is selected then reports according to the selected Report template will be produced at the **Output target** defined below.

Note

Original report is used to refer to a report, which has been automatically generated at the creation of the **determination version**. If a determination is being reprocessed, a new determination version and therefore also a new original report is created.

In order to print the report of the non-reprocessed determination the determination 1 must be selected.

Output target

Printer

on | off (Default value: **on**)

If this check box is activated, the reports are printed on the selected printer.

PDF file

on | off (Default value: **off**)

If this check box is activated the reports are put out as PDF files under the entered file name.

Note

If several reports are produced simultaneously as a PDF file then an index will be automatically appended to the file name.

4.7.13 Determinations - Show method

Menu item: **Database** ▸ **Determinations** ▸ **Show method...**

With the menu item **Determinations** ▸ **Display method...** or the symbol the dialog window **Determination method 'Method name'** opens in which the method with the four subwindows **Devices**, **Time program**, **Evaluation** and **Chromatograms** that is used for the selected determination is displayed. A difference between this and the program part **Method** however is this no parameters are available for editing here.

Saving method

[Save as...]

With this button the determination method can be saved in a method group. The window **Save method** opens in which the method group can be selected and a method name entered or selected.

See also

- *5.1.1 Method - Definition*
- *5.2.8 Saving a method*

4.7.14 Determinations - Displaying history

Menu item: **Database** ▸ **Determinations** ▸ **Show history**

Switch history view on/off

With the menu item **Determinations** ▸ **Display history...** or the symbol only the currently focused determination in the Determination table as well as all the previous versions of this determination will be shown.

If the History view with the menu item **Determinations** ▸ **Display history...** or the symbol is disabled again, then the original selection of determinations in the Determination table will appear again.

4.7.15 Determinations - Make current

Menu item: **Database** ▸ **Determinations** ▸ **Make current**

Make old version current

With the menu item **Determinations** ▸ **Make current...** or the symbol the determination version selected in the determination table will again be made the current determination version. This creates a new determination whose version number is increased by **+1** compared with the last version to have been saved.

4.7.16 Determinations - Detail overview

4.7.16.1 Detail overview - Selection

Dialog window: **Database ▶ Determinations ▶ Detail overview... ▶ Open detail overview**

The menu item **Determinations ▶ Detail overview...**, the dialog window **Open detail overview** opens for the selections of the determination that are to be displayed in the detail overview.

Selection

Selection of the determinations that are to be displayed in the detail overview.

Selection	**Selected determinations** | **All filtered determinations**
Default value	**Selected determinations**

Selected determinations
All those determinations are displayed that have been selected (marked) in the determination table.

All filtered determinations
All those determinations from the whole determination table are displayed in the detail overview that correspond to the set filter.

4.7.16.2 Detail overview - General

Dialog window: **Database ▶ Determinations ▶ Detail overview... ▶ Open detail overview ▶ [OK] ▶ Detail overview**

After the determinations have been selected *(see Chapter 4.7.16.1, page 297)*, the dialog window **Detail overview** opens in which the results and control charts for the selected determinations are displayed.

The dialog window **Detail overview** contains the following two ranges which can be selected by means of the corresponding symbol on the left-hand side:

- *Result*
- *Control chart*

4.7.16.3 Detail overview - Results

Dialog window: **Database ▶ Determinations ▶ Detail overview... ▶ Open detail overview ▶ [OK] ▶ [Results] ▶ Detail overview - Results**

The dialog window **Detail overview - Results** displays results for the selected determinations in graphics and tabular form, in addition to the associated statistical evaluations.

Result

Selection of the result that is to be displayed for all components in the graphic and in the table.

Selection	**Concentration** | **Additional component results**
Default value	**Concentration**

Graphics presentation

The selected result is displayed graphically through several determinations for each component. Each component has its own tab, which is marked with the name of the component.

The y axis is scaled automatically in the unit of the selected result; the selected determinations are displayed on the x axis at identical intervals and numbered sequentially from **1** to **n** according to the date of their recording. The statistical mean value is marked in the graphic as a blue line.

The result values are presented with the following symbols:

Result of a determination that is taken into account for the statistical calculations. A mouse click on the symbol will also cause the associated determination to be marked in the table.

Result of a determination that is taken into account for the statistical calculations and which is also marked in the table.

Result of a determination that is not taken into account for the statistical calculations.

The following context-sensitive menu opens with a right-hand mouse click inside the graphics frame:

Show all	Shows the entire graphics. This menu item is always enabled.
Default view	This menu item is disabled.
Zoom	Opens dialog window for setting the zoom range *(see Chapter 4.7.16.5, page 303)*.
Unzoom	Undoes the last zoom action.
Copy	Copy graph

Table

Table with information concerning the selected determinations. It contains the following columns:

Date

Date the determination was recorded.

Number

Number of the determination (sorted chronologically).

Ident

Identification for the sample data of the determination.

Sample type

Type of standard that was used in the determination.

Method

Name of the method used for the determination.

Analysis

Name of the analysis with which the result was generated.

'Result name'

Result value for each result.

Statistics

Indicates whether a result was used for calculation of the statistics or not.

The graphic of the results values is synchronized with the determinations table. A point can be selected in either the graphic or in the table. The point is then highlighted in **blue** and the corresponding line in the table in **yellow**. Points that were deleted manually from the statistics, appear as a **black cross** in the graphic.

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width.
- **Double-click on the border between column titles**
  Sets the optimal column width.
- **Drag the column title**
  Moves the column to the required location.

Clicking on the Determinations table with the right-hand mouse causes a context-sensitive menu to appear with the following menu items:

On	Switch on check box **Statistics** for the selected determinations.
Off	Switch off check box **Statistics** for the selected determinations.
Invert selection	Invert setting of check box **Statistics** for the selected determinations.

Note

Highlighted lines in the table can be applied to other programs with CTRL+C and CTRL+V. The context menu for the table is not permitted to be open while this is carried out!

4.7.16.4 Detail overview - Control chart

Dialog window: **Database** ▸ **Determinations** ▸ **Detail overview...** ▸ **Open detail overview** ▸ **[OK]** ▸ **[Control chart]** ▸ **Detail overview - Control chart**

The dialog window **Detail overview - Control chart** displays a control chart of the results for the selected determinations in graphics and tabular form, in addition to the associated statistical evaluations.

Template

Selection of the saved template for showing control charts. When the dialog window is opened, the last template to have been loaded will be shown. If a new template is selected then the display will be updated automatically.

Selection	**Saved templates**

[Templates]

Opens dialog window **Control chart templates** for the creation and editing of control chart templates *(see Chapter 4.5.1, page 256)*.

Graphics presentation

Each result has its own tab, which is marked with the name of the result.

The y axis is scaled automatically according to the template; the selected determinations are displayed on the x axis at identical intervals and numbered sequentially from **1** to **n** according to the date of their recording. The intervention limits are displayed in the graphic with orange lines, the warning limits with red lines, the statistical mean value with a blue line and the standard deviation ranges with black lines.

The result values are presented with the following symbols:

Result of a determination that is taken into account for the statistical calculations. A mouse click on the symbol will also cause the associated determination to be marked in the table.

Result of a determination that is taken into account for the statistical calculations and which is also marked in the table.

Result of a determination that is taken into account for the statistical calculations and that lies outside the warning limits defined in the template.

Result of a determination that is taken into account for the statistical calculations and that lies outside the intervention limits defined in the template.

Result of a determination that is not taken into account for the statistical calculations.

The following context-sensitive menu opens with a right-hand mouse click inside the graphics frame:

Show all	Shows the entire graphics. This menu item is always enabled.
Default view	This menu item is disabled.
Zoom	Opens dialog window for setting the zoom range *(see Chapter 2.6.9, page 95)*.
Unzoom	Undoes the last zoom action.
Copy	Copy graph

Table

Table with information concerning the selected determinations. It contains the following columns:

Date

Date the determination was recorded.

Number

Number of the determination (sorted chronologically).

Ident

Identification for the sample data of the determination.

Sample type

Type of standard that was used in the determination.

Method

Name of the method used for the determination.

'Result name'

Result value. Values that lie within the intervention limits are displayed in **green**; values that lie outside the intervention limits are displayed in **orange**; and values that lie outside the warning limits are displayed in **red**.

Statistics

Indicates whether a result was used for calculation of the statistics or not.

The graphic of the results values is synchronized with the determinations table. A point can be selected in either the graphic or in the table. The point is then highlighted in **blue** and the corresponding line in the table in **yellow**. Points that were deleted manually from the statistics, appear as a **black cross** in the graphic.

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width.
- **Double-click on the border between column titles**
  Sets the optimal column width.
- **Drag the column title**
  Moves the column to the required location.

Clicking on the Determinations table with the right-hand mouse causes a context-sensitive menu to appear with the following menu items:

On	Switch on check box **Statistics** for the selected determinations.
Off	Switch off check box **Statistics** for the selected determinations.
Invert selection	Invert setting of check box **Statistics** for the selected determinations.

Note

Highlighted lines in the table can be applied to other programs with CTRL+C and CTRL+V. The context menu for the table is not permitted to be open while this is carried out!

4.7.16.5 Detail overview - Zooming

Dialog window: **Database ▸ Determinations ▸ Detail overview... ▸ Open detail overview ▸ [OK] ▸ [Results] / [Control chart] ▸ Detail overview - Results / Detail overview - Control chart ▸ Zoom... ▸ Zoom**

Specifies the displayed area, which is always spanned over the whole size of the graphics window.

X axis

Visible range in X direction.

from

Starting point in x direction.

Input range	**0 - 10 ^{12} Number**

to

Endpoint in x direction

Input range	**0 - 10 ^{12} Number**

Y axis

Visible range in Y direction.

from

Starting point in y direction.

Input range	**-10 ^{12} - 10 ^{12}**

to

Endpoint in y direction

Input range	**-10 ^{12} - 10 ^{12}**

4.7.16.6 Printing results overview

Dialog window: **Database ▸ Determinations ▸ Detail overview... ▸ Open detail overview ▸ [OK] ▸ [Results] ▸ Detail overview - Results ▸ [Print (PDF)] ▸ Print result overview (PDF)**

The dialog window **[Print result overview (PDF)]** opens with **Print (PDF)**.

Selection

Selection	**All components** | **Selected component**
Default value	**All components**

All components
Produces result overview for all components.

Selected component
Produces result overview only for the selected component.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Produces result overview in portrait format.

Landscape
Produces result overview in landscape format

Comment

Possibility of entering comments on the result overview which will be produced together with the result overview.

Entry	**1000 characters**

[OK]

The result overview is produced in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

4.7.16.7 Print control chart

Dialog window:Database ▸ Determinations ▸ Detail overview... ▸ Open detail overview ▸ [OK] ▸ [Control chart] ▸ Detail overview - Control chart ▸ [Print (PDF)] ▸ Print control chart (PDF)

In the dialog window **Print control chart (PDF)** the format for the printout of the control chart is indicated.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Landscape**

Portrait
Produces control chart in portrait format.

Landscape
Produces control chart in landscape format.

Comment

Possibility of entering comments on the control chart which will be produced together with the control chart.

Entry	**1000 characters**

[OK]

The control chart is shown in the required format as a PDF file and opened directly with the Acrobat Reader; it can then be printed out and/or saved.

4.7.17 Determinations - Overlay curves

4.7.17.1 Overlaying curves - Selection

Dialog window: **Database ▸ Determinations ▸ Overlay curves... ▸ Overlay curves**

With the menu item **Determinations ▸ Overlay curves...**, the dialog window **Overlay curves** opens for the selection of the determinations whose curves are to be overlaid.

Selection

Selection	**Selected determinations** | **All filtered determinations**
Default value	**Selected determinations**

Selected determinations
Displays curves from all of the determinations that have been selected (highlighted) in the determination table.

All filtered determinations
Displays curves from all of the determinations contained in the whole determination table that correspond to the filter that was set.

4.7.17.2 Overlaying curves - Display

Dialog window: **Database ▸ Determinations ▸ Overlay curves... ▸ Overlay curves ▸ [OK] ▸ Overlay of curves**

The dialog window **Overlay of curves** displays curves for the selected determinations in graphics and tabular form.

Graphic presentation

The curves of the selected determinations are displayed graphically in different colors. The y axis is automatically scaled in the unit of the first selected determination and adjusted to the largest curve; the x axis is also scaled in such a way that the longest curve is displayed in its entirety.

You can use the cursor to determine the coordinates of curve points.

Clicking on a curve presents it with a bolder line, and a frame is created around the entire curve which is scaled to the right-hand side.

The following context-sensitive menu opens with a right-hand mouse click inside the graphics frame:

Show all	Show the entire graphics. This menu item is always enabled.
Default view	This menu item is inactive.
Zoom	Open the dialog for setting a zoom range *(see Chapter 4.7.17.3, page 307)*.
Unzoom	Undo the last zoom action.

Copy	Copy the graph.
Properties...	Define properties for the curve display *(see Chapter 4.7.17.4, page 308)*.

Table

Table with information concerning the selected determinations.

Note

An analysis which is recorded with the amperometric detector can contain several cyclovoltammograms. In this case, the table contains one separate line for each cyclovoltammogram of the analysis. The cyclovoltammograms are distinguishable on the basis of the entry in the **Analysis** column.

The table contains the following columns:

Date

Date the determination was recorded.

Number

Number of the determination (sorted chronologically).

Ident

Identification for the sample data of the determination.

Sample type

Type of standard that was used in the determination.

Volume

Volume that was used in the determination.

Dilution

Dilution that was used in the determination.

Sample amount

Sample amount that was used in the determination.

Method

Name of the method used for the determination.

Analysis

Name of the analysis with which the result was generated.

In the case of an analysis with cyclovoltammograms, one "/" and the name of the respective cyclovoltammogram appear after the name of the analysis.

Legend

Color of the line in which the curve is displayed.

Display

Indicates whether a curve is displayed or not.

The graph is synchronized with the determinations table. A curve can be selected in either the graph or in the table. The line is then shown in boldface.

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**
  Sets the column width.
- **Double-click on the margin between column titles**
  Sets the optimal column width.
- **Drag the column title**
  Moves the column to the required location.

Moves curve upward (modifies sequence).

Moves curve downward (modifies sequence).

If you click on the table for the determinations with the right mouse button, a context-sensitive menu will appear with the following menu items:

On	Activate the **Display** check box for the selected curves.
Off	Deactivate the **Display** check box for the selected curves.
Invert selection	Invert the setting **Display** for the selected curves.

4.7.17.3 Overlaying curves - Zoom

Dialog window: **Database** ▸ **Determinations** ▸ **Overlay curves...** ▸ **Overlay curves** ▸ **[OK]** ▸ **Overlay of curves** ▸ **Zoom...** ▸ **Zoom**

Specifies the displayed area, which is always spanned over the whole size of the graphics window.

X axis

Visible range in X direction.

from

Starting point in x direction.

Input range	**0.0 - 10^{12} min**

to

Endpoint in x direction.

Input range	**0.0 - 10^{12} min**

Y axis

Visible range in Y direction.

from

Starting point in y direction.

Input range	**-10^{12} - 10^{12}**

to

Endpoint in y direction.

Input range	**-10^{12} - 10^{12}**

4.7.17.4 Overlaying curves - Properties

Dialog window: **Database** ▸ **Determinations** ▸ **Overlay curves..** ▸ **Overlay curves** ▸ **[OK]** ▸ **Overlay of curves** ▸ **Properties...** ▸ **Overlay of curves - Properties**

4.7.17.4.1 Properties - General

Dialog window: **Database** ▸ **Determinations** ▸ **Overlay curves...** ▸ **Overlay curves** ▸ **[OK]** ▸ **Overlay of curves** ▸ **Properties...** ▸ **Overlay of curves - Properties** ▸ **General**

Reference point

Point of the X axis in which the Y value of all displayed curves lies above one another before the curve offset is applied. The unit for the reference point is determined by the *first* overlaid curve. If the first overlaid curve is time-based (e.g. a chromatogram), then the X axis has the dimension **Time** with the unit **min**. If the first overlaid curve is a cyclovoltammogram, then the X axis has the dimension **Potential** with the unit **V**.

Time or Potential

Point on the X axis in which the Y value of all curves lies above one another.

If there is no measuring point at the selected reference point, then the nearest measuring point will be used.

Input range	**- 1000.00 - 1000.00 min or V**
Default value	**0.00 min or V**

Curve offset

The offset based on the reference point that is used to display the curves for clear comprehension.

X-Axis

Offset on the X axis. The curves are moved by the amount of the specified percentage of the length of the selected curve.

Input range	**0.0 - 100.0 %**
Default value	**0.0 %**

Y-Axis

Offset on the Y axis (measurement value axis). The curves are moved by the amount of the specified percentage of the height of the selected curve.

Input range	**0.0 - 100.0 %**
Default value	**5.0 %**

4.7.17.4.2 Properties - Colors

Dialog window: **Database ▸ Determinations ▸ Overlay curves... ▸ Overlay curves ▸ [OK] ▸ Overlay of curves ▸ Properties... ▸ Overlay of curves - Properties ▸ Colors**

On this tab you can define and modify the colors which will be used for the display of the curves in the curve overlay. In the default settings, 10 colors are defined (standard colors).

Table "Colors"

The table permits the definition of 1 to 20 colors. The defined colors are applied in sequence to the curves that are selected in the curve overlay.

The following context-sensitive menu opens with a right-hand mouse click inside the table:

New	Add another color. The **Choose color** dialog opens *(see Chapter 2.6.13, page 105)*.
Edit	Edit the selected color. The **Choose color** dialog opens *(see Chapter 2.6.13, page 105)*.
Delete	Delete the selected color. This function is only available if more than one color is defined.

Moves color upward (modifies sequence).

Moves color downward (modifies sequence).

[Load default colors]

Pressing this button causes the table of the colors to be initialized with the 10 standard colors. Any changes you have made yourself will be lost at this time. However, the changes will only be permanently applied when the **[OK]** button is pressed.

4.7.17.5 Printing the curve overlay

Dialog window: **Database ▸ Determinations ▸ Overlay curves... ▸ Overlay curves ▸ [OK] ▸ Overlay of curves ▸ [Print (PDF)] ▸ Print curve overview (PDF)**

[Print (PDF)] opens the dialog window **Print curves overview (PDF)**.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Put out the curve overview in portrait format.

Landscape
Put out the curve overview in landscape format.

Comment

Possibility of entering comments on the curve overview which will be produced along with it.

Entry	**1000 characters**

[OK]

The curve overview is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

4.7.18 Determinations - Reprocessing

4.7.18.1 Reprocessing - General

Dialog window: **Reprocessing**

Reprocessing determinations

Completed determinations that are saved in the database can be reprocessed at any time. Sample data, integration, evaluation parameters, calibration and result definitions can all be modified and the determinations can be reevaluated when this is done. The reprocessed determination can then be saved in the database as a new version.

Note

Determinations signed at level 2 cannot be reprocessed.

Note

Determinations that are not yet completed, e.g. because their calibration is not yet complete or because not all injections have been accomplished for a multiple determination, cannot be reprocessed.

Opening the reprocessing window

The reprocessing of determinations that have been selected in the subwindow **Determination overview** takes place in the independent dialog window **Reprocessing** which is opened with **Determinations ▸ Reprocess...** or the symbol . It contains the button for closing in the Windows title bar. When the window is opened the first of the selected determinations is always shown as standard.

Closing the reprocessing window

The **Reprocessing** dialog window is closed with **[OK]**, **[Cancel]** or the Windows button for closing.

Note

The reprocessing window cannot be closed while recalculations are still running.

4.7.18.2 Reprocessing - Rules

Dialog window: **Reprocessing**

Selecting determinations

The following rules apply for the selection of determinations that are reprocessed:

- **Completed determination**
  Only completed determinations can be reprocessed.
- **Signed determination**
  Determinations that have a Signature at level 1 can be reprocessed.
  Determinations signed at level 2 cannot be reprocessed.
- **Multiple determinations**
  Multiple determinations can only be reprocessed as a group.

- **Number of determinations**
  Only a maximum of 200 determinations can be selected for reprocessing.

Reprocessing several determinations

In order for more than one determination to be reprocessed together at the same time, the analyses for these determinations must fulfill additional rules.

- **No determination contains an analysis with evaluation**
  There is no limitation.
- **Each determination contains only one analysis with evaluation**
  The **Data channel** of this analysis must be identical for all of the determinations; the analysis names need not match.
- **The determinations contain several analyses with evaluation**
  The number of analyses with evaluation must be identical in all of the determinations and **Name** and **Data channel** must match for each of these analyses.

Run

The following rules apply for reprocessing the selected and modified determinations:

- **Recalculate**
  All of the determinations are reprocessed that are located in the **Reprocessing table**. If one determination is not to be reprocessed, then the respective line must be deleted.
- **Sequence**
  The determinations are reprocessed in the same sequence in which they are to be found in the reprocessing table. Reprocessing proceeds in analogous fashion to a sample table. This is particularly important for the sequence of the standards when the calibration is recalculated.

4.7.18.3 Reprocessing window

Dialog window: **Reprocessing**

Subwindows

The **Reprocessing** dialog window contains the following two subwindows that can be enlarged and reduced by dragging the separating bar between them:

- *Reprocessing table*
  Selects determination, edits sample data and defines sequence in which the determinations are to be reprocessed.
- *Results*
  Displays results.
- *Evaluation parameters*
  Edits evaluation parameters.

- *Chromatograms*
  Integrates chromatograms manually, displays measurement and calibration curves.

Functions

If determinations have been modified, then the following functions can be triggered:

[Method... ▸Save As...]

Opens the dialog window **Save method**, in order to save the method of the selected determination *(see Chapter 5.2.8, page 359)*.

[Method... ▸Change column]

Opens the dialog window **Modify column**. The columns which are assigned to analyses can be modified for all determinations during reprocessing in this window *(see Chapter 4.7.18.5.1, page 322)*.

[Method... ▸Change eluent]

Opens the dialog window **Change eluent**. The eluents which are assigned to analyses can be modified for all determinations during reprocessing in this window *(see Chapter 4.7.18.5.3, page 323)*.

[Method... ▸Import calibration points]

Opens the dialog window **Import calibration points**. An ***.ical** file can be selected in this window for the purpose of importing it into an analysis of the currently selected determination *(see Chapter 4.7.18.5.5, page 325)*.

[Method... ▸Export calibration points]

Opens the dialog window **Export calibration points**. The calibration points of an analysis of the currently selected determination can be exported into an ***.ical** file in this window *(see Chapter 4.7.18.5.6, page 326)*.

[Reprocessing]

Opens the dialog window **Reprocessing**. Calibration and integration options for reprocessing are set and reprocessing is triggered in this window *(see Chapter 4.7.18.5.7, page 326)*.

[Update]

Applies the (modified) evaluation parameters to the selected determination.

Note

Reprocessing behaves as though only one determination were in the table and this were being reprocessed with the option **From marked determination**.

The function is used for optimization of the evaluation parameters. The effect of a modification of the parameters can be checked without having to reprocess the entire table.

Note

The determination itself is not reprocessed during this process!

Modifications of the determination that were generated by the **[Update]** function cannot be saved. If the dialog window **Reprocessing** is exited without reprocessing, then all modifications will be discarded.

[Reset]

This button causes all modifications that were carried out during reprocessing to be reset. The original data and results are once again available. This button is inactive for as long as reprocessing has not yet been triggered.

[OK]

With this button each determination that has been modified by reprocessing will be saved as a new version with a version number increased by **+1** and the **Reprocessing** subwindow will be closed. This button is inactive for as long as reprocessing has not yet been triggered and if not all of the selected determinations were able to reprocessed.

[Cancel]

The reprocessing is discarded with this button and the **Reprocessing** dialog window is closed.

4.7.18.4 Reprocessing - Subwindow

4.7.18.4.1 Reprocessing table subwindow

Subwindow: **Reprocessing** ▸ **Reprocessing table**

The determinations to be reprocessed are listed in the **Reprocessing table** subwindow. The sample data of the individual determinations can be modified here and the sequence in which the determinations are to be processed is established here.

Table

The table contains all of the determinations that are to be reprocessed.

The table has a fixed number of columns; the **determination type**, **all sample data** and the type of **integration** are displayed in separate columns for each determination.

The table is sorted in ascending order according to type of determination in the default settings. The sequence can, however, be modified with the arrow keys on the right-hand margin.

Clicking on a line will cause it to be marked with a **yellow background**; this determination is selected. This has the following consequences:

- The subwindows **Results**, **Evaluation parameters** and **Chromatograms** display the properties of the selected determination.
- The selected determination can be shifted upwards or downwards with the arrow keys in the reprocessing table.
- The selected determination can be edited or deleted from the reprocessing list.

Arrow keys

Note

The sequence of the determinations in the reprocessing table establishes the sequence in which the determinations will be reprocessed. This is particularly important when the calibration is recalculated according to standards to be found in reprocessing.

Moves the selected determination one line upwards.

Moves the selected determination one line downwards.

Edit menu

[Edit] contains the following menu items:

Edit line	Open the dialog window **Edit line - Reprocessing** to edit the sample date of the selected determination *(see Chapter 4.7.18.4.5, page 319)*.
Delete line	Remove the selected determination from reprocessing.
Increment	Using the cursor, which takes on the form ✜, the range which is to be automatically incremented can be selected from a column in the table. The number standing at the end of the expression will thereby be automatically increased by 1 in the selected cells of a column, starting from the first selected cell. This works not only with pure numbers but also with text expressions which end with a number (e.g. **ABC10** → **ABC11** → **ABC12** etc.)
Filling	Fill the selected lines automatically.

4.7.18.4.2 Results subwindow

Subwindow: **Reprocessing ▸ Results**

The results of the selected determination are displayed in the subwindow **Results**.

Structure and properties correspond to the **Results** subwindow in the **Database** program area *(see Chapter 4.9, page 346)*.

Tabs

The results of the determination are shown on the following tabs:

- *Results*
  Display of the automatically generated and user-defined results for determination.
- *Statistics*
  Display of the statistics data concerning the statistically evaluated results of multiple determinations.
- *Monitoring*
  Display of monitored results for determination.

4.7.18.4.3 Evaluation parameters subwindow

Subwindow: **Reprocessing ▸ Evaluation parameters**

The evaluation parameters of the selected determination are displayed in the **Evaluation parameters** subwindow. One can see in the header of the subwindow the determination from which the evaluation parameters originate. The evaluation parameters can be edited in order to reprocess the determinations.

Structure and properties correspond to the **Evaluation parameters** subwindow in the **Method** program area *(see Chapter 5.8, page 411)*.

Note

Even though the entire evaluation of the method is visible, not all of the ranges can be edited in reprocessing. The ranges that cannot be edited are not executed in reprocessing.

Overview evaluation parameters

Evaluation parameters that can be edited are incorporated into the calculations made during reprocessing. As a basic rule, all evaluation parameters behave the same way in **Reprocessing** and **Method**.

The evaluation ranges that behave differently during reprocessing than they do in the method are shown in **boldface**. Their behavior is described in detail in the space after the table.

Range		Can be edited
Evaluation - Integration		Yes
Evaluation - Components		Yes
Evaluation - Standards		Yes
Evaluation - Calibration		Yes
Evaluation - Results		
	Results - Report	Partially
	Results - Database	No
	Results - Statistics	Yes
	Results - Monitoring	Yes
	Results - User-defined results	Yes
	Results - Common Variable	**Yes**

Report

- **Report template**
  Cannot be edited, no new report will be generated after reprocessing.
- **Pharmacopoeia**
  Can be edited, is incorporated into reprocessing.
- **Decimal places of the results**
  Can be edited, the reprocessed results are displayed with the number of decimal places specified in the settings.

Database

- **Database**
  Cannot be edited, no new database entry is generated, the reprocessed determination is saved as a new version.
- **Automatic export**
  Cannot be edited, no export takes place after reprocessing.

Common variable

Can be edited; the common variables are used during reprocessing, however, their values will not be written into the configuration.

4.7.18.4.4 Chromatograms subwindow

Subwindow: **Reprocessing** ▸ **Chromatograms**

The measurement and calibration curves of the selected determination are displayed in the subwindow **Chromatograms**. Chromatograms can also be integrated here manually.

Tabs

A tab is displayed for every analysis that is defined in a method; these tabs are lettered with the name of the analysis and they show the associated chromatograms and calibration curves.

Graphics window

The interface, functions and properties of the **Chromatograms** subwindow are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Calibration curve view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Select color*

Integrating manually

The chromatograms of the **selected** determination can be integrated manually during reprocessing. The only measurement curves that can be integrated manually are those that have an evaluation; auxiliary curves of analyses lacking evaluation cannot be integrated manually.

Note

Chromatograms belonging to the calibration data set of the selected determination cannot be integrated manually. The associated determination must be selected for this purpose.

Manual integration functions

The functions of manual integration can be called up with the **context-sensitive menu** of the Chromatogram view by using the right-hand mouse button (*Functions Manual Integration*).

The following functions are available:

- Add peak
- Add valley
- Remove peak
- Divide peak
- Join peaks

Note

A manually integrated determination is marked with the entry **Manual** in the field **Integration**.

This field is displayed in **Reprocessing** in the subwindow **Reprocessing ▸ Reprocessing table** and in the **Database** on the tabs **Database ▸ Information ▸ Determination** and **Database ▸ Information ▸ Analyses**.

4.7.18.4.5 Edit lines - Reprocessing

Dialog window: **Reprocessing ▸ Reprocessing table ▸ [Edit] ▸ Edit lines ▸ Edit lines - Reprocessing**

Note

Except for **Method** and **Injections**, all displayed sample data for a determination can be edited in reprocessing. It makes no difference in this context whether or not it had been used at all in the original method, or whether or not it was defined as **Fixed values**.

Sample data that was defined as fixed values at the start of the determination are presented in the dialog window **Editing lines - Reprocessing** in ***italics***.

Method

Display of the method with which the determination was recorded; no longer available for editing in reprocessing.

Ident

Entry of an identification or selection of a defined text template to identify the chromatogram.*(see Chapter 3.6.1, page 144)*

Entry	**100 characters**
Selection	**Selection of text templates**

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Entry	**64 characters**
Selection	**'empty'** | **Sample** | **Standard 1…n** | **Spiking 1…n** | **Check standard 1…n** | **Blank**
Default value	**'empty'**

Injections

The value **n/m** indicates whether or not the determination is part of a multiple determination. No longer available for editing in reprocessing.

- **n**: Injection number of the determination.
- **m**: Number of injections in the multiple determination.

The determinations of a multiple injection are linked statistically with one another.

Volume

Volume of the sample in µL.

Input range	**0.01 - 1000000.00 µL**
Default value	**'empty' µL**

Dilution

Dilution factor for the sample.

Input range	**0.001 - 100,000.00**
Default value	**'empty'**

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
  Basic initial weight = 2.0 g
  Sample initial weight = 2.1 g
  Sample amount = 2.1 / 2.0 = 1.05
  The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
  Basic unit = 1.0 mg
  Initial sample size = 2.1 mg
  Sample amount = 2.1 / 1.0 = 2.1
  The result is divided by 2.1 and indicates how high the content per mg of sample is.

Input range	**0.00001 - 1000000.00000**
Default value	**'empty'**

Info 1…4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**
Selection	**Selection of text templates**

Value 1…4

Input of additional values for the sample.

Input range	**-10^{99} - 10^{99}**
Default value	**'empty'**

Navigation

Jumps to the first line in the table.

Jumps to the previous line in the table.

Option of entering the desired line number to which the program jumps when the **[Enter]** is actuated.

Jumps to the next line in the table. If the end of the table has been reached, then a new line will be inserted automatically and the program will jump to it.

The same function can also be triggered by pressing the **[Enter]** key.

Jumps to the last line in the table.

Functions

[Apply]

Applies the sample data entered in the respective line of the table. If the end of the table has been reached, then a new line will be generated automatically.

[Close]

Closes the input window. The current sample data will not be applied in the table (this needs to be triggered beforehand with **[Apply]**).

4.7.18.5 Reprocessing - Functions

4.7.18.5.1 Change column

Dialog window: **Reprocessing** ▸ **[Method...]** ▸ **Change column** ▸ **Change column**

The columns of the selected determination are displayed and can be replaced by other columns from the configuration. The settings made in the **Change column** dialog can then be applied to all determinations in reprocessing.

Elements

'Analysis name'

Note

All analyses with evaluation that are present in the selected determination are each listed in their own section.

Column

Display of the column that is assigned to the analysis 'Analysis name'.

Note

The column is linked with the analysis in the instrument window of the method in the hardware assignment of the analysis.

If the analysis has had a gradient pump assigned to it, then up to four eluents (**Eluent A - B**) will be displayed.

Opens the dialog window **Select column from configuration**, in order to assign another column *(see Chapter 4.7.18.5.2, page 323)*.

[OK]

The settings are applied to **all** determinations in the reprocessing table.

[Cancel]

The settings are discarded.

Assigning the columns

The assignment of the columns to the determinations depends on the type of determinations that are to be found in the reprocessing. The following rules apply:

- **Each determination contains only one analysis with evaluation**
  The columns are assigned with evaluations in all determinations of the analysis. It makes no difference whether the analysis names of the determinations match the analysis names of the selected determination.
- **The determinations contain several analyses with evaluation**
  The number of analyses with evaluation and their name is identical in all determinations, the columns are assigned in the other determinations according to the settings in the **Change column** dialog.
-

4.7.18.5.2 Selecting columns from configuration

Dialog window: **Reprocessing ▸ [Method...] ▸ Change column ▸ Change column ▸ Selecting columns from configuration**

Column

Selection	**Columns from column table**

4.7.18.5.3 Change eluent

Dialog window: **Reprocessing ▸ [Method...] ▸ Change eluent ▸ Change eluent**

The eluents of the selected determination are displayed and can be replaced by other eluents from the configuration. The settings made in the dialog **Change eluent** can then be applied to all determinations in reprocessing.

Elements

'Analysis name'

Note

All analyses that are present in the selected determination are each listed in their own section.

Eluent / Eluent #

Display of the eluent that is assigned to the analysis 'Analysis name'.

Note

The eluent is specified in the instrument window of the method in the start parameters of the high-pressure (gradient) pump; this pump — and with it the eluent — are linked with the analysis in the hardware assignment of the analysis.

If the analysis has had a gradient pump assigned to it, then up to four eluents (**Eluent A - B**) will be displayed.

Opens the **Select eluent from configuration** dialog window in order to assign another eluent *(see Chapter 4.7.18.5.4, page 325)*.

[OK]

The settings are applied to **all** determinations in the reprocessing table.

[Cancel]

The settings are discarded.

Assigning the eluents

The assigning of the eluents to the determinations depends on the type of determinations that are to be found in the reprocessing. The following rules apply:

Note

The eluents that are defined in the dialog **Change eluent** are applied to the **respective** eluents of the determinations in reprocessing.

- **Change eluentcontains fewer eluents than the determination in reprocessing.**
  The eluents in the dialog **Change eluent**, which correspond to one eluent in the determination, are applied in the determination. Eluents in the determination that have no correspondence will not be modified.
- **Change eluent contains more eluents than one determination in reprocessing.**
  The eluents in the dialog **Change eluent**, which correspond to one eluent in the determination, are applied in the determination. Eluents in the dialog **Change eluent** that have no correspondence in the determination have no effect.
-

4.7.18.5.4 Selecting eluents from configuration

Dialog window: **Reprocessing ▸ [Method...] ▸ Change eluent ▸ Change eluent ▸ Selecting eluents from configuration**

Eluent

Selection	**Eluent from eluent table**

4.7.18.5.5 Importing calibration points

Dialog window: **Reprocessing ▸ [Method...] ▸ Import calibration points ▸ Import calibration points**

The function **Import calibration points** refers to the currently selected determination in the Reprocessing table *(see Chapter 4.7.18.4.1, page 314)*. You can use this function as an aid to import the content of an ***.ical** file that was created by MagIC Net into a selected analysis ("target analysis") of this determination.

Select analysis

List of the analyses (sorted alphabetically) in the selected determination. Select here the analysis (target analysis) into which you wish to import calibration points from an ***.ical** file.

Import file

Display of the name (including path) of the ***.ical** file selected for the import.

Opens a dialog for the selection of an ***.ical** file for import.

[OK]

Starts the import of the calibration points from the selected ***.ical** file into the selected analysis. The dialog **Import calibration points** will close after the import has been successfully completed.

[Cancel]

Discards any user inputs and closes the **Import calibration points** dialog.

What happens when calibration points are imported into an analysis?

- All of the calibration points of the target analysis are deleted.
- For every component for which calibration points are available in the ***.ical** file, these will be copied into the target analysis. The *names* of the components will be compared at this time.

- After the import of the calibration points into the target analysis, the display of their calibration will be updated in the **Chromatograms***(see Chapter 4.7.18.4.4, page 318)* subwindow.
- The determination will *not* be automatically recalculated after the import.

4.7.18.5.6 Exporting calibration points

Dialog window: **Reprocessing ▸ [Method...] ▸ Export calibration points ▸ Export calibration points**

The function **Export calibration points** refers to the currently selected determination in the Reprocessing table *(see Chapter 4.7.18.4.1, page 314)*. This function can be used as an aid for selecting an analysis of this determination and to export its calibration points (if available) into an ***.ical** file.

Select analysis

List of the analyses (sorted alphabetically) in the selected determination. Select here the analysis whose calibration points you wish to export into an ***.ical** file. If the selected analysis contains no calibration points, then you will be prompted to select a different analysis when you press **[OK]**.

Export file

Display of the name (including path) of the ***.ical** file determined for the export.

Opens a dialog for the definition of the ***.ical** file into which the calibration points are to be exported. You can select the target directory and an ***.ical** file or enter them manually.

[OK]

Starts the export of the calibration points from the selected analysis into the ***.ical** file. The **Export calibration points** dialog will close after the export has been successfully completed.

[Cancel]

Discards any user inputs and closes the **Export calibration points** dialog.

4.7.18.5.7 Reprocessing

Dialog window: **Reprocessing ▸ [Reprocessing] ▸ Reprocessing**

The actual reprocessing is triggered in this dialog window.

All modifications that were made in the subwindows **Reprocessing table**, **Evaluation parameters** and **Chromatograms** are incorporated in the reprocessing of the determinations.

Calibration

Defines whether a new calibration is generated during reprocessing or whether an existing calibration will be used.

Selection	**Of the marked determination** | **From the standards of the reprocessing table**
Default value	**From the standards of the reprocessing table**

Of the marked determination
The calibration data set (standard chromatograms, calibration points and calibration curves) are used during reprocessing for the calibration of all determinations in the table.

From the standards of the reprocessing table
New calibration data sets and, with them, new calibration curves are generated from the standards in reprocessing with the aid of the evaluation parameters of the marked determination. The sequence is the same as when a sample table is processed.

Keep manual integration

on | off (Default value: **on**)

Establishes whether manual integration is taken into account during reprocessing or whether new integrations are carried out.

- **on**: Manual integration taken into account during reprocessing.
- **off**: Manual integrations are discarded, all determinations are reintegrated with the current evaluation parameters.

[OK]

Triggers reprocessing. As long as the reprocessing is running, all subwindows and buttons are disabled; a progress bar is displayed in the lower area of the window.

Note

All determinations are reprocessed with the evaluation parameters of the **selected** determination.

It is not until this point in time that all the modifications that were made in the reprocessing are incorporated into the determinations. The modified results and chromatograms are displayed in the subwindows **Results** and **Chromatograms**.

[Cancel]

The procedure will be canceled.

What happens during reprocessing?

- **Columns and eluents**
  Modified columns and eluents are written into **all** determinations and taken into account for the calculations (e.g. theoretical plates).
- **Sample data**
  All determinations are reprocessed one after the other with their sample data from the reprocessing table.
- **Evaluation parameters**
  All determinations are reprocessed one after the other with the evaluation parameters of the selected determination. The reprocessing table is run through from top to bottom during this process. The calculations and results behave the same way as when a determination series is being processed. The chromatograms of the determinations are reintegrated, the peaks of the components that are discovered are assigned and the results are calculated with the current calibration. Depending on the calibration mode, the calibration changes thereby with each standard, in a fashion analogous to a determination series.
  Exceptions:
  - When the **Retain manual operation**parameter is set to **on**, then manually integrated chromatograms will not be reintegrated. All other chromatograms will be integrated with the integration parameters of the selected determination.
  - When the **Calibration** parameter has the value **From marked determination**, then the evaluation parameters of the selected method will be used solely for integrating chromatograms and assigning the peaks to the components. No calibration curves will be recalculated, however.
    The calculation of the results is then accomplished with the calibration data set of the selected determination, i.e. the results of all determinations in reprocessing will each be calculated with the same calibration data set.

4.7.18.6 Modification comment for determinations

Dialog window: **Database ▸ Determinations ▸ Delete/Reprocess...**

If the option **Comment on modification** of determinations is switched on in the security settings then before the modified sample data is accepted the window **Modification comment determination** first appears in which a **Reason** must be selected and a **Comment** on the modification must be entered.

Reason

Selection from the default reasons defined for the category **Modifications of determinations** in the **Security settings** dialog window.

Selection	**Selection from default reasons**

Comment

Entry of a comment on the modification of the determinations.

Entry	**1000 characters**

4.7.19 Completing determinations

Menu item: **Database** ▸ **Determinations** ▸ **Complete...**

All incomplete determinations marked in the determination overview which are not complete due to an incident of global error (e.g. interrupted contact with the server, electrical power failure, program crash) or which were not finished after a reprocessing error will be made complete by means of the menu item **Determinations** ▸ **Complete...**.

Note

Incomplete determinations can only be made complete if they were generated by the same client as the one that is to complete them, and only if no determinations are running in any of that client's workplaces.

4.7.20 Deleting determinations

Menu item: **Database** ▸ **Determinations** ▸ **Delete**

With the symbol or the menu item **Determinations** ▸ **Delete**, the selected determinations are deleted after the confirmation request.

Note

If a database is opened simultaneously on several clients and if determinations are deleted on a client then these will still be shown in the determination table of the other clients until the table is updated. All the fields of these determinations will then have the entry **deleted**.

Note

If the check box **Comment on modification of determinations** in the **Security settings** is activated, then the window **Modification comment determination** will appear before the modification is saved.

4.8 Subwindow Information

4.8.1 Information - Overview

Subwindow: **Database ▸ Information**

General

In the subwindow **Information** general information about the focused determination in the determination table is shown. The subwindow can be switched on in the program part **Database** during the definition of the layout and thus made visible. It can be enlarged and reduced as required; it can also be maximized.

Tabs

Information about the determination is shown on the following tabs:

- *Determination*
  Display of general information about the determination.
- *Method*
  Display of general information about the method used.
- *Sample*
  Display of general information about the sample used.
- *Devices*
  Display of general information about the devices used.
- *Analyses*
  Display of general information concerning the analyses present in the determination.
- *Messages*
  Display of messages about the determination.
- *Determination comment*
  Display of the comment on the determination.

4.8.2 Information - Determination

Tab: **Database ▸ Information ▸ Determination**

Display of general information about the determination.

Identification

Information about the identification of the determination.

Determination ID:

Unambiguous and unmistakable identification for the determination.

Server name:

Computer name of the server to which the client was connected when the determination was recorded.

Client ID:

ID of the client the determination has been recorded with.

Start counter:

Display of the start counter which is increased by +1 at the start of each determination. The start counter is saved for each client and cannot be reset.

Source format:

Display of the source format (e.g. ***.cdf**) for imported determinations.

Recording

Information about recording the determination.

Determination start:

Date and time at start of determination.

Duration of determination:

Duration of the determination from its start to its end or termination in min.

Determination run:

Way in which the determination has been ended:

Selection	**regular without remarks** | **regular with remarks** | **stop** | **stop by error**

regular without remarks
The determination has been finished automatically after the method has been processed normally and without any remarks.

regular with remarks
The determination has been finished automatically after the method has been processed normally but with remarks.

stop
The determination has been canceled manually with **[Stop]**.

stop by error
The determination has been canceled automatically due to an error.

User (short name):

Short name of the user.

Note

Which user is entered depends on the option **Edit workplaces in 'BUSY' status** in the security settings *(see Chapter 6.2.2.2, page 504)*.

Active	User who started the determination.
Inactive	User logged in when finishing determination.

User (full name):

Full name of the user.

Note

Which user is entered depends on the option **Edit workplaces in 'BUSY' status** in the security settings *(see Chapter 6.2.2.2, page 504)*.

Active	User who started the determination.
Inactive	User logged in when finishing determination.

Remarks:

Display of the **Remarks** about the determination entered in the run window of the workplace.

Program version

Display of program version and build number of **MagIC Net** with which the determination has been recorded.

License ID

Display of the license serial number with which the determination has been recorded.

Status/Version

Information about the determination version.

Determination status:

Selection	**original** | **modified**

original
Determination data unaltered.

modified
Determination data modified.

Determination version:

Version of the determination. The unaltered original determination has the version number **1**, reprocessed determinations have a version number **>1**.

Reprocessing date:

Date and time when the reprocessed determination version was saved.

Reprocessed by (short name):

Short name of user logged in when determination was reprocessed.

Reprocessed by (full name):

Full name of the user logged in when the determination has been reprocessed.

Integration:

Information as to how the integration was accomplished.

Selection	**Automatically** | **Manually**

Automatically
Automatic integration.

Manually
Manual integration.

Modification reason determination:

Reason for the determination modification.

Modification comment determination:

User comment on the determination modification.

Signature Level #

Information about the signatures at level 1 or level 2 in chronological order.

Signature date:

Date and time at which the determination was signed.

Signed by (short name):

Short name of the user who has signed the determination.

Signed by (full name):

Full name of the user who has signed the determination.

Signature reason:

Reason for signature selected by the user.

Signature comment:

User comment on signing the determination.

4.8.3 Information - Method

Tab: **Database** ▸ **Information** ▸ **Method**

Display of general information about the method used.

Identification

Information about the identification of the method.

Method name:

Name of the method.

Method group:

Name of the method group to which the method belonged at the moment of the determination.

Method ID:

Unambiguous and unmistakable identification for the method.

Method comment:

Comment on the method that was defined in the dialog window **Properties - Method**.

Status/Version

Information about method version.

Method status:

Selection	**original** | **modified**

original
Determination method unaltered.

modified
Determination method modified by **Reprocessing**.

Method version:

Version of the method the determination has been created with.

Method saving date:

Date and time when the modified method version was saved.

Method saved by (short name):

Short name of the user logged in when the modified method has been saved.

Method saved by (full name):

Full name of the user logged in when the modified method has been saved.

Modification reason method:

Reason for the modification of the method.

Modification comment method:

User comment for the modification of the method.

Signature Level #

Information about the signatures at level 1 or level 2 in chronological order.

Signature date:

Date and time at which the method was signed.

Signed by (short name):

Short name of the user who has signed the method.

Signed by (full name):

Full name of the user who has signed the method.

Signature reason:

Reason for signature selected by user.

Signature comment:

User comment on signing the method.

4.8.4 Information - Sample

Tab: **Database ▸ Information ▸ Sample**

Display of general information about the sample used.

Sample data

Information about the sample. The only sample data shown is that for which a value is available.

Ident:

Identification of the sample.

Sample type:

Sample type of the sample.

Position:

Position of the sample.

Injection counter:

Specification of the injection counter **n/m** (**n** = Injection number of a multiple determination; **m** = Nominal number of injections of a multiple determination).

Volume:

Volume of the sample µL.

Dilution:

Dilution factor for the sample.

Sample amount:

Amount of the sample.

Identifications

Information about the sample identifications. These will only be shown when a value is present.

Info1…Info4:

Display of the text information entered as identification for the sample.

Value1 … Value4:

Display of the numerical values entered as identification for the sample.

Live modification

Information on the last live modification of sample data.

Modification reason sample data:

Reason for the sample data modification.

Modification comment sample data:

User comment for the modification of the sample data.

4.8.5 Information - Devices

Tab: Database ▸ Information ▸ Devices

Display of general information about the devices and common variables used.

Device 'Device name'

Information about the device used (only the existing device information will be shown). If a device has modules, then the respective module designation and module name will be displayed in boldface.

Device type:

Type of device.

Program version:

Device program version.

Device serial number:

Serial number of the device.

Leak sensor:

Status of the leak sensor.

High pressure pump:

Name of the high pressure pump.

Material:

Material of the pump head.

Serial number:

Serial number of the pump head.

Maximum pressure:

Maximum pressure of the pump head.

Correction factor:

Correction factor of the pump head.

Eluent name:

Name of the eluent.

Order number:

Order number for the eluent.

Manufacturer:

Manufacturer of the eluent.

Batch number:

Batch number of the eluent.

Composition:

Composition of the eluent.

Set to work:

Date at which the eluent was used for the first time.

Expiry date:

Expiry date of the eluent.

Detector:

Name of the detector.

Detector type:

Type of detector

Connector:

Designation of the detector connector at the device.

Serial number:

Serial number of the detector.

Cell constant:

Cell constant of the detector.

Thermostat:

Thermostat setting of the detector.

Peristaltic pump:

Name of the peristaltic pump.

Solution name:

Name of the solution conveyed with the pump.

Concentration:

Concentration of the solution.

Production date:

Date of production for the solution.

Expiry date:

Expiry date of the solution.

Injector:

Name of the injection valve.

MSM:

Name of the suppressor.

Degasser:

Name of the degasser.

Column thermostat:

Name of the column thermostat.

MCS:

Name of the CO_2 suppressor.

10-port valve:

Name of the 10-port valve.

Analog Out:

Name of the 891 Professional Analog Out

Device type

Device type of the 891 Professional Analog Out

Device serial number

Device serial number of the 891 Professional Analog Out

Rack name:

Name of the rack on the sample changer.

Number of positions:

Number of sample positions on the rack.

Work position:

Work position of the rack.

Rinse position:

Rinse position of the rack.

Shift position:

Shift position of the rack.

Special position:

Special position of the rack.

Ext. Pump #:

Name of the external pump.

Solution name:

Name of the solution conveyed with the pump.

Production date:

Date of production for the solution.

Expiry date:

Expiry date of the solution.

Device type:

Dosing device type.

Serial number:

Serial number of the Dosino.

Connector:

Dosing connector at device.

Solution name:

Name of the solution.

Concentration:

Concentration value and unit of the solution.

Production date:

Date at which the solution was produced.

Expiry date:

Expiry date of the solution.

Exchange/Dosing unit:

Type of the exchange unit or dosing unit.

Name:

Designation of the exchange or dosing unit.

Order number:

Order number of exchange or dosing unit.

Serial number:

Serial number of exchange or dosing unit.

Cylinder volume:

Cylinder volume of the exchange or dosing unit.

Cylinder serial number:

Serial number of the cylinder.

Device type:

Type of stirrer.

Serial number:

Serial number of the stirrer.

Connector:

Stirrer connector at device.

Remote Box:

Connector at device.

Number of eluents:

Number of eluents for the high pressure gradient pump.

Analysis 'Analysis name'

Information concerning the hardware assigned to an analysis.

Data source:

Alias name of the detector.

Channel:

Data channel.

Injection valve:

Alias name of the injection valve.

Column:

Alias name of the column.

Pump:

Alias name of the pump.

Accessories:

Name of the accessories.

Manufacturer:

Manufacturer of the accessories.

Order number:

Order number of accessories.

Set to work:

Date at which the accessories was used for the first time.

Expiry date:

Expiry date of the accessories.

Column 'Column name'

Information about the separation column used.

Column type:

Type of column.

Order number:

Order number of the column.

Serial number:

Serial number of the column.

Batch number:

Batch number of the column.

Set to work:

Date at which the column was used for the first time.

Length:

Length of the column in mm.

Inner diameter:

Inner diameter of the column in mm.

Particle size:

Particle size of the column in µm.

Determinations:

Number of determinations of the column at the end of the determination.

Operating hours:

Number of operating hours of the column at the end of the determination.

Precolumn type:

Type of precolumn used.

Order number precolumn:

Order number for the precolumn.

Serial number precolumn:

Serial number of the precolumn.

Batch number precolumn:

Batch number of the precolumn

Set to work precolumn:

Date at which the guard column was used for the first time.

Length:

Length of the guard column in mm.

Inner diameter precolumn:

Inner diameter of the guard column in mm.

Determinations precolumn:

Number of guard column determinations at the end of the determination.

Operating hours precolumn:

Number of guard column operating hours at the end of the determination.

Common variable 'Name'

Information about the common variable used.

Value:

Value and unit of the common variables at the start of the determination.

Assignment date:

Date and time of last value assignment.

Assignment method:

Method with which the value was assigned.

4.8.6 Information - Analyses

Tab: Database ▸ Information ▸ Analyses

Display of the most important chromatographic information concerning the analyses.

'Analysis name'

Information concerning an analysis.

Data source:

Type of detector with which the analysis was recorded.

Channel:

Data channel.

Recording time:

Recording time of the analysis in min.

Integration:

Information as to how the integration was accomplished.

Column type:

Type of column.

Eluent composition:

Composition of the eluent

Flow:

Flow at the pump that is assigned to the analysis at **Start data recording** (in mL/min).

Pressure:

Pressure at the pump that is assigned to the analysis at **Start data recording**.

Temperature:

Temperature at the pump that is assigned to the analysis at **Start data recording**.

4.8.7 Information - Messages

Tab: **Database** ▸ **Information** ▸ **Messages**

Display of messages generated during the determination run.

'Time'

Display of the time at which the message was generated in the run (date, time, UTC in the format **YYYY-MM-DD hh:mm:ss UTC.....**).

Message title:

Display of message title and number.

Message text:

Display of the message.

4.8.8 Information - Determination comment

Tab: **Database** ▸ **Information** ▸ **Determination comment**

Display of the comment on the determination.

Determination comment:

Display of the comment entered for the determination.

4.9 Subwindow Results

4.9.1 Results - Overview

Subwindow: **Database ▸ Results**

General

In the subwindow **Results**, the results calculated according to the method are shown for the determination focused in the Determination table. The subwindow can be switched on in the program part **Database** during the definition of the layout and thus made visible. It can be enlarged and reduced as required; it can also be maximized.

Tabs

The results of the determination are shown on the following tabs:

- *Results*
  Display of the automatically generated and user-defined results for determination.
- *Statistics*
  Display of the statistics data concerning the statistically evaluated results of multiple determinations.
- *Monitoring*
  Display of monitored results for determination.

4.9.2 Results - Results

Tab: **Database ▸ Results ▸ Results**

Display of the automatically generated and user-defined results for determination.

'Analysis name'

Each analysis defined in the method has its own peak table on display in which both the automatically calculated and the user-defined component results are listed. The user can define which columns are displayed *(see Chapter 4.9.5, page 348)*. Components to which no peak is assigned are **not** listed in the Results table.

Single results

The user-defined single results are displayed here. Each single result consists of **Result name**, **Result value** and **Result unit.**

Result definitions

The definitions of all user-defined results (single and component results) are displayed here. The result name, formula and the variables used in the formula, together with the name and value of the variable, are displayed for each user-defined result.

4.9.3 Results - Statistics

Tab: **Database** ▸ **Results** ▸ **Statistics**

> **Note**
>
> This tab is displayed only when a statistic for results has been defined in the method and the determination concerns a multiple injection.

'Analysis name' - 'Result name'

The component result and the associated statistical results defined in the method are displayed for each component for every statistically evaluated result of an analysis.

Single results

The single result and the associated statistical results defined in the method are displayed for every statistically evaluated user-defined single result.

4.9.4 Results - Monitoring

Tab: **Database** ▸ **Results** ▸ **Monitoring**

> **Note**
>
> This tab is displayed only when results monitoring has been defined in the method.

'Analysis name' - 'Result name'

For every analysis that contains the monitored component results, the component result and the associated limit values are displayed for each component. If the result falls within the limit values, then it will be displayed in **green**; in **red** if it lies outside them. In such cases, the **message** and the **action** defined for this monitoring will also be displayed.

Single results

The single result and the associated limit values are displayed for every monitored single result. If the result falls within the limit values, then it will be displayed in **green**; in **red** if it lies outside them. In such cases, the **message** and the **action** defined for this monitoring will also be displayed.

4.9.5 Results - Properties

Dialog window: **Database ▸ View ▸ Properties ▸ Properties Results ▸ Properties result window**

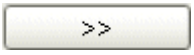
The dialog window Properties Results, in which the elements can be selected that are to be displayed in the peak table of the result window, is opened with the menu item **View ▸ Properties ▸ Properties Result window**.

Available columns

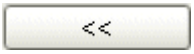
Displays all the columns that can be shown in the peak table.

Displayed columns

Displays all the columns that will be shown in the peak table. In the default settings, the columns **Component name**, **Retention time**, **Height**, **Surface area** and **Concentration** are displayed.



Adds the selected column to the table.



Removes the selected column from the table.

Modifies the sequence of displayed columns by moving the selected column up.

Modifies the sequence of displayed columns by moving the selected column down.

Show unidentified peaks

on | off (Default value: **off**)

If this option is enabled, then even the unidentified peaks in the peak table will be displayed.

4.10 Curves subwindow

4.10.1 Curves - Overview

Subwindow: **Database ▸ Curves #**

General

The chromatograms and calibration curves for the the determination focused in the Determination table are displayed in the subwindows **Curves 1...5**. When navigating in the determination overview, these curves will be updated automatically (with a certain delay).

The subwindows **Curves 1...5** can be switched on in the program part **Database** during the definition of the layout and thus made visible. They can be enlarged and reduced as required; they can also be maximized.

Tabs

A tab is displayed for every analysis that is defined in a method; these tabs are lettered with the name of the analysis and they show the associated chromatograms and calibration curves.

Graphics window

The interface, functions and properties of the subwindow **Curves #** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Calibration curve view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Choose color*

5 Method

5.1 Method - General

5.1.1 Method - Definition

Program part: **Method**

Definition

In **MagIC Net** a **method** is an instruction for processing a sample, which can be created in the program part **Method** and be started in the program part **Workplace**.

Structure

The main window of the program part **Method** is divided into four subwindows:

- *Devices*
- *Time program*
- *Evaluation*
- *Chromatograms*

Management

Methods are organized in **Method groups** and are always automatically assigned a new version i.e. each time a method is stored a new **version** is created. Methods can also be **signed at two levels** and be locked against further modifications. Methods are stored in the **configuration database** and globally accessible for all clients.

5.1.2 Method - Desktop

Program part: **Method**

Method symbol

Clicking on the method symbol in the vertical bar on the left opens the program part **Method** while, at the same time the method symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of methods currently opened *(see Chapter 5.2.3, page 356)*.

Elements

The desktop of the program part **Method** comprises the following elements:

- Method-specific menu bar.
- Method-specific toolbar.
- Main window in which up to four subwindows can be displayed at the same time.

5.1.3 Method - Menu bar

5.1.3.1 Method - Main menus

Program part: **Method**

The menu bar in the program part **Method** contains the following main items:

- *File*
  Create, open, save, close, check, manage, print methods; logout.
- *Edit*
  Define method properties, recalculate calibration data, update calibration data and chromatograms.
- *View*
  Switch the toolbar on and off.
- *Help*
  Open MagIC Net help, display information on the program.

5.1.3.2 Method - Menu File

Program part: **Method**

New...	Create a new method *(see Chapter 5.2.1, page 354)*.
Open...	Open an existing method *(see Chapter 5.2.2, page 354)*.
Save	Save the selected method *(see Chapter 5.2.8, page 359)*.
Save as...	Save the selected method under a new name *(see Chapter 5.2.8, page 359)*.
Close all	Close all opened methods *(see Chapter 5.2.11, page 362)*.
Close	Close the selected method *(see Chapter 5.2.11, page 362)*.
Method check	Check the selected method for plausibility *(see Chapter 5.2.5, page 357)*.
Method manager...	Open the method manager *(see Chapter 5.4.1, page 367)*.

Method groups...	Open the method groups manager *(see Chapter 5.5.1, page 378)*.
Print (PDF)	PDF file output of the method report *(see Chapter 5.2.10, page 361)*.
Logout...	Log out the user. The dialog window **Login** opens *(see Chapter 2.2.3, page 24)*.
Exit	Exit the program.
1 'Method name'	Open the selected method.

5.1.3.3 Method - Menu Edit

Program part: **Method**

Properties...	Open the dialog window **Properties - Method** *(see Chapter 5.3, page 363)*.
Calculate	Recalculate the calibration data *(see Chapter 5.2.6, page 358)*.
Update	Update the calibration data and chromatograms *(see Chapter 5.2.7, page 358)*.

5.1.3.4 Method - Menu View

Program part: **Method**

Toolbar	Switch the toolbar display on/off.

5.1.3.5 Menu Help

Program parts: **Workplace / Database / Method / Configuration**

MagIC Net&Help	Open MagIC Net Help.
&About	Display information about the program and the installation.

5.1.4 Method - Toolbar

Program part: **Method**

New...	Create a new method *(see Chapter 5.2.1, page 354)*.
Open...	Open an existing method *(see Chapter 5.2.2, page 354)*.
Save	Save the selected method *(see Chapter 5.2.8, page 359)*.
Close	Close the selected method *(see Chapter 5.2.11, page 362)*.

Method manager...	Open the method manager *(see Chapter 5.4.1, page 367)*.
Method groups...	Open the method groups manager *(see Chapter 5.5.1, page 378)*.
Print (PDF)	PDF file output of the method report *(see Chapter 5.2.10, page 361)*.
Properties...	Open the properties window of the command selected in the method *(see Chapter 5.3, page 363)*.
Method check	Check the selected method for plausibility *(see Chapter 5.2.5, page 357)*.
Calculate	Recalculate the calibration data *(see Chapter 5.2.6, page 358)*.
Update	Update the calibration data and chromatograms *(see Chapter 5.2.7, page 358)*.
Logout...	Logout user *(see Chapter 2.2.3, page 24)*.
MagIC Net Help	Open MagIC Net Help.

5.1.5 Method - Functions

Program part: **Method**

In the program part **Method**, the following functions can be carried out:

Method editor

- *Creating new method*
- *Opening a method*
- *Selecting method*
- *Editing method*
- *Checking a method*
- *Print method report*
- *Saving a method*
- *Closing a method*

Managing methods

- *Managing methods*
- *Renaming a method*
- *Copying a method*
- *Moving a method*
- *Deleting a method*
- *Exporting a method*
- *Importing a method*
- *Signing methods*
- *Showing the method history*

Managing method groups

- *Managing methods*
- *Edit method groups*

5.2 Method editor

5.2.1 Creating new method

Menu item: **Method ▸ File ▸ New...**

With the symbol or with the menu item **File ▸ New...** the window **New method** is opened in which a method template can be selected for the new method.

Templates

Selection of the template with which the new report is to be generated.

Selection	**Method templates** | **Empty method**
Default value	**Empty method**

Method templates
Selection of a method template as a basis for creating a new method.

Empty method
An empty template is loaded (the four subwindows of the program part method).

Description

Description of the selected method template.

[OK]

Edit the selected template.

5.2.2 Opening a method

Menu item: **Method ▸ File ▸ Open...**

With the symbol or the menu item **File ▸ Open** the window **Open method** is opened. One of the globally available methods can be selected and opened.

Method group

Method group

Selection of the method group whose methods will be displayed in the method table *(see Chapter 5.5.1, page 378)*.

Selection	**Method groups** | **Main group**
Default value	**Main group**

Method table

The method table contains information about all methods of the selected method group. The table cannot be edited. With a click on the column title (columns **Name**, **Saved**, **User**, **Full name**, **Version**, **Signed**, **Method comment**) the table can be sorted according to the selected column in increasing or decreasing order.

Name

Name of the method.

Saved

Date and time when the method was saved.

User

Short name of the user who saved the method.

Full name

Full name of the user who has saved the method.

Version

Version number of the method.

Signed

Display if and at which level the method has been signed.

Selection	**no** | **Level 1** | **Level 2**

no
The method has not been signed. It can be opened for editing and also deleted.

Level 1
The method has been signed electronically at level 1. It can be opened for editing and also deleted. If the method is modified and saved again, a new version is created and all the signatures will be deleted.

Level 2
The method has been signed electronically at level 2. The method is locked now and it can neither be opened for editing nor deleted.

Method comment

Comment on the method defined in method properties *(see Chapter 5.3.3, page 364)*.

Opening a method

Method name

Name of the method to be opened. If a method is selected from the table, the method name will be entered automatically in this field. It can however also be entered manually.

Entry	**50 characters**

[Open]

Open the selected method in the main window in the place of the method that is already opened. The method name is displayed in the title bar of the program; the number of currently opened methods is displayed in the left upper corner of the method symbol.

Note

A maximum of 9 methods can be opened but only one can be displayed.

5.2.3 Selecting method

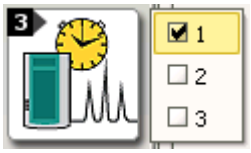
Program part: **Method**

The number of the currently opened methods is displayed in the left upper corner of the method symbol. The method to be displayed in the main window can be selected with the help of the method symbol.

No method is opened. No method is displayed in the main window.

One method is opened and is displayed in the main window.

Two methods are opened. Only one method is displayed in the main window.



A menu with the currently opened methods is displayed by clicking with either the left or right mouse button on the method symbol. The visible method is marked with a checkmark. Clicking on the desired method displays it in the place of the previously selected one.

5.2.4 Editing method

Subwindow: **Method ▸ Devices / Time program / Evaluation**

Methods can only be edited if they are not signed at **Level 2**.

The method is edited directly via **[Edit]** in the subwindows **Devices**, **Time program** or **Evaluation**. General settings are edited under the menu item **Edit ▸ Properties...**.

5.2.5 Checking a method

Menu item: **Method ▸ File ▸ Method check**

With the symbol or menu item **File ▸ Method check** a method check for the method in focus is triggered. The following points are checked:

- **Variables**
  Are the variables defined in calculation formulas available?
- **Common variables**
  Are the common variables in the method also available in the configuration and are they valid?
- **E-mail templates**
  Are the e-Mail templates used in the method also available in the configuration?
- **Database**
  Is a database named in the method?
- **Time program**
  Are all the devices, modules and analyses in the device group available and are all the modules used active?
  Are the requested sub-programs available and are all the times correct?
- **Data source**
  Has a data source been assigned to an analysis?
- **Instruments**
  Are all devices and device modules used available and active?

A message is displayed for each error found. The method check has to be started again afterwards. When the method check has been completed successfully, it is confirmed with a message.

5.2.6 Recalculating calibration data

Menu item: **Method** ▸ **Edit** ▸ **Calculate**

The menu item **Edit** ▸ **Calculate** or the symbol on the toolbar triggers the following actions:

Note

The calibration is recalculated with the **currently loaded determinations** of the calibration data set (Standard chromatograms, blank) and the **latest method settings**.

Later determinations are not reloaded from the database.

- All standard chromatograms are reevaluated with the current settings of the method and the calibration points are redefined.
- All calibration curves are recalculated.
- If there is a sample chromatogram in the method view, it is also re-integrated and evaluated with new calibration curves.
- The representation in the graphics window (settings, zoom) remains the same.

5.2.7 Updating calibration data and chromatograms

Menu item: **Method** ▸ **Edit** ▸ **Update**

The menu item **Edit** ▸ **Update** or the symbol on the toolbar triggers the following actions:

Note

The calibration is recalculated with the **current determinations** of the calibration data set (Standard chromatograms, blank) and the **latest method settings**.

The latest determinations for the method are reloaded from the database.

- The temporary calibration data set of the method is updated, i.e. determinations of standards and blanks that may have been added are loaded into the method and displayed. Outdated standards and blanks are removed.
- All standard chromatograms are reevaluated with the current settings of the method and the calibration points are redefined.
- All calibration curves are recalculated.

- If there is a sample chromatogram in the method view, it is also re-integrated and evaluated with new calibration curves.
- The display in the graphics window (settings, zoom) is reloaded. Changes that were not saved are discarded.

5.2.8 Saving a method

Menu item: **Method ▸ File ▸ Save / Save as...**

With the symbol or the menu item **File ▸ Save** an existing focused method is saved again under its name without the window **Save method** being opened.

When saving a **newly** created method with **File ▸ Save** or when saving an existing method with **File ▸ Save as...** the dialog window **Save method** is opened, in which the method group can be selected and a method name can be entered or selected.

Method group

Method group

Selection of the method group where the method is to be stored *(see Chapter 5.5.1, page 378)*.

Selection	**Method groups** | **Main group**
Default value	**Main group**

Method table

The method table contains information about all methods of the selected method group. The table cannot be edited. With a click on the column title (columns **Name**, **Saved**, **User**, **Full name**, **Version**, **Signed**, **Method comment**) the table can be sorted according to the selected column in increasing or decreasing order.

Name

Name of the method.

Saved

Date and time when the method was saved.

User

Short name of the user who saved the method.

Full name

Full name of the user who has saved the method.

Version

Version number of the method.

Signed

Display if and at which level the method has been signed.

Selection	**no** | **Level 1** | **Level 2**

no
The method has not been signed. It can be opened for editing and also deleted.

Level 1
The method has been signed electronically at level 1. It can be opened for editing and also deleted. If the method is modified and saved again, a new version is created and all the signatures will be deleted.

Level 2
The method has been signed electronically at level 2. The method is locked now and it can neither be opened for editing nor deleted.

Method comment

Comment on the method defined in method properties *(see Chapter 5.3.3, page 364)*.

Saving a method

Method name

Name under which the Method is to be saved.

Entry	**50 characters**

Note

The method name must be unique in the entire Client/Server system.

[Save]

Save the selected method under the desired method name in the selected method group.

The **method check** is automatically carried out before saving the method - it can also be started manually at any time *(see Chapter 5.2.5, page 357)*. The method is checked as thoroughly as possible. Checks for devices, columns and eluents are carried out not until the start of the method in order to ensure that methods for devices can be created which are not yet configured in the system. If an error is detected during the method check, a message is displayed asking whether the method should be saved nevertheless. Faulty methods cannot be started.

A new method version with a new identification is created after each storage of a modified method *(see Chapter 5.4.11, page 377)*. If the option

Comment on modification of methods is activated under **Security settings ▸ Audit Trail ▸ Changes** in the program part **Configuration**, *(see Chapter 6.2.2.4, page 509)*then the window **Modification comment method** *(see Chapter 5.2.9, page 361)* is displayed before the method is saved.

5.2.9 Modification comment on method

Menu item: **Method ▸ File ▸ Save / Save as…**

If the option **Comment on modification of methods** is activated in the **Security settings ▸ Audit Trail ▸ Modifications** in the program part **Configuration** *(see Chapter 6.2.2.4, page 509)* when saving a modified method or when deleting methods, the dialog window **Modification comment method** is opened, in which a reason and a comment on the modification must be entered.

Reason

Selection from the **Default reasons** defined for the category **Modification of methods** in the **Security settings** dialog window *(see Chapter 6.2.2.6, page 511)*.

Selection	**Selection from the default reasons**

Comment

Entry of a comment for modifying the method.

Entry	**1000 characters**

5.2.10 Print method report

Menu item: **Method ▸ File ▸ Print (PDF)…**

With menu item **File ▸ Print (PDF)…** or the symbol PDF the window **Print method reports (PDF)** is opened in which the desired report for the selected method can be selected and output as PDF file.

Report selection

Selectionof the part reports to be output for the method report.

Hardware

on | off (Default value: **on**)

Output of device group with all the start parameters of the devices used and the settings and links of the analysis. This part report covers the fixed report **Start parameter** *(see Chapter 4.4.4.3.7, page 241)*.

Time program

on | off (Default value: **on**)

Output of the complete time program together with all sub programs. This part report covers the fixed report **Time program** *(see Chapter 4.4.4.3.7, page 241)*.

Evaluation parameters

on | off (Default value: **on**)

All evaluation parameters are output including the components and standard table. This part report covers the fixed reports **Integration**, **Components**, **Standards**, **Calibration parameters** and **Result definition** *(see Chapter 4.4.4.3.7, page 241)*.

Properties

on | off (Default value: **on**)

All settings of the menu item **Settings** are output. This part report covers the fixed report **Method properties** *(see Chapter 4.4.4.3.7, page 241)*.

5.2.11 Closing a method

Menu item: **Method ▸ File ▸ Close / Close all**

Closing a single method

With the symbol or the menu item **File ▸ Close**, the selected method is closed. If the method has been modified, there will be a request to save the method as a new version.

Closing all methods

All the opened methods are closed with the menu item **File ▸ Close all**. A request to save the method as a new version will appear for each method having been modified.

5.3 Method - Properties

Dialog window: **Method** ▸ **Edit** ▸ **Properties...** ▸ **Properties - Method**

5.3.1 Properties - Sample data

Tab: **Method** ▸ **Edit** ▸ **Properties...** ▸ **Properties - Method** ▸ **Sample data**

On this tab, the sample data used and monitored in the method and their fixed values are displayed. The table contains the following columns:

Name

Designation of the sample data variable (cannot be changed).

Type

Type of sample data variable (cannot be changed).

Fixed value

Fixed value for the sample data variable.

Used

Shows whether the sample data variable is used in the method or not.

Monitoring

Shows whether the sample data variable is monitored in the method or not.

[Edit]

Opens dialog window **Configure sample data input** to edit the sample data selected in the table *(see Chapter 5.3.5, page 364)*.

5.3.2 Properties - View

Tab: **Method** ▸ **Edit** ▸ **Properties...** ▸ **Properties - Method** ▸ **View**

You can configure the views of the method in this tab.

Workplace

Selects the workplace view that is to open automatically when the method is started.

Selection	**Current view** | **View**
Default value	**Current view**

Current view
If this option is enabled, the current view of the workplace remains opened.

View
Selection list with the saved workplace views.

Curve display

Live window 1

Selection of the analysis whose chromatogram is to be displayed in the subwindow **Live display 1** *(see Chapter 3.8, page 184)*.

Selection	**'Analysis name'**

Live window 2

Selection of the analysis whose chromatogram to be displayed in the subwindow **Live display 2** *(see Chapter 3.8, page 184)*.

Selection	**'Analysis name'**

5.3.3 Properties - Method comment

Tab: **Method** ▸ **Edit** ▸ **Properties...** ▸ **Properties - Method** ▸ **Method comment**

Method comment

Comment on the method displayed in the method table.

Entry	**1000 characters**

5.3.4 Properties - Application note

Tab: **Method** ▸ **Edit** ▸ **Properties...** ▸ **Properties - Method** ▸ **Application note**

An application note can be entered on this tab,

Application note

Application note for the method displayed in the **Workplace** program part in the subwindow **Live display** on its own tab *(see Chapter 3.8, page 184)*. This tab opens automatically when the method is loaded.

With or by double-clicking into the text field, start the text editor to enter or change the application note.

Selection	**Text (unlimited)**

5.3.5 Configuring sample data

Dialog window: **Method** ▸ **Edit** ▸ **Properties** ▸ **Sample data** ▸ **[Edit]** ▸ **Configure sample data input**

Used

on | off (Default value: **off**)

If this option is enabled, the sample data variable is used in the method.

Note

The sample data variables **Ident**, **sample type**, **position**, **injections**, **volume**, **dilution** and **sample volume** are always used in a method, i.e. their use cannot be disabled.

Fixed value

on | off (Default value: **off**)

If this option is enabled, a fixed value can be defined for the sample data variable. This value is displayed and used in the run for the sample data variable and can no longer be edited there.

The input of the fixed value (text, number, input range) depends on the sample data variable selected *(see Chapter 3.7.4.4, page 149)*. If text templates are defined for the sample data variables **Ident** and **Info 1...4** *(see Chapter 3.6.1, page 144)*, they can be selected in the input field.

Type

Displays the data type (**Number** or **Text**). The field cannot be edited.

Comment

Optional comment on sample data variable.

Monitoring

Note

For the sample data variable **Position** no monitoring is possible.

on | off (Default value: **off**)

If this option is enabled then sample data variable will be monitored at the start test. The monitoring cannot be activated for sample data variables of the type **Text**.

Lower limit

Lower limit for the variable.

The input of the limit value depends on the sample data variable selected *(see Chapter 3.7.4.4, page 149)*.

Upper limit

Upper limit for the variable.

The input of the limit value depends on the sample data variable selected *(see Chapter 3.7.4.4, page 149)*.

Message

The message options can only be edited if monitoring is switched on.

The Text editor for entering or changing the message is opened with or by double-clicking into the text field.

Selection	**Text (unlimited)**

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send E-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If at the start test it is found that the limit values have been exceeded, then one of the following actions will be triggered automatically:

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Display message**

Record message
The message that the limit value has been exceeded will be saved automatically in the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued, then the message that the limit value has been exceeded will be saved automatically in the determination.

Stop determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

5.4 Managing methods

5.4.1 Managing methods

Dialog window **Method** ▸ **File** ▸ **Method manager…** ▸ **Method manager**

With the symbol or with **File** ▸ **Method manager…** the dialog window **Method manager** is opened where a user with the corresponding access right is allowed to manage the methods.

Method group

Method group

Selection of the method group for which the methods should be displayed in the table.

Selection	**Method groups** | **Main group**
Default value	**Main group**

[Method groups]

Opens the dialog window **Method groups** for managing the method groups *(see Chapter 5.5.1, page 378)*.

Method table

The method table contains information about all methods of the selected method group. The table cannot be edited. With a click on the column title (columns **Name**, **Saved**, **User**, **Full name**, **Version**, **Signed**, **Method comment**) the table can be sorted according to the selected column in increasing or decreasing order.

Name

Name of the method.

Saved

Date and time when the method was saved.

User

Short name of the user who saved the method.

Full name

Full name of the user who has saved the method.

Version

Version number of the method.

Signed

Display indicating whether and at which level the method has been signed.

Selection	**no** | **Level 1** | **Level 2**

no
The method has not been signed. It can be opened for editing and can be deleted.

Level 1
The method has been signed electronically at level 1. It can be opened for editing and can be deleted. If the method is modified and saved again, a new version is created and all the signatures will be deleted.

Level 2
The method has been signed electronically at level 2. The method is locked now and it can neither be opened for editing nor deleted.

Method comment

Comment on the method defined in method properties *(see Chapter 5.3.3, page 364)*.

Window menus

The menu **[Edit]** below the method table contains the following menu items:

Rename…	Rename the selected method *(see Chapter 5.4.2, page 369)*.
Copy	Copy the selected method(s) in the same method group *(see Chapter 5.4.3, page 369)*.
Move…	Move the selected method(s) to a different method group *(see Chapter 5.4.4, page 369)*.
Delete…	Delete the selected method(s) *(see Chapter 5.4.5, page 370)*.
Send to…	Export the selected method(s) and attach it (them) to an e-mail *(see Chapter 5.4.6, page 370)*.
Export…	Export the selected method(s) *(see Chapter 5.4.7, page 371)*.
Import…	Import the selected method(s) *(see Chapter 5.4.8, page 371)*.

The **[Sign]** menu below the method table contains the following menu items:

Signature 1…	Sign the selected method on level 1 *(see Chapter 2.3.3, page 27)*.

Signature 2...	Sign the selected method on level 2 *(see Chapter 2.3.4, page 28)*.
Show signatures...	Show all signatures of the selected method *(see Chapter 5.4.10.4, page 375)*.
Delete signatures 2...	Delete all signatures at level 2 of the selected method *(see Chapter 2.3.5, page 30)*.

[History]

Open the **Method history** dialog window of the selected method *(see Chapter 5.4.11, page 377)*.

[Close]

Close the dialog window and save the entries.

5.4.2 Renaming a method

Dialog window: **Method ▸ File ▸ Manage method... ▸ Method manager ▸ [Edit] ▸ Rename... ▸ Rename method**

The **Rename method** dialog window for renaming the selected method is opened with the menu item **[Edit] ▸ Rename...**.

Rename method 'Method name' to

Entry of the new method name.

Entry	**50 characters**

Note

The method name must be unique in the entire Client/Server system. Locked methods cannot be renamed. Renaming the method is not regarded as modification i.e. the method version does not change.

5.4.3 Copying a method

Menu item: **Method ▸ File ▸ Manage method... ▸ Method manager ▸ [Edit] ▸ Copy**

With the menu item **[Edit] ▸ Copy**, the selected methods are saved in the same method group under the name **Copy of 'Method name'**.

5.4.4 Moving a method

Dialog window: **Method ▸ File ▸ Manage method... ▸ Method manager ▸ [Edit] ▸ Move... ▸ Move method(s)**

With the menu item **Edit ▸ Move...**, the selected methods are moved to the desired method group. The method group can be selected in the window **Move method(s)**.

Method group

Selection of the method group to which the selected methods should be moved.

Selection	**Method groups**

Note

Locked methods (methods signed at **Level 2**) cannot be moved.

5.4.5 Deleting a method

Menu item: **Method ▸ File ▸ Method manager… ▸ Method manager ▸ [Edit] ▸ Delete**

With the menu item **[Edit] ▸ Delete**, the selected methods and all method versions are deleted.

If the option **Comment on modification of methods** is activated in the **Security settings** *(see Chapter 6.2.2.4, page 509)*, then the dialog window **Modification comment method** *(see Chapter 5.2.9, page 361)* is displayed when methods are deleted.

Note

Locked methods (methods signed at **Level 2**) cannot be deleted.

5.4.6 Sending a method to

Menu item: **Method ▸ File ▸ Method manager… ▸ Method manager ▸ [Edit] ▸ Send to…**

With the menu item **Edit ▸ Send to…**, the selected methods are each exported as a file named **'Method name'imet**.

Afterwards, the Windows Standard E-mail Client will open with an empty message. The export files of the highlighted objects will automatically be added as an attachment. The user can complete the e-mail himself/herself and send it on. The exported methods are stored only temporarily on the computer and will be deleted automatically after the e-mail has been sent.

Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is tampered with, then it cannot be imported again.

5.4.7 Exporting a method

Menu item: **Method ▸ File ▸ Method manager… ▸ Method manager ▸ [Edit] ▸ Export…**

With the menu item **Edit ▸ Export…**, the selected methods can each be exported as a file named **'Method name'.imet** The window **Select directory for export** opens in which the directory for export must be selected.

Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is tampered with, then it cannot be imported again.

5.4.8 Importing a method

Menu item: **Method ▸ File ▸ Method manager… ▸ Method manager ▸ [Edit] ▸ Import…**

With the menu item **Edit ▸ Import…** the dialog window **Select files for import** opens. Here you must select the methods to be imported and the method group into which the methods are to be imported. These methods are imported into the opened method table.

5.4.9 Renaming an imported method

Menu item: **Method ▸ File ▸ Method manager… ▸ Method manager ▸ [Edit] ▸ Import…**

Methods with the same name as methods already imported can only be imported under a new name. The window **Import method** opens for renaming the method.

Rename imported method 'Method name' to

Entry of the new method name.

Entry	**50 characters**

Note

The method name must be unique in the entire Client/Server system. Locked methods cannot be renamed. Renaming the method is not regarded as modification i.e. the method version does not change.

5.4.10 Signing methods

5.4.10.1 Rules for electronic signatures

Program parts: **Method / Database**

In MagIC Net, methods and determination can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**
  Methods and determinations can be signed at two levels (Signature Level 1 and Signature Level 2) by entering the user name and password.
- **Multiple signing**
  Methods and determinations can be signed several times at each level. All signatures are saved and documented in the Audit Trail.
- **Signing at Level 1**
  If Level 2 has been signed then no more signatures are possible at Level 1.
- **Signing at Level 2**
  Level 2 can only be signed if signatures already exist at Level 1.
- **Different users**
  The same user may only sign on either Level 1 or Level 2.
- **Reason and comment**
  Each signature must be accompanied by a reason selected from predefined default reasons. Additionally, a further comment can be entered.
- **Saved data**
  For each signature, signature date, user name, full name, reason and comments are saved.
- **Deleting signatures 1**
  Signatures at Level 1 are automatically deleted again when creating a new version.
- **Deleting signatures 2**
  Signatures at Level 2 can only be deleted by users who have the appropriate rights.
- **Signing methods**
  Methods can only be signed individually.
- **Signature options**
  The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

5.4.10.2 Signature Level 1

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ Signature &1... ▸ Signature Level 1**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Signature &1... ▸ Signature Level 1**

In the window **Signature Level 1**, methods or determinations can be signed at level 1.

Note

Methods or determinations which have been signed at level 1 can be modified and deleted. If the modified method or determination is saved as a new version then all existing signatures will be deleted automatically, i.e. the method or determination must be signed again.

Info

Display of information for signing and deleting signatures. The following messages are possible:

Selection	**Signature possible** | **Signature 1 not possible (signature 2 exists)** | **Signature not possible (accessed by other client)**

Signature possible
The selected method or determination can be signed.

Signature 1 not possible (signature 2 exists)
The selected method or determination can no longer be signed at level 1 as it has already been signed at level 2.

Signature not possible (accessed by other client)
The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 1**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Sign]

Sign the method or determination. The window remains open.

> **Note**
>
> Methods or determinations can only be signed at level 1 if the user belongs to a user group with the corresponding authorization.

5.4.10.3 Signature Level 2

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ Signature &2... ▸ Signature Level 2**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Signature &2... ▸ Signature Level 2**

In the window **Signature Level 2**, methods or determinations can be signed at level 2.

> **Note**
>
> Methods or determinations signed at level 2 are **locked**, i.e. they can neither be modified nor deleted. In order to be able to edit such methods or determinations again, the signatures on level 2 must first be deleted.

Info

Information for signing and deleting signatures is displayed in this box. The following messages are possible:

Selection	**Signature possible | Signature 2 not possible (signature 1 missing) | Signature not possible (accessed by other client)**

Signature possible
The selected method or determination can be signed.

Signature 2 not possible (signature 1 missing)
The selected method or determination cannot be signed at level 2 as it has not yet been signed at level 1.

Signature not possible (accessed by other client)
The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 2**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Sign]

Sign the method or determination. The window remains open.

Note

Methods or determinations can only be signed at level 2 if the user belongs to a user group with the corresponding authorization.

5.4.10.4 Show method signatures

Dialog window: **Method ▸ File ▸ Method Manager... ▸ Method Manager ▸ [Sign] ▸ Show signatures...**

The dialog window **Signatures - Method 'Method name'** opens by means of the menu item **[Sign] ▸ Show signatures...** with a table in which the information for all of the signatures for the selected method is given.

Signature

Shows at which level the method has been signed (**Level 1** or **Level 2**).

Signature date

Date and time at which the method was signed.

User

Short name of the user who signed the method.

Full name

Full name of the user who signed the method.

Reason

Reason for signature.

Signature comment

Comment on the signature.

5.4.10.5 Delete signatures level 2

Dialog window: **Database ▸ &Determinations ▸ S&ign ▸ &Delete signatures 2... ▸ Delete Signatures Level 2**

Dialog window: **Method ▸ &File ▸ Method &manager... ▸ Method manager ▸ [Sign] ▸ Delete signatures 2... ▸ Delete Signatures Level 2**

In the window **Delete Signatures Level 2**, all signatures on level 2 for the selected method or determination can be deleted.

User

Entry of the user name (short name).

Entry	**24 characters**

Password

Password entry.

Entry	**24 characters**

Reason

Selection from the **Default reasons** defined in the dialog window **Security settings** for the category **Signature level 2**.

Selection	**'Selection from the default reasons'**

Comment

Entry of a comment on the signature.

Entry	**1000 characters**

[Delete]

Delete signatures 2.

Note

Signatures 2 can only be deleted if the user belongs to a user group with the corresponding authorization.

5.4.11 Showing the method history

Dialog window: **Method** ▸ **File** ▸ **Method manager…** ▸ **Method manager** ▸ **[History]** ▸ **Method history**

The dialog window **[Method history]** showing a table with all **versions** of the selected method is opened with the **History** button.

Name

Name of the method.

Version

Version number of the method.

Method ID

Unique method identification.

Saved

Date and time when the method was saved.

User

Short name of the user who saved the method.

Full name

Full name of the user who has saved the method.

Modification reason

Reason entered when saving the modified method.

Modification comment

Comment entered when saving the modified method.

[Show method]

Open the dialog window **Method 'Method name' - Version #** in which the method for the selected method version is displayed.

[Make current]

Make the selected method version to the current method version. This creates a new method whose version number is increased by **+1** compared with the last version to have been saved.

5.5 Method groups

5.5.1 Manage method groups

Dialog window: **Method** ▸ **File** ▸ **Method groups...** ▸ **Method groups**

With the symbol or with the menu item **File** ▸ **Method groups...** the dialog window **Method groups** is opened in which the user can manage the method groups provided he has the necessary access rights. The information on the existing method groups is shown in a table. The table cannot be edited and is not automatically updated. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing order.

Name

Name of the method group.

Number

Number of methods in the method group.

Saved

Date and time when the method group was saved

User

Short name of the user who has saved the method group.

Full name

Full name of the user who saved the method group.

Comment

Comment on the method group.

[New]

Opens the dialog window **Properties - Method group - 'New Group'** opens for defining a new method group *(see Chapter 5.5.2, page 379)*.

[Properties]

Opens the dialog window **Properties - Method group 'Name'**, in which the method group selected in the table can be edited *(see Chapter 5.5.2, page 379)*.

[Delete]

Deleting the selected method group.

5.5.2 Edit method groups

5.5.2.1 Method groups - Properties

Dialog window: **Method ▸ File ▸ Method groups... ▸ Method groups ▸ Properties - Method group 'Name'**

The properties window **[Properties - Method group 'Name']** for the selected method group is opened with the button **Properties** or by double-clicking on the line in the table.

The parameters for the method groups are configured on the following tabs:

- *General*
  General parameters
- *Access rights*
  Access rights for method groups and their methods.

5.5.2.2 Method groups - General

Tab: **Method ▸ File ▸ Method groups... ▸ Method groups ▸ [Properties] ▸ Properties - Method group 'Name' ▸ General**

Name

Name of the method group. The name has to be entered when creating a new method group.

Entry	**50 characters**

Number

Number of methods in the method group.

Comment

Freely definable remarks about the user group.

Entry	**1000 characters**

5.5.2.3 Method groups - Access rights

Tab: **Method ▸ File ▸ Method groups... ▸ Method groups ▸ [Properties] ▸ Properties - Method group 'Name' ▸ Access rights**

Access rights for method groups and their methods can be assigned per user group.

Note

The user group **Administrators** always has both access rights, i.e. they cannot be disabled.

User group

Names of the user groups

Execute

on | off (Default value: **on**)

Authorization to start methods from a method group. Methods in this group can only be opened and started but can not be edited or deleted.

Edit

on | off (Default value: **on**)

Authorization to edit methods from a method group. Methods in this group can be opened, started, edited and deleted. New methods can be added as well.

5.6 Subwindow Devices

5.6.1 Devices - General

Subwindow: **Method** ▸ **Devices**

Devices subwindow

The **Devices** subwindow shows the devices in the group. This is where devices and analyses are assigned to the method and their start parameters and/or properties are defined.

Desktop

The assigned devices and analyses are displayed in the upper part of the **Devices** subwindow.

The start parameters *(see Chapter 5.6.4, page 389)* for the devices and the properties *(see Chapter 5.6.6, page 391)* for the analyses can be defined in the bottom part of the subwindow **Devices**.

Note

Both parts of the window are synchronized with each other. If a device, module or analysis is selected in the upper part, the corresponding start parameters/properties are displayed in the lower part.

5.6.2 Devices - Edit menu

Subwindow: **Method** ▸ **Devices** ▸ **[Edit]**

Add ▸	
Device	Add a device to the method *(see Chapter 5.6.3.1, page 381)*.
Analysis	Add an analysis to the method *(see Chapter 5.6.5.1, page 390)*.
Gradient pump	Add a gradient pump to the method *(see Chapter 5.6.3.6, page 386)*.
Edit	Open the editing window of the element (device, analysis or gradient pump) selected in the upper part of the subwindow **Devices**: ▪ **Edit device** *(see Chapter 5.6.3.2, page 384)* ▪ **Edit analysis** *(see Chapter 5.6.5.2, page 390)* ▪ **Edit gradient pump** *(see Chapter 5.6.3.7, page 387)*
Remove	Remove the element (device, analysis or gradient pump) selected in the upper part of the **Devices** subwindow from the method.

5.6.3 Devices - Functions

5.6.3.1 Adding a device

Dialog window: **Method** ▸ **Devices** ▸ **[Edit]** ▸ **Add** ▸ **Device** ▸ **Add device**

Device selection

Selection of the device that is to be added.

Selection	**From device table** | **New device**
Default value	**From device table**

From device table
Add a known device from the device table to the list of devices of the method.

New device
Add a new device, which is not connected and not configured in the device table, to the device group for the method.

The rest of the dialog window modifies its appearance depending on the selection.

Adding a device from the device table

The option **From device table** must be selected in order for a known device to be able to be added to the method from the device table.

Name

Device that is to be added.

Selection	**All devices from the device table that have not yet been assigned to this method**

Device type

Displays the device type of the device selected under **Name**.

Note

- If a device to which an MSB device is connected is added, then you are asked if you also want to add the MSB device to the method. If this is confirmed with **[Yes]**, then the dialog window **Enter name for 'MSB device type' on MSB 'No.'** will appear *(see Chapter 5.6.3.3, page 385)*.
- If a device with an amperometric detector to which an intelligent measuring cell is connected is added, then the measuring cell is added to the method without a prompt appearing *(see Chapter 7.1.3.1.12.1, page 646)*.

Connectors

Display of all the detector connectors of the device and the detectors connected (cannot be edited). This area depends on the device selected. Only detectors connected to the main device at the time the method is created are added to the device group.

Detector 1

A standard name is assigned for the detectors which cannot be edited in the **Change instrument** dialog window. The default designation for the detector is made up of the detector type and the connector number of the main device. If the method is to be changed later and a second detector connected to the 850 Professional IC, it is plugged in and the device is added to the list of devices once again in the **Edit device** subwindow.

Detector 2

See **Detector 1**.

Adding a new device

The option **New device** must be selected in order to be able to add to a method a device that has never been connected to this **MagIC Net** (and is therefore not listed in the device table).

Device type

Type of the new device that is to be added to the method.

Selection	**Device type**

Name

Name of the new device that is to be added to the method.

Entry	**40 characters**

Note

Which of the following parameters are displayed depends on the selected device type.

Connectors

Detector 1

Indicates the detector to be used at detector connector **Detector 1**.

Only for devices with detector connector

Selection	**not defined** | **All detector types known to MagIC Net**
Default value	**not defined**

Detector 2

Indicates the second detector to be used at detector connector **Detector 2**.

Only for devices with detector connector

Selection	**not defined** | **All detector types known to MagIC Net**
Default value	**not defined**

Analog Out connected

on | off (Default value: **off**)

Selecting whether an 891 Professional Analog Out is to be connected to the device.

Only with devices of the Professional IC and Compact IC type

MSB

Display of the MSB connector this device is connected to.

Only for MSB devices

Selection	**not defined** | **Number of the MSB connector and name of the device (in parentheses)**
Default value	**not defined**

Open window **'MSB device' - Select connection** *(see Chapter 5.6.3.4, page 385)*.

Towers

Number of towers

Number of towers of the sample changer to be added.

Only with the 814 USB Sample Processor or the 815 Robotic USB Sample Processor XL

Selection	**1** | **2**
Default value	**1**

Cooling

With cooling unit

on | off (Default value: **off**)

Selecting whether the device is to be added with or without cooling.

Only with the 889 IC Sample Center

Autosampler

Autosampler

on | off (Default value: **off**)

Selecting whether the device is to be added with or without auto sampler.

Only with the combustion module

5.6.3.2 Editing the device

Dialog window: **Method** ▸ **Devices** ▸ **[Edit]** ▸ **Edit** ▸ **Edit device**

If a device is selected in the list of devices, then the menu item **[Edit]** ▸ **Edit** opens the dialog window **Edit device**, in which a device can be replaced by a different one and the module designations of a device can be changed.

Replacing a device

A device can be replaced by another one of the same type from the device table. If the device is already used in the time program, the new name is entered automatically in the time program.

Device

Selection of the new device of the same device type as the device to be replaced.

Selection	**Devices of the same type from the device table**

Device type

Display of the device type of the device to be replaced.

Module designations

This section is structured dynamically depending on the device type and contains all the modules of a device. Each module can be given its own application-specific name.

'Module name'

Freely definable designation for the selected module. These alias names are only used within the method used and are intended to allow the user to give 'descriptive' names for a special application. They need not be unique.

Entry	**24 characters**
Default value	**Standard designation proposed by MagIC Net**

5.6.3.3 Entering a name for an MSB device

Dialog window: **Method ▸ Devices ▸ [Edit] ▸ Add ▸ Device ▸ Add device**

If a device to which an MSB device is connected is added, then you are asked if you also want to add the MSB device to the method. If this is confirmed with **[Yes]**, then the dialog window **Enter name for 'MSB device type' on MSB 'No.'** will appear.

Name

Name of the MSB device connected to a newly added device. This name must be unique within the method.

Entry	**40 characters**

5.6.3.4 Selecting an MSB connector

Dialog window **Method ▸ Devices ▸ [Edit] ▸ Add ▸ Device ▸ Add device ▸ 'MSB-device' - Connection - Select**

In the window **'MSB Device - Select connection**, the devices added to the method are listed with their MSB connectors. Select the connector to which the MSB device is connected.

5.6.3.5 Editing the name for an MSB device

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Edit ▶ Edit device**

If an MSB device is selected in the list of devices, the menu item **[Edit] ▶ Edit** opens the dialog window **Edit device** in which its name can be changed.

Device

Name of the MSB device. This name must be unique within the method.

Entry	**40 characters**

Device type

Display of the device type of the MSB device for which the name is to be changed.

Connector

Display of the connector to which the MSB device is connected.

5.6.3.6 Adding a gradient pump

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Add ▶ Gradient pump ▶ Add gradient pump**

With menu item **[Edit] ▶ Add ▶ Gradient pump**, the dialog window **Add gradient pump** opens, in which a gradient pump consisting of individual high pressure pumps can be defined.

Name

Name of the gradient pump.

Entry	**40 characters**

Number of pumps

Number of pump modules that are to be combined to form a gradient pump.

Selection	**2** | **3** | **4**
Default value	**2**

Pump selection

The pump modules for the gradient pumps are selected in this area. It is not possible to edit more fields than were defined in **Number of pumps**.

Note

- A pump module can only be assigned once to the same gradient pump.
- Only pump modules controlled by the same 850 Professional IC can be grouped together to a gradient pump, i.e. they must either be built in to the same 850 Professional IC or be in an extension module connected to the device.
- All pump heads of the gradient pump must have the same order number.

Pump A

Pump A for gradient pump.

Pump B

Pump B for gradient pump.

Pump C

Pump C for gradient pump.

Pump D

Pump D for gradient pump.

Open the dialog window **Pump 'X' - Assign pump**, in which the pump modules for the gradient pump can be selected *(see Chapter 5.6.3.8, page 389)*.

5.6.3.7 Editing the gradient pump

Dialog window: **Method** ▸ **Devices** ▸ **[Edit]** ▸ **Edit** ▸ **Edit gradient pump**

If a gradient pump is selected in the list of devices, the menu item **[Edit]** ▸ **Edit** opens the dialog window **Edit gradient pump** in which the gradient pump can be changed.

Name

Name of the gradient pump.

Entry	**40 characters**

Note

If a gradient pump already used in the time program is renamed, the new name is entered automatically there.

Number of pumps

Number of pump modules that are to be combined to form a gradient pump.

Selection	**2** | **3** | **4**
Default value	**2**

Pump selection

The pump modules for the gradient pumps are selected in this area. It is not possible to edit more fields than were defined in **Number of pumps**.

Note

- A pump module can only be assigned once to the same gradient pump.
- Only pump modules controlled by the same 850 Professional IC can be grouped together to a gradient pump, i.e. they must either be built in to the same 850 Professional IC or be in an extension module connected to the device.
- All pump heads of the gradient pump must have the same order number.

Pump A

Pump A for gradient pump.

Pump B

Pump B for gradient pump.

Pump C

Pump C for gradient pump.

Pump D

Pump D for gradient pump.

Open the dialog window **Pump 'X' - Assign pump**, in which the pump modules for the gradient pump can be selected *(see Chapter 5.6.3.8, page 389)*.

5.6.3.8 Assigning pumps for gradient pump

Dialog window: **Method ▸ Devices ▸ [Edit] ▸ Add ▸ Gradient pump ▸ Add gradient pump ▸ Pump 'X' - Assign pump**

The dialog window **Pump 'X' - Assign pump** is for selecting a high pressure pump module for the gradient pump. The window is structured dynamically and contains only those high pressure pumps for selection that are not already assigned to another gradient pump. Each pick tree is grouped according to devices. Extension modules are shown as top-level devices.

5.6.4 Devices - Start parameters

Subwindow: **Method ▸ Devices**

The start parameters for the devices can be defined in the bottom part of the **Devices** subwindow. If you click on a device in the top part of the window, the tabs of the modules contained the device appear in the bottom part of the subwindow. The start parameters for the various modules to be sent to the devices when the method is started can be defined on these tabs.

Device-dependent start parameters

- *850 Professional IC - Start parameters*
- *881 Compact IC pro - Start parameters*
- *882 Compact IC plus - Start parameters*
- *883 Basic IC plus - Start parameters*
- *814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Start parameters*
- *858 Professional Sample Processor - Start parameters*
- *863 Compact Autosampler - Start parameters*
- *889 IC Sample Center - Start parameters*
- *919 IC Autosampler plus - Start parameters*
- *886 Professional Thermostat / Reactor - Start parameters*
- *887 Professional UV/VIS Detector - Start parameters*
- *896 Professional Detector - Start parameters*
- *872 Extension Module IC Pump - Start parameters*
- *872 Extension Module IC Module - Start parameters*
- *872 Extension Module Sample Prep - Start parameters*
- *872 Extension Module Liquid Handling - Start parameters*
- *872 Extension Module Suppression - Start parameters*
- *872 Extension Module Suppression – MCS - Start parameters*
- *771 IC Compact Interface - Start parameters*
- *800 Dosino - Start parameters*
- *Stirrer - Start parameters*
- *Remote Box MSB - Start parameters*
- *RS-232 device - Start parameters*
- *High-pressure gradient pump - Start parameters*

- *Combustion Module - Start parameters*
- *920 Absorber module - Start parameter*

The start parameters of the **891 Professional Analog Out** *(see Chapter 7.1.3.1.13, page 654)* are assigned to the main device it is connected to.

5.6.5 Analyses - Functions

5.6.5.1 Adding an analysis

Dialog window: **Method ▸ Devices ▸ [Edit] ▸ Add ▸ Add analysis**

With menu item **[Edit] ▸ Add ▸ Analysis**, the dialog window **Add analysis** is opened and the name for the new analysis can be entered.

Analysis name

Name of the analysis.

Entry	**40 characters**
Default value	**New analysis**

5.6.5.2 Editing an analysis

Dialog window: **Method ▸ Devices ▸ [Edit] ▸ Edit ▸ Edit analysis**

In this dialog window, you can change the name of the selected analysis and its modules.

Name

Name of the analysis.

Entry	**40 characters**

Module designations

Hardware assignment

Name of the module "Hardware assignment".

Entry	**25 characters**

Data acquisition

Name of the module "Data acquisition".

Entry	**25 characters**

Accessories

Name of the module "Accessories".

Entry	**25 characters**

Note

If an analysis already used in the time program is renamed, the new name is entered automatically there.

5.6.6 Analyses - Properties

Subwindow: **Method** ▸ **Devices**

The properties of the selected analysis are defined in the bottom part of the device window. They are grouped on the tabs **Hardware assignment**, **Data acquisition** and **Accessories**.

The analysis covers all the chromatographically relevant hardware components (data source, column, pump, etc.) that generate a measurement signal and links these with the evaluation parameters.

5.6.6.1 Analysis - Hardware assignment

Tab: **Method** ▸ **Devices** ▸ **Hardware assignment**

Modules from the list of devices for the method can be assigned to the analysis on this tab. This assignment makes it possible to see in the report which chromatograms were recorded with which device modules.

Note

To run a method, it is not necessary that modules are assigned to the analysis. But for a sensible analysis, at least the data source must be assigned.

Data source

Data source that provides the raw data.

The symbol [...] opens the pick window for selecting the data source *(see Chapter 5.6.6.4, page 393)*.

Channel:

Channel of the data source assigned to the analysis. This optional selection list is only active if the data source selected has more than one data channel. The same channel can be assigned to more than one analysis, so that the same signal can be evaluated with different evaluation parameters (e.g. to determine the analytes and contaminations; content/purity).

Selection	**All the channels of a module**

Note

Not all the data channels provide signals that can be evaluated. You will find more details on this with the individual devices.

- *850 Professional IC - Data channels*
- *771 IC Compact Interface - Data channels*
- *High-pressure gradient pump - Data channels*

Injection valve

Injection valve assigned to the analysis.

The symbol [...] opens the pick window for selecting the injection valve *(see Chapter 5.6.6.5, page 394)*.

Column

Column from the column table assigned to the analysis *(see Chapter 6.6.2, page 556)*.

The symbol [...] opens the pick window for selecting the separation column *(see Chapter 5.6.6.6, page 394)*.

Pump

High pressure pump assigned to the analysis.

The symbol [...] opens the pick window for selecting the high pressure pump *(see Chapter 5.6.6.7, page 394)*.

5.6.6.2 Analysis - Data acquisition

Tab: **Method** ▸ **Devices** ▸ **Data acquisition**

The recording duration for a chromatogram is defined on this tab.

Recording time

Time during which the signal of the **Data source** defined under **Hardware assignment** is recorded. The value can be entered manually or defined with the formula editor ( ). Recording starts with the command **Start data acquisition** in the time program.

Input range	**0.5 - 1000.0 min**
Default value	**15.0 min**

5.6.6.3 Analysis - Accessories

Tab: **Method** ▸ **Devices** ▸ **Accessories**

Accessories can be assigned to the analysis on this tab. Monitoring and GLP data of the accessories are checked at method start by means of the assignment *(see Chapter 6.9.3, page 592)*. These accessories parts are also indicated in the report.

Table

The accessories assigned to the analysis are shown in the table. The table is sorted in alphabetical order.

Name

Designation of the accessories part.

[Add]

Open the dialog window **Add accessories** *(see Chapter 5.6.6.8, page 394)*.

[Remove]

Remove the selected accessories parts from the accessories table of the analysis.

5.6.6.4 Assigning data source

Dialog window: **Method** ▸ **Devices** ▸ **Hardware assignment** ▸ **'Analysis name' - assign data source**

The dialog window **'Analysis name' - assign data source** is for selecting the data source to be assigned to the analysis. The window is structured dynamically and contains only those data sources for selection that are already part of the method due to the main device. The pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

Data sources

The following devices can provide data that can be recorded in **MagIC Net**:

- *850 Professional IC - Data channels*
- *881 Compact IC pro - Data channels*
- *882 Compact IC plus - Data channels*
- *883 Basic IC plus - Data channels*
- *886 Professional Thermostat / Reactor - Data channels*
- *887 Professional UV/VIS Detector - Data channels*
- *Amperometric detector - Data channels*
- *872 Extension Module IC Pump - Data channels*
- *872 Extension Module IC Module - Data channels*
- *771 IC Compact Interface - Data channels*

- *High-pressure gradient pump - Data channels*

5.6.6.5 Assigning an injection valve

Dialog window: **Method ▸ Devices ▸ Hardware assignment ▸ 'Analysis name' - assign injection valve**

The dialog window **'Analysis name' - assign injection valve** is for selecting the injection valves to be assigned to the analysis. The window is structured dynamically and contains only those injection valves for selection that are already part of the method due to the main device. Each pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

5.6.6.6 Assigning a column

Dialog window: **Method ▸ Devices ▸ Hardware assignment ▸ 'Analysis name' - assign column**

The dialog window **'Analysis name' - assign column** is for selecting the separation column to be assigned to the analysis. The window is structured dynamically and contains only those columns for selection that are already part of the method due to the main device. Each pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

5.6.6.7 Assigning a pump

Dialog window: **Method ▸ Devices ▸ Hardware assignment ▸ 'Analysis name' - Assign pump**

The dialog window **'Analysis name' - Assign pump** is for selecting the high pressure pump to be assigned to the analysis. The window is structured dynamically and contains only those pumps for selection that are already part of the method due to the main device. Each pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

5.6.6.8 Adding accessories

Dialog window: **Method ▸ Devices ▸ Accessories ▸ [Add] ▸ Add accessories**

With the button **[Add]**, the dialog window **Add accessories** opens in which the accessories parts defined in the accessories table can be added to the analysis *(see Chapter 6.9.2, page 589)*.

Accessories

Accessories part to be assigned to the analysis.

Selection	**Accessories parts from the accessories table**

5.7 Subwindow Time program

5.7.1 Time program - General

Subwindow: **Method ▶ Time program**

Definition

- A **time program** is an instruction for the automated editing of a sample and is part of a method. Each **method** has exactly one time program.
- Time programs consist of **main program** and **subprograms**, which in turn are made up of **commands**.

Main program

- Each time program contains exactly one **main program** with the main instruction. Subprograms can be called up in the main program.

Subprograms

- A time program can contain 0 to 100 **subprograms**.
- The subprograms can be **called up** in main programs or in other subprograms of the same time program. This call is done with the commands **Parallel** *(see Chapter 5.7.4.2.2, page 402)*, **Sequence** *(see Chapter 5.7.4.2.3, page 403)* or **Loop** *(see Chapter 5.7.4.2.4, page 404)*.
- In the IC combustion system, the subprograms are integrated in the **Combustion***(see Chapter 7.22.3.2.1, page 1167)* command.
- A subprogram can only be **deleted** when no command exists in the entire time program that calls up this subprogram.

Commands

- Main programs and subprograms consist of a sequence of **commands**. We distinguish between **device-dependent commands** and **device-independent commands**.
- The time program allows a mixture of commands that are carried out at a defined moment (known as **command without feedback**) and commands that are executed after the last command has been carried out (known as **command with feedback**).
- **Commands without feedback** are commands with a predictable and relatively short run time (e.g. switching over the injection valve).
- Commands with feedback are commands with a longer and often **unpredictable run time** (e.g. moving the robotic arm to a certain sample position).

Note

You can find further information on commands under *5.7.4.1Commands - General*.

5.7.2 Time program - Desktop

Subwindow: **Method ▸ Time program**

Structure of the time program table

- The **main program** is displayed in its own tab, which is always available.
- Every **subprogram** can be found on its own tab, which is labeled respectively with the name of the subprogram.
- One line corresponds to a **command**.

Columns of the time program table

Time

Moment the command is executed in relation to the current time basis. A **command with feedback** contains no time indication.

Note

After a **command with feedback** has been carried out, the time basis is reset to **0**.

Device

Name of the device to which the command is sent.

Note

A **device-independent command** contains no device specification.

Module

Name of the module to which the command is sent.

Note

A **device-dependent command** contains no module specification.

Command

Name of the command.

Parameters

Adjustable values of the command.

Comment

Comment on the command.

No.

Number of the command. This number is issued automatically when a new time program command is inserted.

Editing the time program table

The time program table can be edited in a variety of ways:

- Via the **[Edit]** menu *(see Chapter 5.7.3, page 397)*.
- Via the context menu that can be called up with the right mouse button.
- Via a double click in a command line, whereby the dialog window for editing this command opens.
- By copy & paste from other time programs.

5.7.3 Editing a time program

5.7.3.1 Time program - Menu Edit

Subwindow: **Method ▸ Time program**

The menu **[Edit]** can also be called up via a right click on the time program table and contains the following menu items:

New	Insert a new row above the selected row in the time program table and open the dialog window **Insert new line** *(see Chapter 5.7.3.2, page 398)*.
Edit	Open the window **'Device' - 'Command'** to edit the selected row *(see Chapter 5.7.3.3, page 398)*.
Copy	Copy the selected lines from the time program table to the clipboard (the command keeps its number).
Paste	Insert all lines from the clipboard above the selected line in the time program table.
Cut	Copy the selected rows from the time program table to the clipboard and delete them.
Delete	Delete the selected rows from the time program table.

Change time	Open the **Change time** dialog window *(see Chapter 5.7.3.4, page 399)*. The time of the selected commands can be changed.
Insert subprogram	Open the **Insert subprogram** dialog window *(see Chapter 5.7.3.5, page 399)*. After a new name is entered, an empty subprogram is created, which can be selected via a new tab.
Rename subprogram	Open the **Rename subprogram** dialog window *(see Chapter 5.7.3.6, page 399)*. The subprogram selected via the tab can be renamed.
Delete subprogram	Delete the subprogram selected via the tab. This menu item is only active if a subprogram is selected. The main program cannot be deleted.

5.7.3.2 Inserting a new line

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New ▶ Insert new line**

With the menu item **[Edit] ▶ New**, the dialog window **Insert new line** opens and lists all the commands that can be inserted in tree-form.

Commands

Selection of the new command. All device-independent commands are available as well as the device-dependent commands for the active modules of the devices that are in the list of devices for the loaded method.

Description

Description of the selected command.

The **[OK]** button opens the dialog window **'Device type - 'Module' - 'Command'** for device-dependent commands; for commands for an MSB device, it opens the dialog window **'MSB device name - 'Command'**; for device-independent commands, it opens the dialog window **'Command'**.

5.7.3.3 Editing a line

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ Edit ▶ 'Device' - 'Module' - 'Command'**

With the menu item **[Edit] ▶ Edit**, the dialog window **'Device' - 'Module' - 'Command'** opens, in which the command selected in the time program can be edited.

The parameters in the dialog window that can be edited depend on the command selected.

5.7.3.4 Changing the time

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ Change time ▸ Change time**

With the menu item **[Edit] ▸ Change time**, the dialog window **Change time** opens.

Time offset

Time value by which the current time of the commands selected is corrected. The resulting time must be within the permitted range of **0 to 10000 min**.

Input range	**-9999.99 - 9999.99 min**
Default value	**0 min**

5.7.3.5 Inserting a subprogram

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ Insert subprogram ▸ Insert subprogram**

With the menu item **[Edit] ▸ Insert subprogram**, the dialog window **Insert subprogram** opens.

Name

Name of the subprogram that is to be inserted.

Entry	**50 characters**

5.7.3.6 Renaming a subprogram

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ Insert subprogram ▸ Rename subprogram**

With the menu item **[Edit] ▸ Rename subprogram**, the dialog window **Rename subprogram** opens.

Name

Name of the subprogram that is to be renamed.

Entry	**50 characters**

5.7.4 Time program - Commands

5.7.4.1 Commands - General

Subwindow: **Method ▸ Time program**

Definitions

- Main programs and subprograms consist of a sequence of **commands**. We distinguish between **device-dependent commands** and **device-independent commands**.

- The time program allows a mixture of commands that are carried out at a defined moment (known as **command without feedback**) and commands that are executed after the last command has been carried out (known as **command with feedback**).
- At the start of the main program, the time begins running with the starting time of **0**. The starting point of the time measurement is subsequently also designated the **time basis**. The times specified with the commands are in reference to this time basis. When carrying out a **command with feedback**, the time basis is automatically reset to **0**. The times specified with the subsequent commands are in reference to this time basis.

Device-dependent commands

- Device-dependent commands serve to trigger and control the functions of devices and device modules.
- The device-dependent commands that can be selected depend on the devices assigned to the method.
- Device-dependent commands lock access to the device or device module in the program sequence until the command has been completed.

Device-independent commands

- Device-independent commands serve to control the time program sequence.
- The device-independent commands that can be selected are always the same and do not depend on the devices assigned to the method.

Commands without feedback

- The command lines for commands without feedback are displayed in the time program table in **white**.
- Commands without feedback are commands with a relatively short and **predictable run time** (e.g. switching over the injection valve).
- Commands without feedback are executed at a defined moment.
- The run in the time program is not interrupted when commands are executed without feedback; the time basis remains the same.
- Commands without feedback are processed parallel with the same time indication in the program sequence.

Note

With a **command without feedback** that immediately follows a **command with feedback**, it is mandatory that **0** be defined as **time**. Other time indications are invalid and are displayed in the time program table in **red**.

Commands with feedback

- The command lines for commands with feedback are displayed in the time program table in **blue**.
- Commands with feedback are commands with a longer and often **unpredictable run time** (e.g. moving the robotic arm to a certain sample position).
- Commands with feedback are executed after the previous command has been finished.
- The time sequence in the time program is interrupted by the execution of commands with feedback and the time is reset to **0**. The moment after the end of the command is then the new time basis for the commands that follow.
- Consecutive commands with feedback are processed sequentially in the program sequence.

Copying commands

- Commands can be copied to the clipboard and from there inserted anywhere in the time program, even in other methods.
- Copy/Paste can be used to adopt complete sections of programs from other time programs.

5.7.4.2 Device-independent commands

Device-independent commands are instructions for controlling the time program sequence. These commands are carried out by the software and are available in every time program. The following commands are available:

5.7.4.2.1 Wait

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Wait**

The device-independent command **Wait** serves to interrupt a targeted program sequence and to send a message.

Wait

Radio buttons for selecting how to stop the Wait function.

Selection	**Stop program and waiting for [Continue]** | **Waiting time**
Default value	**Waiting time**

Stop program and waiting for [Continue]
If this option is selected, the run of the main or subprogram, in which the command is, is paused. A message window appears in which the run can be continued with [Next].

Waiting time
If this option is selected, the run of the main or subprogram, in which the command is, is paused. After the time indicated has elapsed, the program run is continued automatically.

Waiting time

The waiting time can be defined manually or with the aid of the formula editor *(see Chapter 2.4, page 31)*.

Input range	**0 - 9999 min | s**

Message

The text editor for entering or changing the message is opened with or by double-clicking into the text field.

Record message

on | off (Default value: **off**)

If this option is activated, the message is saved in the determination.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted additionally to the message defined above.

[E-mail]

The **[E-mail]** button opens the **Send E-mail** *(see Chapter 2.7.1, page 106)* window, and the address can be entered.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.2 Parallel

Dialog window: **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Parallel**

The device-independent command **Parallel** serves to call up a subprogram running parallel to the calling-up program.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Subprogram

Name of the subprogram that is to be started.

Selection	**All the subprograms saved in the method**

Condition

on | off (Default value: **off**)

If this option is activated, the subprogram is only started if the condition defined with the aid of the formula editor *(see Chapter 2.4, page 31)* is fulfilled.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.3 Sequence

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Sequence**

The device-independent command **Sequence** serves to call up a subprogram that must be processed before the calling-up program continues.

Subprogram

Name of the subprogram that is to be started.

Selection	**All the subprograms saved in the method**

Condition

on | off (Default value: **off**)

If this option is activated, the subprogram is only started if the condition defined with the aid of the formula editor *(see Chapter 2.4, page 31)* is fulfilled.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.4 Loop

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Loop**

The device-independent command **Loop** serves to call up a subprogram more than once. The loop is carried out until the number of runs is reached or the call condition is no longer fulfilled.

Subprogram

Name of the subprogram that is to be started more than once.

Selection	**All the subprograms saved in the method**

Number of runs

on | off (Default value: **on**)

If this option is activated, the loop is canceled when the number of runs defined here is reached. The number can be entered as a fixed value or it can be entered as a variable with the aid of the formula editor *(see Chapter 2.4, page 31)* that is opened with .

Input range	**1 - 9999**
Default value	**1**

Condition

on | off (Default value: **off**)

If this option is activated, the loop is being carried out for as long as the condition defined with the aid of the formula editor *(see Chapter 2.4, page 31)* for calling up the subprogram is fulfilled.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.5 Starting IC Net

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Start IC Net**

The device-independent command **Start IC Net** serves to trigger the start of an **IC Net 2.3 system** in the time program of **MagIC Net**.

System

System file to be started in IC Net. The symbol opens the dialog window **Open file** to select the system file.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.6 Wait for IC Net

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Wait for IC Net**

The device-independent command **Wait for IC Net** serves to make the time program of **MagIC Net** wait until an **IC Net 2.3** determination has been completed.

Max. waiting time

on | off (Default value: **off**)

If this option is activated, the time program will always be continued after expiry of the waiting time even if the IC Net 2.3 determination is not yet completed.

Waiting time

Input range	**0 - 9999 min | s**
Default value	**10 min | s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.7 Starting data acquisition

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Start data acquisition**

The device-independent command **Start data acquisition** serves to start data recording for an analysis.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.8 Calculation

Dialog window: **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Calculation**

The device-independent command **Calculation** permits the calculation of results while determinations are running. Up to 25 single results can be calculated for each **Calculation** command. The single results are listed in a table and can be edited.

5.7.4.2.8.1 Table of single results

Dialog window: **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Calculation**

Results

The **Results** table lists the single results defined for the calculation. It contains the following columns, which are described in detail in *Editing the result*:

Result

Name of the result.

Formula

Formula for calculation of the result. The result value calculated with the formula is saved in the variable **TP.'#'.'Result name'.VAL**.

Unit

Unit of the result. The unit is saved in the variable **TP.'#'.'Result name'.UNI**.

Decimal places

Number of decimal places for the output of the result in the report and in the display of results in the database.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add a new line to the result table and edit in a separate dialog *(see Chapter 5.7.4.2.8.2, page 407)* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *(see Chapter 5.7.4.2.8.2, page 407)* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Paste	Insert line from the clipboard into the table.
Cut	Cut the selected lines and copy them to the clipboard.
Delete	Delete the selected line.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.2.8.2 Editing the result

Dialog window: **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Calculation** ▸ **Edit result**

When selecting the function **[New]** or **[Edit]** for a **Calculation** command (see *Table of single results*), the dialog **'Calculation - Result #'** will open.

Name

Name of the result. The standard value is **'Result #'**, whereby # is the number of the result in the command. A different name can be assigned. This will however need to be unique within the same **Calculation** command of the same method.

Entry	**40 characters**

Formula

The entry and editing of the formula according to which the result will be calculated is accomplished by means of the formula editor. This is called up by means of the symbol *(see Chapter 2.4, page 31)*. The calculated result value is saved in the variable **TP.'#'.'Result name'.VAL**.

Unit

Unit of the result for the output (text only). The unit can be selected from the list or entered manually. The unit selected or entered is saved in the variable **TP.'#'.'Result name'.UNI**.

Entry	**60 characters**
Selection	**ppm** | **ppb** | **ppt** | **g/L** | **mg/L** | **µg/L** | **ng/L** | **g/kg** | **mg/kg** | **µg/kg** | **ng/kg**
Default value	**ppm**

Decimal places

Number of decimal places for the output of the calculated result. This parameter is ignored for results of the type **text** or **date/time**.

Input range	**0 - 6**
Default value	**3**

Description

Optional description of the result.

5.7.4.2.9 Insert new line

Dialog window: **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Insert new line**

The device-independent command **Insert new line** inserts another line into the sample table during the run of a determination.

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first characters, the method selection is continuously restricted and allows fast selecting of the method required.

Entry	**50 characters**
Selection	**Method selection**

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.

Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.

Ident

Entry of an identification or selection of a defined text template to identify the chromatogram.*(see Chapter 3.6.1, page 144)*

Entry	**100 characters**
Selection	**Selection of text templates**

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Entry	**64 characters**
Selection	**'empty'** | **Sample** | **Standard 1…n** | **Spiking 1…n** | **Check standard 1…n** | **Blank**
Default value	**'empty'**

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Entry	**100 characters**

Injections

Number of injections per sample line. The determinations of this kind of multiple injection are linked statistically with one another.

Input range	**1 - 99** (Increment: **1**)
Default value	**'empty'**

Volume

Volume of the sample in µL.

Input range	**0.01 - 1000000.00 µL**
Default value	**'empty' µL**

Dilution

Dilution factor for the sample.

Input range	**0.001 - 100,000.00**
Default value	**'empty'**

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
  Basic initial weight = 2.0 g
  Sample initial weight = 2.1 g
  Sample amount = 2.1 / 2.0 = 1.05
  The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
  Basic unit = 1.0 mg
  Initial sample size = 2.1 mg
  Sample amount = 2.1 / 1.0 = 2.1
  The result is divided by 2.1 and indicates how high the content per mg of sample is.

Input range	**0.00001 - 1000000.00000**
Default value	**'empty'**

Info 1…4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here *(see Chapter 3.6.1, page 144)*.

Entry	**100 characters**
Selection	**Selection of text templates**

Value 1…4

Input of additional values for the sample.

Input range	**-10^{99} - 10^{99}**
Default value	**'empty'**

Select the position for insertion

Options to select where the new line should be inserted into the sample table.

Selection	**Next sample line** | **Next sample line but one** | **Last sample line**

Next sample line
Insert the new line after the specified sample line.

Next sample line but one
Insert the new line two lines after the specified sample line.

Last sample line
Insert the new line as the last line in the table.

Comment

Optional comment on the time program command.

Entry	**64 characters**

5.7.4.3 Device-dependent commands

Subwindow: **Method ▸ Time program**

Device-dependent commands serve to trigger and control the functions of devices and device modules. The following commands are available:

- *850 Professional IC - Commands*
- *881 Compact IC pro - Commands*
- *882 Compact IC plus - Commands*
- *883 Basic IC plus - Commands*
- *814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Commands*
- *858 Professional Sample Processor - Commands*

- *889 IC Sample Center - Commands*
- *919 IC Autosampler plus - Commands*
- *886 Professional Thermostat / Reactor - Commands*
- *887 Professional UV/VIS Detector - Commands*
- *896 Professional Detector - Commands*
- *872 Extension Module IC Pump - Commands*
- *872 Extension Module Sample Prep - Commands*
- *872 Extension Module Liquid Handling - Commands*
- *872 Extension Module IC Module - Commands*
- *872 Extension Module Suppression - Commands*
- *872 Extension Module Suppression – MCS - Commands*
- *771 IC Compact Interface - Commands*
- *800 Dosino - CommandsCommands*
- *Combustion Module - Commands*
- *High-pressure gradient pump - Commands*
- *Stirrer - Commands*
- *Remote Box MSB - Commands*
- *RS-232 device - Commands*

The commands of the **891 Professional Analog Out** *(see Chapter 7.1.3.3.13, page 685)* are assigned to the main device it is connected to.

5.8 Subwindow Evaluation

5.8.1 Evaluation - General

Subwindow Evaluation

In the subwindow **Evaluation**, you can define how the retention times, concentrations and other parameters of the individual ions are to be calculated from the measured raw data. The procedure can be subdivided into **Integration** and **Calibration**. Every analysis with a detector as data source has its own evaluation.

Sections of evaluation

The subwindow **evaluation** covers five sections that can be selected with the following symbols on the left-hand toolbar:

The section **Integration** includes parameters for the integration of the measuring point list and determination of the peak data. It also contains criteria as to which signals of the measuring point list are recognized as peaks *(see Chapter 5.8.2.1, page 412)*.

The components to be determined are defined the section **Components**. The criteria defined here are used for assigning to the recognized and integrated peaks *(see Chapter 5.8.3.1, page 418)*.

In the section **Standards**, the standard solutions for calibrating the sample and the check standards and standard addition solutions for calculating recovery are defined *(see Chapter 5.8.4.1, page 422)*.

The calibration methods and the calibration parameters for calculating the calibration curves are defined in the section **Calibration** *(see Chapter 5.8.5.1, page 428)*.

The output and export of results are defined in the **Results** section. Additional results can also be defined by the user, results can be evaluated statistically and can be monitored *(see Chapter 5.8.6.1, page 440)*.

This area is only available in the case of UV/VIS analysis. Here you can define whether and at which time points UV/VIS spectrums should be recorded; for every spectrum, the evaluation of extinction maximums can be defined*(see Chapter 5.8.8, page 482)*.

5.8.2 Evaluation - Integration

5.8.2.1 Integration - General

Subwindow section: **Method** ▸ **Evaluation** ▸ **Integration**

Application

The section **Integration** includes parameters for the integration of the measuring point list and determination of the peak data. It also contains criteria on which signals of the measuring point list are recognized as peaks.

Selecting the analysis

Analysis

Selecting the analysis. Only analyses with data sources that can be evaluated can be selected. Details can be found with the individual devices *(see Chapter 7, page 621)*.

Selection	**Analyses of the method**

Tabs

- *Settings*
- *Peak detection*
- *Events*

5.8.2.2 Integration - Settings

Tab: **Method ▶ Evaluation ▶ Integration ▶ Settings**

Smoothing

Smoothing value. The greater the value, the more the data are smoothed before integration.

Input range	**1 - 100**
Default value	**30**

Sensitivity

Sensitivity value. The higher the value, the better smaller peaks are detected.

Input range	**1 - 100**
Default value	**50**

[Basic setting]

Reset **Smoothing** and **Sensitivity** to default values.

5.8.2.3 Integration - Peak detection

Tab: **Method ▶ Evaluation ▶ Integration ▶ Peak detection**

Minimum height

Minimum height which is still detected as a peak.

Input range	**0.0000 - 10000.0000 µS/cm**
Default value	**0.01 µS/cm**

Minimum area

Minimum area which is still detected as a peak.

Input range	**0.00000 - 100000.00000 (µS/cm) x min**
Default value	**0.001 (µS/cm) x min**

Integration start

Time from the start of a determination to the start of integration.

Input range	**0.00 - 1000.00 min**
Default value	**1.00 min**

Polarity

Polarity for representing the measuring signal. The measured conductivity is always positive. Peaks from cation chromatograms point downward and those of anion chromatograms upward. The polarity makes it possible to display the cation chromatograms with the peaks pointing upward.

Selection	**+** | **–**

[Filter]

Opens the **Filter** dialog window to define the filtering of the measuring point list of an analysis *(see Chapter 5.8.2.5, page 416)*.

Negative peaks

on | off (Default value: **off**)

If this option is enabled, negative peaks are evaluated. Otherwise they are ignored.

Subtract blank

on | off (Default value: **off**)

If this option is enabled, all the determinations of the same method measured in a run after a blank are corrected with this blank. The measuring point list of the blank is subtracted from the measuring point list of the determination (regardless of whether it is a sample, standard, check standard or standard addition solution). This subtraction is a continuous process whenever a chromatogram is recorded.

Note

- The chromatogram of the blank is saved with the corrected curve so that the correction can be undone during reprocessing.
- Only curves of analyses with an evaluation are corrected (i.e. not pump pressure, etc.).
- A determination of sample type **Blank** is not evaluated. The determination includes only chromatogram and the sample data, but no results.

Drift compensation

on | off (Default value: **off**)

If this option is enabled, the drift is compensated, i.e. a drift curve is calculated for the baseline, which is subtracted from the measuring point list. It is this measuring point list that is integrated and evaluated.

Note

In the subwindow **Live display**, the drift is not displayed and the chromatogram is displayed without correction. If you press**[Evaluate]**, the drift compensation is included in the evaluation and the corrected chromatogram is displayed with the determined peaks. The chromatogram is always displayed in its corrected version in the **database**.

Ignore overflow

on | off (Default value: **off**)

If this option is enabled, peaks that are higher than the overflow value are evaluated. Otherwise there is no evaluation.

5.8.2.4 Integration - Events

Tab: **Method** ▸ **Evaluation** ▸ **Integration** ▸ **Events**

Definition

Integration events are time-controlled integration parameters. The time indication refers to the time axis of the chromatogram.

Table

The event table contains an overview of the programmed integration events. It is always displayed sorted according to times and cannot be edited directly. When selecting an integration event, the graphics window is switched to the chromatogram view and the corresponding analysis. A vertical mouse pointer appears in the displayed chromatogram of the graphics window. One or two lines of the mouse pointer appear, depending on whether the integration event has a start and end or only a start time. The mouse pointer can be moved but the end time cannot be moved ahead of the start time.

Menu Edit

New	Inserts a new empty line above the selected line and open the **Integration event** dialog window.
Edit	Edits selected line.
Copy	Copies selected lines to the clipboard.
Insert	Inserts all lines from the clipboard above the selected line in the event table.
Cut	Cuts selected lines and copy them to the clipboard.
Delete	Deletes the selected lines.

Activate events

on | off (Default value: **on**)

If this option is enabled, the integration events are applied.

[Update event time]

The cursor position(s) for a selected event of the event table are adopted. One or two lines of the cursor appear, depending on whether the selected peak event has a start and end or only a start time. The cursor can be

moved. The end time cannot however be shifted ahead of the start time. The cursor lines for the start and end time are differentiated with different colors.

5.8.2.5 Editing filter

Dialog window: **Method ▸ Evaluation ▸ Integration ▸ Peak detection ▸ [Filter] ▸ Filter**

The measuring point list (chromatogram) is displayed with these settings and passed on to the evaluation algorithm in the same state.

The chromatogram is displayed with filtering.

Savitzky-Golay

on | off (Default value: **off**)

If this option is enabled, the noise of the signal is filtered with a Savitzky-Golay filter.

Filter length

Range of measuring points in which filtering is to be carried out. The input refers to half the filter length. Since the filter must have an odd number of points over which filtering takes place, the overall filter length is **2 x input +1**.

Input range	**1 - 30**
Default value	**1**

5.8.2.6 Editing integration event

Dialog window: **Method ▸ Evaluation ▸ Integration ▸ Events ▸ [Edit] ▸ New / Edit ▸ Integration event**

Start

Start time for the integration event.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

End

End time for the integration event.

Input range	**0.00 - 1000.00 min**
Default value	**1.00 min**

Note

Absolute times must always be entered for **Start** and **End**. The time basis is the time of the command **Start data acquisition** of the analysis of the time program.

Event

Integration event to be executed.

Selection	**Deactivate peak detection** | **Peak start** | **Peak end** | **Valley - Valley** | **Common baseline** | **Rider peak** | **Horizontal baseline** | **Horizontal baseline back** | **Smoothing** | **Minimum height** | **Minimum area**

Deactivate peak detection
The peak detection is deactivated in this interval.

Peak start
The start point of the peak is set to this value. The event **Peak start** is ignored if the set value is before the end of the previous peak or after the first turning point of the peak in question.

Peak end
The endpoint of the peak is set to this value. The event **Peak end** is ignored if the set value is after the start of the following peak or before the second turning point of the peak in question.

Valley - Valley
Peaks that are not separated by the baseline are each given their own baseline.

Common baseline
Peaks that are not separated by the baseline are given a common baseline.

Rider peak
Peaks that are not separated by the baseline are interpreted such that the smaller peaks are evaluated as riders on the highest peak.

Horizontal baseline
The baseline is drawn horizontally from left to right from the start point of the peak. The intersection point with the curve or the end of the event is the endpoint.

Horizontal baseline back
The baseline is drawn horizontally from left to right from the endpoint of the peak. The intersection point with the curve or the start value of the event is the start point.

Smoothing
New value for the smoothing

Minimum height
New value for the minimum height

Minimum area
New value for minimum area.

Parameters

Extra parameters for **Event** = **Smoothing**.

Smoothing value. The greater the value, the more the data are smoothed before integration.

Input range	**1 - 100**
Default value	**30**

Parameters

Extra parameters for **Event** = **Minimum height**.

Minimum height which is still detected as a peak.

Input range	**0.0000 - 10000.0000 µS/cm**
Default value	**0.01 µS/cm**

Parameters

Extra parameters for **Event** = **Minimum area**.

Minimum area which is still detected as a peak.

Input range	**0.00000 - 100000.00000 (µS/cm) x min**
Default value	**0.001 (µS/cm) x min**

5.8.3 Evaluation - Components

5.8.3.1 Components - General

Subwindow section: **Method** ▸ **Evaluation** ▸ **Components**

Application

The components to be determined are defined the section **Components**. The criteria defined here are used for assigning to the recognized and integrated peaks.

Selecting the analysis

Analysis

Selecting the analysis. Only analyses with data sources that can be evaluated can be selected. Details can be found with the individual devices *(see Chapter 7, page 621)*.

Selection	**Analyses of the method**

Tabs

- *Component table*
- *Identification*

5.8.3.2 Components - Component table

Tab: **Method** ▶ **Evaluation** ▶ **Components** ▶ **Component table**

Table

The component table contains the components of an analysis and the criteria for how to assign this to the peaks of a chromatogram. The table cannot be edited and contains the following columns:

Name

Name of the component.

Time (Retention time)

Expected retention time of the component.

Window %

Identification window of the peak.

Reference

Reference peak with which the expected retention time is defined.

Editing menu

New	Inserts a new empty line above the selected line in the component table and open the **Component** dialog window *(see Chapter 5.8.3.4, page 421)*.
Edit	Edits selected line *(see Chapter 5.8.3.4, page 421)*.
Copy	Copies selected lines to the clipboard.
Insert	Inserts all lines from the clipboard above the selected line.
Cut	Cuts selected lines and copy them to the clipboard.
Delete	Deletes the selected lines.

Functions and parameters

[Update retention time]

Adopts the time of the cursor position in the graph frame as the retention time for a selected component. Any existing retention time is overwritten.

Void time

Time required by a component of the sample not retained by the column to reach the detector. The void time is required to calculate the net retention time of a component and its retention factor.

Selection	**Manual** | **1st peak**

Manual
With this setting, the void time can be entered manually in the adjacent field.

1st peak
With this setting, the retention time found for the first detected peak (regardless of whether it is detected as a peak or not) is used as void time.

Time indication

Time indication given for the void time if the option **Manual** was selected.

Input range	**0.01 - 1000.00 min**

5.8.3.3 Components - Identification

Tab: **Method** ▸ **Evaluation** ▸ **Components** ▸ **Identification**

Reference components

Criterion for the assigning of a peak to a reference component if there is more than one peak in the time slot of the reference component.

Selection	**Height** | **Area** | **Time**
Default value	**Height**

Height
The peak with the greatest height is assigned to the reference component.

Area
The peak with the greatest area is assigned to the reference component.

Time
The peak with the closest retention time is assigned to the reference component.

Other components

Criterion for assigning a peak to a component if there is more than one peak in the time slot of the component.

Selection	**Height** | **Area** | **Time**
Default value	**Time**

Height
The peak with the greatest height is assigned to the component.

Area
The peak with the greatest area is assigned to the component.

Time
The peak with the closest retention time is assigned to the component.

Track retention time

Settings for tracking the retention time.

Selection	**off** | **Standard** | **everytime**
Default value	**off**

off
The latest retention times are not tracked. Instead, they are always taken from the component table.

Standard
The latest retention times are tracked by using the retention times of the last standard in the calibration data set and displaying them in the calibration curve.

everytime
The latest retention times are tracked by using the retention times of the last determination in the calibration data set and displaying them in the calibration curve.

5.8.3.4 Editing component

Dialog window: **Method ▸ Evaluation ▸ Components ▸ Component table ▸ [Edit] ▸ New / Edit ▸ Component**

Name

Name of the component The name must be unique within the component table of an analysis.

Entry	**64 characters**

Retention time

Expected retention time of the component with which the component is identified. The retention time is the time span from the injection of the component until the detector is reached. This time is specific for one component, whereby the properties of the separation column and the eluents also have an effect.

Input range	**0.000 - Duration of recording min**

Window

Identification window for assigning a peak to the component. The window size is given as a percentage of the expected retention time.

Input range	**1 - 50 %**
Default value	**5 %**

Reference components

Reference components with which the retention time is corrected. The expected retention time of a component is corrected with the factor $t_{reference}$(found)/$t_{reference}$(expected). A reference component may not have any reference components itself.

Selection	**none** | **Components of the analysis**
Default value	**none**

5.8.4 Evaluation - Standards

5.8.4.1 Standards - General

Subwindow section: **Method** ▸ **Evaluation** ▸ **Standards**

Application

The standard solutions for calibrating the sample and the check standards and the standard addition solutions for calculating recovery are defined in the **Standards** section. The solutions defined here are defined globally for the whole method. They are not specifically for a particular analysis.

Selecting the unit of concentration

Concentration unit

Unit of concentration used for calculations in the method. It applies for **Standards**, **Check standards**, **standard addition solutions** and the **Internal standard**. The result concentrations are also output in this unit.

Entry	**60 characters**
Selection	**ppm** | **ppb** | **ppt** | **g/L** | **mg/L** | **µg/L** | **ng/L** | **g/kg** | **mg/kg** | **µg/kg** | **ng/kg**
Default value	**ppm**

Tabs

- *Standards*
- *Check standards*
- *Standard addition solutions*

5.8.4.2 Standards - Standards

Tab: **Method** ▸ **Evaluation** ▸ **Standards** ▸ **Standards**

Table

The table of standard solutions contains the standards defined for the method with the corresponding concentrations for the components. If a component is defined in more than one analysis, it is only listed once.

The table cannot be edited and contains the following columns:

Name

Name of the component.

Standard #

Concentrations of the components for the corresponding standard.

Editing menu

New	Opens the **New Standard** dialog window to create a new standard *(see Chapter 5.8.4.5, page 425)*.
Edit	Edits selected standard *(see Chapter 5.8.4.6, page 425)*.
Copy	Copies selected standard to the clipboard.
Insert	Inserts new standard from the clipboard. Opens the **New Standard** dialog window to create a new standard. The dialog will be completed automatically and needs to be closed with **[OK]**.
Cut	Cuts selected standard and copy it to the clipboard.
Delete	Deletes the selected standard.

5.8.4.3 Standards - Check standards

Tab: **Method** ▸ **Evaluation** ▸ **Standards** ▸ **Check standards**

Table

The table of check standards contains the check standards defined for the methods with the corresponding concentrations for the components. If a component is defined in more than one analysis, it is only listed once.

The table cannot be edited and contains the following columns:

Name

Name of the component.

Check standard #

Concentrations of the components for the corresponding check standard.

Editing menu

New	Opens the **New check standard** dialog window to create a new check standard *(see Chapter 5.8.4.7, page 426)*.
Edit	Edits selected check standard *(see Chapter 5.8.4.8, page 426)*.

Copy	Copies selected check standard to the clipboard.
Insert	Inserts new check standard from the clipboard. Opens the **New check standard** dialog window to create a new check standard. The dialog will be completed automatically and needs to be closed with **[OK]**.
Cut	Cuts selected check standard and copies it to the clipboard.
Delete	Deletes the selected check standard.

5.8.4.4 Standards - Standard addition solutions

Tab: **Method ▶ Evaluation ▶ Standards ▶ Standard addition solutions**

Table

The table of standard addition solutions contains the standard addition solutions defined for the methods with the corresponding concentrations for the components. If a component is defined in more than one analysis, it is only listed once.

The table cannot be edited and contains the following columns:

Name

Name of the component.

Standard addition solution #

Concentrations of the components for the corresponding standard addition solution

Editing menu

New	Opens dialog window **New standard addition solution** to create a new standard addition solution *(see Chapter 5.8.4.7, page 426)*.
Edit	Edits selected standard addition solution *(see Chapter 5.8.4.8, page 426)*.
Copy	Copies selected standard addition solution to the clipboard.
Insert	Inserts new standard addition solution from the clipboard. Opens the **New standard addition solution** dialog window in order to create a new standard addition solution. The dialog will be completed automatically and needs to be closed with **[OK]**.
Cut	Cuts selected standard addition solution and copy it to the clipboard.
Delete	Deletes the selected standard addition solution.

Spiking

This is the section where the volumes are specified for the sample and standard addition solutions which define the mixing ratio in the spiking.

Sample

Percentage of volume of the sample in the spiking.

Input range	**0.000 - 100.000 mL**
Default value	**1.000 mL**

Standard addition solution

Percentage of volume of the standard addition solution in the spiking.

Input range	**0.000 - 100.000 mL**
Default value	**9.000 mL**

5.8.4.5 Creating new standard

Dialog window: **Method** ▸ **Evaluation** ▸ **Standards** ▸ **Standards** ▸ **[Edit]** ▸ **New** ▸ **New standard**

A new standard is defined in the **New standard** dialog window and is inserted in the standard table according to its name.

Standard

Number of the standard.

Input range	**1 - 1000**
Default value	**Smallest number not assigned**

'Components'

Concentration of the components in the selected standard.

Input range	**0.0 - 1000000.0 'Concentration unit'** (Increment: **0.000001**)
Default value	**0.0 'Concentration unit'**

[Filling]

Apply concentration for the selected components for all components.

5.8.4.6 Editing standard

Dialog window: **Method** ▸ **Evaluation** ▸ **Standards** ▸ **Standards** ▸ **[Edit]** ▸ **Edit** ▸ **Edit standard**

The standard selected in the table can be edited in the **Edit standard** dialog window.

Standard

Number of the standard.

Input range	**1 - 1000**
Default value	**Smallest number not assigned**

'Components'

Concentration of the components in the selected standard.

Input range	**0.0 - 1000000.0 'Concentration unit'** (Increment: **0.000001**)
Default value	**0.0 'Concentration unit'**

[Filling]

Apply concentration for the selected components for all components.

5.8.4.7 Creating new check standard

Dialog window: **Method ▸ Evaluation ▸ Standards ▸ Check standards ▸ [Edit] ▸ New ▸ New check standard**

A new check standard is defined in the **New check standard** dialog window and is inserted in the table of the check standards in accordance with its name.

Check standard

Number of the check standard

Input range	**1 - 1000**
Default value	**Smallest number not assigned**

'Components'

Concentration of the components in the selected check standard.

Input range	**0.0 - 1000000.0 'Concentration unit'** (Increment: **0.000001**)
Default value	**0.0 'Concentration unit'**

[Filling]

Apply concentration for the selected components for all components.

5.8.4.8 Editing check standard

Dialog window: **Method ▸ Evaluation ▸ Standards ▸ Check standards ▸ [Edit] ▸ Edit ▸ Edit check standard**

The check standard selected in the table can be edited in the **Edit check standard** dialog window.

Check standard

Number of the check standard

Input range	**1 - 1000**
Default value	**Smallest number not assigned**

'Components'

Concentration of the components in the selected check standard

Input range	**0.0 - 1000000.0 'Concentration unit'** (Increment: **0.000001**)
Default value	**0.0 'Concentration unit'**

[Filling]

Apply concentration for the selected components for all components.

5.8.4.9 Creating new standard addition solution

Dialog window: **Method** ▸ **Evaluation** ▸ **Standards** ▸ **Standard addition solutions** ▸ **[Edit]** ▸ **New** ▸ **New standard addition solution**

In the dialog window **New standard addition solution**, a new standard addition solution is defined and is inserted in the table according to its name.

Standard addition solution

Number of the standard addition solution.

Input range	**1 - 1000**
Default value	**Smallest number not assigned**

'Components'

Concentration of the components in the selected standard addition solution.

Input range	**0.0 - 1000000.0 'Concentration unit'** (Increment: **0.000001**)
Default value	**0.0 'Concentration unit'**

[Filling]

Apply concentration for the selected components for all components.

5.8.4.10 Editing standard addition solution

Dialog window: **Method** ▸ **Evaluation** ▸ **Standards** ▸ **Standard addition solutions** ▸ **[Edit]** ▸ **Edit** ▸ **Edit standard addition solution**

The standard addition solution selected in the table can be edited in the **Edit stanard addition solution** dialog window.

Standard addition solution

Number of the standard addition solution.

Input range	**1 - 1000**
Default value	**Smallest number not assigned**

'Components'

Concentration of the components in the selected standard addition solution.

Input range	**0.0 - 1000000.0 'Concentration unit'** (Increment: **0.000001**)
Default value	**0.0 'Concentration unit'**

[Filling]

Apply concentration for the selected components for all components.

5.8.5 Evaluation - Calibration

5.8.5.1 Calibration - General

Subwindow section: **Method** ▸ **Evaluation** ▸ **Calibration**

Application

In the section **Calibration**, the calibration methods and the calibration parameters for calculating the calibration curves are defined for the components.

Tabs

- *Calibration curves*
- *Properties Calibration*
- *Monitoring*

5.8.5.2 Calibration - Calibration curves

Tab: **Method** ▸ **Evaluation** ▸ **Calibration** ▸ **Calibration curves**

Selecting the analysis

Analysis

Selecting the analysis. Only analyses with data sources that can be evaluated can be selected. Details can be found with the individual devices *(see Chapter 7, page 621)*.

Selection	**Analyses of the method**

Table

The type of calibration curve is defined in the table of calibration curves for each component. The table cannot be edited and contains the following columns:

Component

Name of the component. Components can neither be added nor deleted here; this must be done in the component table*(see Chapter 5.8.3.2, page 419)*.

Response

Measured quantity for the evaluation of the calibration curve.

Curve type

Curve type for the evaluation of the calibration curve.

Weighting

Information as to how the points of the calibration curve are to be weighted.

Menu Edit

Edit	Opens the dialog window **Calibration curve 'Component name'** to edit the data of the selected line.
Copy	Copies all selected lines to the clipboard.
Insert	Lines from the clipboard inserted in the lines above the selected line. The copied lines cannot be inserted into the same method.
Apply settings for all components	Settings of the selected line will be set for all components.

5.8.5.3 Calibration - Properties Calibration

Tab: **Method** ▸ **Evaluation** ▸ **Calibration** ▸ **Properties Calibration**

Calibration method

Selecting the method with which calibration is to take place.

Selection	**External standard** | **Internal standard**
Default value	**External standard**

External standard
When calibrating with external standard, calibration curves are recorded for all components to be determined. The concentrations of the components in the sample are calculated with the aid of these calibration curves *(see Chapter 5.8.7.3.1, page 462)*.

Internal standard
When calibrating with the internal standard, an internal standard is injected along with each sample and each standard. The signal ratios and volume ratios of component and internal standard are taken into account for calculating the calibration curves and the concentrations of the components in the sample *(see Chapter 5.8.7.3.2, page 466)*.

[Internal standard...]

Opens the **Internal standard** dialog window in which each analysis can be assigned an internal standard and its concentration *(see Chapter 5.8.5.6, page 435)*.

Calibration mode

The calibration mode determines which standard measurements are used for determining the calibration curve.

Note

The exact behavior of the calibration modes is described under*5.8.5.7Calibration mode*.

Selection	**Replace** | **Average** | **Moving average** | **Bracketing** | **Total**
Default value	**Replace**

Replace
In this calibration mode, only the last determination is included in the calibration of the sample for each standard.

Average
In this calibration mode, the average of the selected number of determinations is incorporated into the calibration of the sample for each standard. All standards are weighted equally thereby.

Moving average
In this calibration mode, the average of the selected number of determinations of standard is incorporated into the calibration of the sample for each standard. The standards are weighted differently. If this mode is selected, only one weighting **1** is allowed.

Bracketing
In this calibration mode, all standards around a sample are used for calibrating it. The calibration curves can only be calculated after the second sequence of standards. This mode is only possible within a sample table. Methods with this calibration mode cannot be executed in a single determination.

Total
In this calibration mode, every sample of a sample table is calibrated with all the standards in this table. This mode is only possible within a sample table. Methods with this calibration mode cannot be executed in a single determination.

Average / Moving average

Number of determinations for calculating the average or moving average.

Input range	**1 - 10**
Default value	**3**

Function type

The function type determines the independent variable when fitting the calibration curve. This also defines how the calibration curve is displayed.

Selection	**Response = f(concentration)** | **Concentration = f(response)**
Default value	**Response = f(concentration)**

Add point in origin to calibration curve

on | off (Default value: **off**)

If this option is enabled, a point with the coordinates 0;0 is added to the calibration data set. This point is taken into account in the calculation of the calibration curve. It is not listed in the table of calibration points and not depicted in the graph of the calibration points. It can therefore also not be removed manually from the calibration. To do so, this option, and thus also the method as well, must be changed.

Blank value correction for inline calibration

on | off (Default value: **off**)

If this option is activated, the blank value calculated from the calibration curve is automatically subtracted from the result.

Calculation of calibration curve from

Selection as to how the single calibration points of the same standard contribute to the calculation of the calibration curve.

Note

This setting is only visible for the calibration modes **Bracketing** and **Total**. For the other calibration modes always one calibration point per standard is created.

Selection	**Single calibration points** | **Mean values for every standard**
Default value	**Single calibration points**

Single calibration points
Each measurement with the same standard contributes equally to the calibration curve; they will be adjusted to all calibration points. I.e. if standard 3 is measured 5 times, then 5 calibration points of standard 3 will contribute to the calibration curve.

Mean values for every standard
For all standards, the mean value is derived from the calibration points of the same standard. Then the calibration curve is adjusted to the mean values of the standards. I.e. if standard 3 is measured 5-times, then the mean value of the 5 measurements of standard 3 will contribute to the calibration curve.

5.8.5.4 Calibration - Monitoring

Tab: **Method** ▸ **Evaluation** ▸ **Calibration** ▸ **Monitoring**

Validity of calibration

Selection	**Unlimited** | **Same day** | **x days**
Default value	**Unlimited**

Unlimited
The calibration data set is valid indefinitely, i.e. an unknown sample will be calibrated with this calibration data set no matter how old it is.

Same day
All standards that are included in the calculation of the calibration data set must be determined on the same day.

x days
All standards that are included in the calculation of the calibration data set need to have been determined within the specified number of days (**1 ... 999**).

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail...]

[E-mail...] opens the window **Send E-mail** *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on. Regardless of which action is selected, the particular message is also displayed in the message window of the **Watch Window**.

If it has been discovered while monitoring that the time interval for the validity of the calibration has expired, then one of the following actions will be triggered automatically with the Start test:

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Display message**

Record message
The message that the time interval for the validity of the calibration has expired will be saved automatically in the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued then the message that the calibration is no longer valid will be automatically saved with the determination.

Stop determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

5.8.5.5 Editing calibration curves

Dialog window: **Method ▸ Evaluation ▸ Calibration ▸ Calibration curves ▸ [Edit] ▸ Edit ▸ Calibration curve 'Component'**

The calibration curve parameters for the components selected in the table can be edited in the **Calibration curve 'Component'** dialog window.

Response

Measured quantity for the evaluation of the calibration curve.

Selection	**Area** | **Height**
Default value	**Area**

Curve type

Curve type for the evaluation of the calibration curve. Specifies how the calibration curve is to be fitted. A minimum number **p** of different calibration points must exist for the different curve types (the number of calibration points corresponds to the number of different standards) for the fit of the calibration curve to make sense. The minimum number **p** corresponds to the number of terms in the calibration equation.

Selection	**Linear through 0** | **Linear** | **Quadratic through 0** | **Quadratic** | **Cubic through 0** | **Cubic** | **Point to Point**
Default value	**Linear**

Linear through 0
Linear calibration curve that crosses the zero point.

Linear
Linear calibration curve

Quadratic through 0
Quadratic calibration curve that crosses the zero point.

Quadratic
Quadratic calibration curve.

Cubic through 0
Cubic calibration curve that crosses the zero point.

Cubic
Cubic calibration curve.

Point to Point
The individual calibration points are linked together in a linear form.

Note

If the minimum number of calibration points for the selected curve type in the calibration data set is not achieved, a different curve type will be selected to fit the curve during the calculation of the calibration curve .

Selected curve type	p	Curve type used
Linear through 0	≥ 1	Linear through 0
Linear	≥ 2	Linear
	1	Linear through 0
Quadratic through 0	≥ 2	Quadratic through 0
	1	Linear through 0
Quadratic	≥ 3	Quadratic

	2	Linear
	1	Linear through 0
Cubic through 0	≥ 3	Cubic through 0
	2	Linear
	1	Linear through 0
Cubic	≥ 4	Cubic
	3	Quadratic
	2	Linear
	1	Linear through 0
Point to Point	≥ 3	Point to Point
	2	Linear
	1	Linear through 0

Weighting

Information as to how the points of the calibration curve are to be weighted.

Selection	**1** | **1/Concentration** | **1/Concentration²** | **1/Area** | **1/Area²**
Default value	**1**

Note

If **Moving average** is selected on the tab **Properties calibration** for the **Calibration mode**, then only weighting **1** is permitted.

5.8.5.6 Editing internal standard

Dialog window: **Method** ▸ **Evaluation** ▸ **Calibration** ▸ **Properties Calibration** ▸ **[Internal standard]** ▸ **Internal standard**

The dialog window **Internal standard** contains a line for each analysis, in which the internal standard and its concentration can be entered. No

calibration points are created if the peak of the internal standard is not found in a determination.

'Analysis'

Selecting the components to be defined as internal standard for the selected analysis.

Selection	**not defined** | **Components from the component table of the analysis**
Default value	**not defined**

Concentration

Input range	**0.000 - 1000000.000 'Concentration unit'**
Default value	**not defined 'Concentration unit'**
Selection	**Value 1...4**

Value 1...4
Value 1...4 can be selected from the **sample data** of the determination as concentration value of the internal standard.

5.8.5.7 Calibration mode

The calibration mode determines which standard measurements are used for calculating the calibration curve. It is specified in the evaluation dialog **Calibration** on the tab **Properties calibration**.

In the calibration modes **Replace**, **Average** and **Moving average** only standards that were measured **before the sample** are included in the calibration of the sample. A sample determined with these calibration modes can therefore immediately be calibrated, evaluated and fully completed.

In contrast to this, with **Bracketing** and **Total**, standards that were measured **after the sample** are also included in the calibration of the sample. In these calibration modes, a sample is first provisionally evaluated with the available standards and saved as an incomplete determination. When all the relevant standards have been measured, the sample is automatically evaluated with the full calibration and completed. These calibration modes are therefore only possible in a sample table.

5.8.5.7.1 Calibration mode - Replace

With **Replace**, only the **last determination** from each **standard m** is incorporated into the calibration of the sample.

- In the case of the multiple determination of a standard, only the result of the last determination is included in the calibration, since the calibration points are always replaced immediately.
- Only standards measured **before the sample** are used for calibration. A sample can immediately be evaluated and fully completed.

5.8.5.7.2 Calibration mode - Average

With **Average**, the average from the **last n determinations** from **Standard m** is included in the calibration of the sample. All the determinations of standard m are **weighted equally** thereby.

- In this mode, a full calibration is always generated. It merely indicates the maximum no. of determinations of a **Standard m** that are included in the calibration.
- Only standards measured **before the sample** are used for calibration. A sample can immediately be evaluated and fully completed.

5.8.5.7.3 Calibration mode - Moving average

With **Moving average**, the average from the **last n determinations** from **Standard m** is included in the calibration of the sample. All the determinations of a standard m are **weighted differently**. A standard always carries double the weight of the next older and half the weight of the next younger standard.

- In this mode, a full calibration is always generated. It merely indicates the maximum no. of determinations of a **Standard m** that are included in the calibration.
- Only standards measured **before the sample** are used for calibration. A sample can immediately be evaluated and fully completed.

5.8.5.7.4 Calibration mode - Bracketing

In the case of **Bracketing**, **all standards surrounding a sample** in the sample table are included in the calibration of the sample.

Note

This mode is only possible within a sample table. Methods with this calibration mode cannot be executed in a single determination.

- If a **Standard m** is subjected to multiple determinations, all the measurement points are included in the calculation of the calibration curve without averaging. It makes no difference whether the multiple determination results from a multiple injection of a sample or from several samples from the sample table.
- A sequence of samples is always surrounded by two sequences of standards before and after that must be taken into account. Final calculation of the calibration curves is therefore not possible until after the second sequence of standards.

- Samples with the standards measured so far (Standard sequence before the sample) are determined in a sample table, marked as incomplete and stored in the database. After the last standard of the standard sequence following the samples has been determined, the incomplete determination is reprocessed automatically. The valid calibration data set is calculated and final determination of the sample is made. It is not until now that the data sets of the sample can be marked as complete.

5.8.5.7.5 Calibration mode - Total

With **Total**, every sample of a sample table is completely calibrated with **all the standards** in this **sample table**.

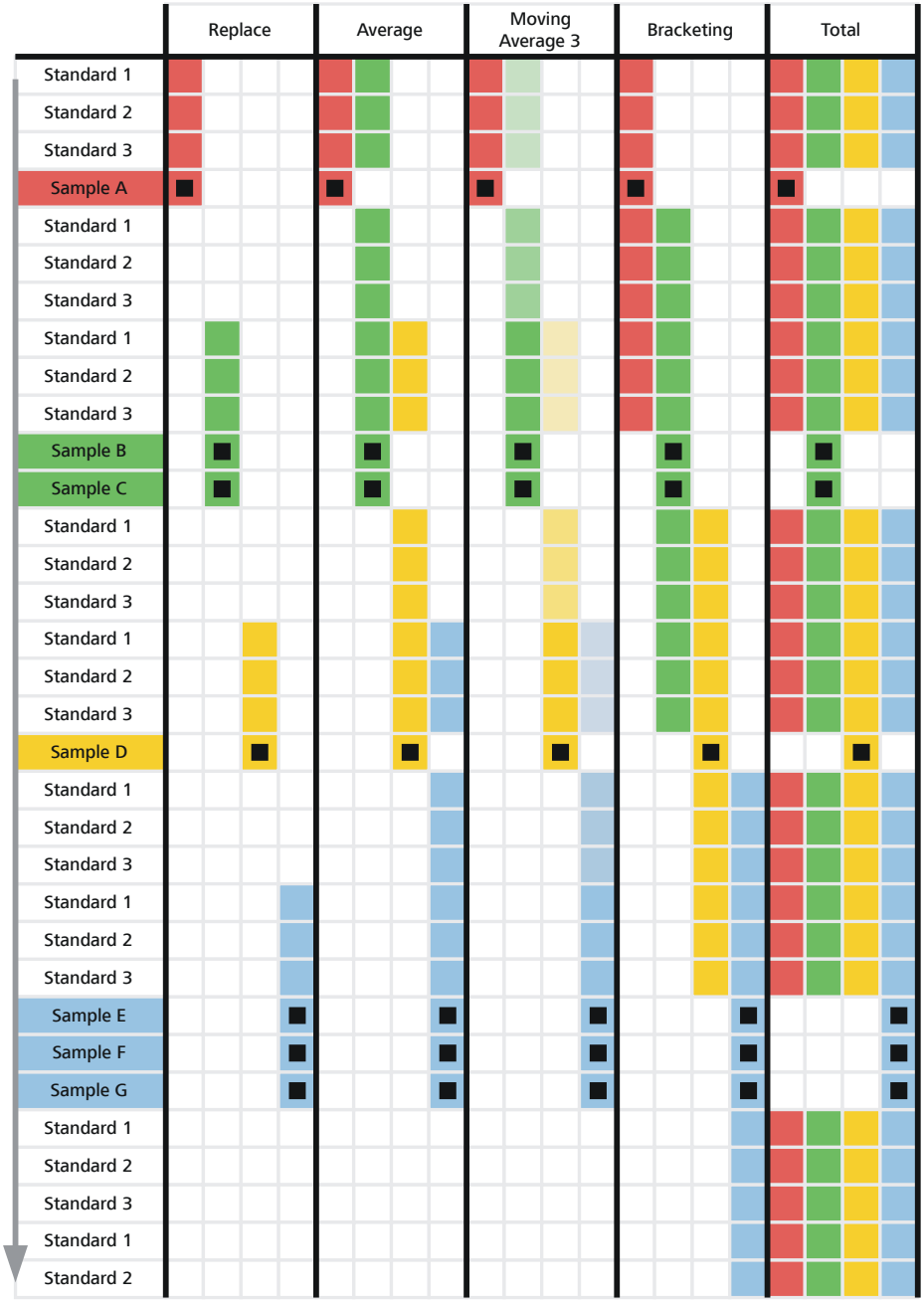
Note

This mode is only possible within a sample table. Methods with this calibration mode cannot be executed in a single determination.

- To calculate the calibration curve, all standards are include for all samples within a sample table. If a **Standard m** is subjected to multiple injections, all the measurement points are included in the calculation of the calibration curve without averaging.
- Before the sample table is completely processed, samples with the standards measured so far are determined, marked as incomplete and stored in the database. After the entire table has been processed, the incomplete determinations are automatically reprocessed. It is not until now that the data sets of the sample can be marked as complete.

5.8.5.7.6 Calibration mode - Overview

Schematic overview of the behavior of the calibration in the various calibration modes:



First column Example of a sample table with standards and samples.

Further columns Each column shows a calibration mode. All the standards that belong to the calibration of a sample are visualized according to the calibration mode.

Black square Marks a sample.

Colored background — A different color is assigned to each sample. The samples and the standards that generate the associated calibration curve are marked with the same color.

5.8.6 Evaluation - Results

5.8.6.1 Results - General

Subwindow section: **Method** ▸ **Evaluation** ▸ **Results**

Application

The output and export of results are defined in the **Results** section. Additional results can also be defined by the user, and results can be both evaluated statistically and monitored.

Tabs

- *Report*
- *Database*
- *Statistics*
- *Monitoring*
- *User-defined results*
- *Common variable*

5.8.6.2 Results - Report

Tab: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Report**

Table

Definition is made in the report table as to which report template is used to generate the reports for the determinations in this method and whether they are to be saved as PDF file or printed. The report is output as soon as the determination is complete (in the case of multiple determination, for example, all the single determinations must be carried out and the common statistics calculated). The table cannot be edited and contains the following columns:

Report template

Displaying the names of the report templates for the reports.

Output

Displaying the output target for the reports.

Edit menu

New	Inserts a new empty line above the selected line and open the dialog window **Define report** *(see Chapter 5.8.6.8, page 445)*.

Edit	Edits selected line *(see Chapter 5.8.6.8, page 445)*.
Copy	Copy the selected lines to the clipboard.
Paste	Insert all lines from the clipboard above the selected line in the report table.
Cut	Cuts selected lines and copy them to the clipboard.
Delete	Deletes the selected lines.

Pharmacopoeia

Selecting the calculation regulation for certain peak parameters that are calculated differently depending on the country/region.

Selection	**EP 7.5** | **JP 15** | **USP** | **EP** | **JP**
Default value	**USP**

EP 7.5
European pharmacopoeia, Edition 7.5

JP 15
Japanese pharmacopoeia, Edition 15 .

USP
US Pharmacopoeia.

EP
European pharmacopoeia.

JP
Japanese pharmacopoeia.

Decimal places of the results

[Edit]

Opens the window **Define decimal places** in which you can define with which level of accuracy the results are to be output *(see Chapter 5.8.6.9, page 446)*.

5.8.6.3 Results - Database

Tab: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Database**

Database

This table defines which database the determination data is to be saved in.

Database name

Name of the database in which the determination is to be stored.

Edit menu

New	Open the **Select database** dialog window *(see Chapter 5.8.6.10, page 446)*.
Edit	Open the **Select database** dialog window *(see Chapter 5.8.6.10, page 446)*.
Delete	Deletes the selected lines.

Automatic export

This table defines whether and how an automatic export of the determination data should take place.

Export settings

Name of the export template with which the determination is to be exported.

Edit menu

New	Open the **Select export settings** dialog window *(see Chapter 5.8.6.11, page 446)*.
Edit	Open the **Select export settings** dialog window *(see Chapter 5.8.6.11, page 446)*.
Delete	Deletes the selected lines.

5.8.6.4 Results - Statistics

Tab: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Statistics**

Statistically covered results

This table defines which results of multiple determinations are to be statistically evaluated automatically. The table cannot be edited and contains the following columns:

Result name

Name of the result being statistically evaluated.

Statistics function

Statistics function with which the result is evaluated.

Edit menu

New	Opens **Define statistics** dialog window *(see Chapter 5.8.6.12, page 447)*.
Edit	Opens **Define statistics** dialog window *(see Chapter 5.8.6.12, page 447)*.
Delete	Deletes the selected lines.

5.8.6.5 Results - Monitoring

Tab: **Method ▸ Evaluation ▸ Results ▸ Monitoring**

Rules for monitoring results

- Each result can only be monitored once.
- Only results of type **number** can be monitored.
- The results are always monitored after evaluation. The determination need not be complete. As soon as the results of a determination are recalculated in a run (e.g. due to modified calibration), the newly calculated results are monitored.

Table

This table defines which results are to be monitored. The monitoring settings of a marked result are displayed in the right-hand part of the tab.

Edit menu

New	Opens **Define monitoring** dialog window *(see Chapter 5.8.6.14, page 448)*.
Edit	Opens **Define monitoring** dialog window *(see Chapter 5.8.6.14, page 448)*.
Delete	Deletes the selected lines.

Limit

Lower limit

Displays the bottom limit value for the selected result.

Upper limit

Displays the top limit value for the selected result.

Message

Displays the message to be sent when the limit values for the selected result are exceeded.

Action

Displays the action to be triggered automatically when the limit values for the selected result are exceeded.

5.8.6.6 Results - User-defined results

Tab: **Method ▸ Evaluation ▸ Results ▸ User-defined results**

Table

Additional user-defined results can be defined in this table and are automatically included in the calculation. The main properties of a marked result are displayed in the right-hand part of the tab. The results are calcu-

lated in the order in which they appear in the table. They can be moved with the arrow key in order to change the sequence in which they appear.

The table cannot be edited and contains the following columns:

Result name

Name of the user-defined result.

Edit menu

New	Opens dialog window **Define result** *(see Chapter 5.8.6.15, page 450)*.
Edit	Opens dialog window **Define result** *(see Chapter 5.8.6.15, page 450)*.
Delete	Deletes the selected lines.

Result type

Displays the result type for the selected result.

Formula

Displays the formula for the selected result.

Description

Displays the description for the selected result.

Modifies the sequence of displayed lines by moving the selected line upward.

Modifies the sequence of displayed lines by moving the selected line downward.

5.8.6.7 Results - Common Variable

Tab: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Common Variable**

Table

In this table you can assign **Common Variables**, to be able to use them in the following determinations. Assigned result and description of a marked result are displayed in the right-hand part of the tab. The common variables are calculated in the order in which they appear in the table. The common variables are saved in the data set of the determination and can be output in a report but will not be displayed in the result overview.

The table cannot be edited and contains the following columns:

Name

Name of the Common Variable.

Edit menu

New	Opens dialog window **Assign common variable** *(see Chapter 5.8.6.16, page 451)*.
Edit	Opens dialog window **Assign common variable** *(see Chapter 5.8.6.16, page 451)*.
Delete	Deletes the selected lines.

Assigned result

Displays the result assigned to the common variable.

Description

Displays the description for the common variable.

5.8.6.8 Defining report

Dialog window: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Report** ▸ **[Edit]** ▸ **New / Edit**

Report template

Report template

Selection of the predefined Report template with which the report is to be generated.

Selection	**Report templates**

Report output

Definition of targets for report output.

Printer

on | off (Default value: **off**)

The report is printed on the selected printer when this option is activated.

Selection	**Standard printer** | **All of the printers configured in Windows**
Default value	**Standard printer**

Standard printer
Printout on the printer defined as standard printer in Windows.

PDF file

on | off (Default value: **off**)

The report is stored as PDF file when this option is activated.

The desired directory can be selected and a name for the PDF file can be entered by means of the symbol .

Send E-mail

on | off (Default value: **off**)

If this option is enabled, then the report is produced not only as a PDF file but also as an attachment to the address defined under **[E-mail]**.

[E-mail]

[E-Mail] opens the **Send E-mail** window *(see Chapter 2.7.1, page 106)*.

5.8.6.9 Define decimal places

Dialog window: **Method ▸ Evaluation ▸ Results ▸ Report ▸ [Edit] ▸ Define decimal places**

The dialog window contains all results calculated by default in **MagIC Net** which are not whole numbers. The fields can be edited directly.

[OK]

Apply new entries for decimal places.

[Basic setting]

Restore default values for decimal places.

5.8.6.10 Select database

Dialog window: **Method ▸ Evaluation ▸ Results ▸ Database ▸ [Edit] ▸ New / Edit ▸ Select database**

Database

Name of the database in which the determination is to be stored.

Selection	**All databases in MagIC Net**

5.8.6.11 Selecting export settings

Dialog window: **Method ▸ Evaluation ▸ Results ▸ Database ▸ [Edit] ▸ New / Edit ▸ Select export settings**

Export settings

Name of the export template with which the determination is to be exported.

Selection	**Export templates**

5.8.6.12 Defining statistics

Dialog window: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Statistics** ▸ **[Edit]** ▸ **New / Edit** ▸ **Define statistics**

Result

Name of the result to be statistically evaluated.

With the symbol … you open the dialog window **Select result**, in which the desired result can be selected *(see Chapter 5.8.6.13, page 447)*.

Statistics

List of statistical variables to be calculated.

Mean value

on | off (Default value: **on**)

Absolute standard deviation

on | off (Default value: **off**)

Relative standard deviation

on | off (Default value: **off**)

Minimum

on | off (Default value: **off**)

The variable **Minimum** is not calculated. Only the smallest defined result of the statistical group is output together with the statistical variables.

Maximum

on | off (Default value: **off**)

The variable **Maximum** is not calculated. Only the smallest defined variable of the statistical group is output together with the statistical variables.

5.8.6.13 Selecting result

Dialog window: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Statistics** ▸ **[Edit]** ▸ **New / Edit** ▸ **Define statistics** ▸ **Select result**

The result variables can be selected in the dialog window **Select result**.

Variables

Selects the desired result variables from all of the automatically calculated results and from the user-defined single and component results.

Description

Description of the result variables selected under **Variables**.

5.8.6.14 Defining monitoring

Dialog window: **Method** ▸ **Evaluation** ▸ **Results** ▸ **Monitoring** ▸ **[Edit]** ▸ **New / Edit** ▸ **Define monitoring**

Result

Name of the result to be monitored.

With the symbol … you open the dialog window **Select result**, in which the desired result can be selected *(see Chapter 5.8.6.13, page 447)*.

Validity

In this section, the type of determinations to be monitored are defined and how the monitoring should react if a result to be monitored is not at all present.

Sample

on | off (Default value: **on**)

If this option is enabled, all the determinations with sample type **Sample** are monitored.

Check standard

on | off (Default value: **off**)

If this option is enabled, all the determinations with sample type **Check standard** are monitored.

Standard

on | off (Default value: **off**)

If this option is enabled, all the determinations with sample type **Standard** are monitored.

Monitor unavailable results

on | off (Default value: **on**)

If this option is enabled, the result is always monitored even if it is not available (it is then automatically outside the limits). If this option is disabled, an unavailable result will be ignored by the monitoring.

Note

Monitoring only affects unavailable results which have been generated but which are without content (e.g. no peak was found for a component). It does not affect results that have not been generated (e.g. no analysis has been started). These are never monitored.

Limit

Lower limit

Lower limit value for the result. It is possible to enter a formula with .

Input range	**-1.000E99 - 1.000E99**

Upper limit

Upper limit value for the result. It is possible to enter a formula with .

Input range	**-1.000E99 - 1.000E99**

Message

The text editor for entering or changing the message is opened with or by double-clicking into the text field. The message defined here is output in the message window of the **Watch Window** if the lower limit value is not reached or if the upper limit value is exceeded. This is in the program part **Workplace**.

Selection	**Text (unlimited)**

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail...]

[E-mail...] opens the window **Send E-mail** *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

If the lower limit value is not reached or if the upper limit value is exceeded for the monitored result, then one of the following actions will be executed automatically:

Selection	**Document message** | **Display message** | **End the determination and stop devices**
Default value	**Display message**

Document message
The message that the result is outside the limit values is saved automatically in the determination.

Display message
After the determination is ended, a message is displayed and you can select whether you want to continue the determination or cancel it. The message that the result is outside the limit values is saved automatically in the determination.

End the determination and stop devices
After the determination has finished a message is displayed and the used devices will be shut down. The message that the result is outside the limit values is saved automatically in the determination.

5.8.6.15 Defining result

Dialog window: **Method** ▸ **Evaluation** ▸ **Results** ▸ **User-defined results** ▸ **[Edit]** ▸ **New / Edit** ▸ **Define result**

Result type

Result type

Selecting the type of user-defined result.

Selection	**Individual result** | **Component result**
Default value	**Individual result**

Individual result
User-defined single result that is automatically calculated.

Component result
User-defined component result that is calculated from an automatically generated result with the help of the specified formula for all components of the selected analysis.

for

selecting the analysis for user-defined component results.

Selection	**Analyses**

Result name

Unit of the calculated result for output that can continue to be used under the designation **RS.' Analysis name'.'Component name'.'Result name'.[.VAL]** (single result) or **RS.AC'Result name'[VAL]** (**AC**=all components; component result).

Entry	**40 characters**

Properties

Formula

Field for the calculation formula that can either be edited directly or be created with the formula editor by clicking on the symbol . The formula defines the type (**Number**, **Text** or **Date/Time**) of the result.

Unit

Unit of the calculated result for output (only text) that can continue to be used under the designation **RS. 'Analysis name'.'Component name'.'Result name'.UNI** (single result) or **RS.AC. 'Result name'.UNI** (**AC** =all components; component result).

Entry	**60 characters**
Selection	**ppm** | **ppb** | **ppt** | **g/L** | **mg/L** | **µg/L** | **ng/L** | **g/kg** | **mg/kg** | **µg/kg** | **ng/kg** | **µS/cm·min**
Default value	**ppm**

Decimal places

Number of decimal places for the output of the calculated result. This parameter is ignored for results of the type **text** or **date/time**.

Input range	**0 - 6**
Default value	**3**

Description

Optional description of the result.

Entry	**1000 characters**

5.8.6.16 Assigning common variable

Dialog window: **Method ▸ Evaluation ▸ Results ▸ Common Variable ▸ [Edit] ▸ New / Edit ▸ Assign common variable**

Name

Selecting the common variables to which a result can be assigned.

Selection	**Common variables that are not already assigned**

Assigned result

Name of the result to be assigned to the common variables.

With the symbol [...] you open the dialog window **Select result**, in which the desired result can be selected *(see Chapter 5.8.6.13, page 447)*.

Description

Optional description of the common variables.

Entry	**1000 characters**

5.8.7 Evaluation - Calculations

5.8.7.1 Peak results

The following peak results are automatically calculated/defined for each component and are available as variable:

5.8.7.1.1 Peak number

Variable name: RS.'Analysis name'.'Component name'.NUM

Number of the peak. The peaks found at integration are numbered consecutively. It is of no importance whether they can be assigned to a component or not.

5.8.7.1.2 Component name

Variable name: RS.'Analysis name'.'Component name'.COMP

Name of the components contained in the sample or standard.

5.8.7.1.3 Retention time

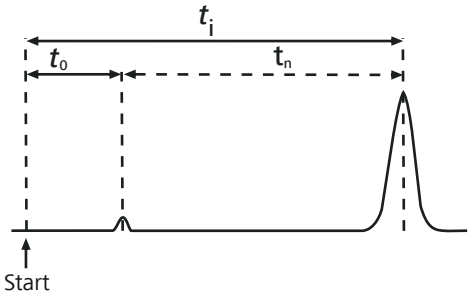
Variable name: RS.'Analysis name'.'Component name'.RET

The dwell time of a component in the column is referred to as the overall retention time or **gross retention time** t_i. The gross retention time is defined as **net retention time** t_n plus **void time** t_0.

$$t_i = t_n + t_0$$

The time during which a component does not move is referred to as **net retention time** (corrected retention time).

The time required by a component to travel through the column without interacting with the stationary phase is referred to as **void time**.



5.8.7.1.4 Full width at half maximum

Variable name: RS.'Analysis name'.'Component name'.FWHM

Width of a peak at half height.

5.8.7.1.5 Height

Variable name: RS.'Analysis name'.'Component name'.HGT

Height of a peak.

5.8.7.1.6 Height ratio

Variable name: RS.'Analysis name'.'Component name'.HGT%

Normalization of the peak height for all peaks to 100%.

The formula for standardizing is:

$$H_i\% = \frac{100 \cdot H_i}{\sum | H_i |}$$

5.8.7.1.7 Area

Variable name: RS.'Analysis name'.'Component name'.AREA

Area of a peak

5.8.7.1.8 Area ratio

Variable name: RS.'Analysis name'.'Component name'.AREA%

Normalization of the peak area for all peaks to 100%.

$$A_i\% = \frac{100 \cdot A_i}{\sum | A_i |}$$

5.8.7.1.9 Capacity factor

Variable name: RS.'Analysis name'.'Component name'.CAP

The capacity factor is a parameter for evaluating the quality of a chromatographic separation. The **capacity factor** k_i' (also referred to as retention factor) indicates how much longer a component remains at or in the stationary phase compared to the mobile phase. The capacity factor is equal to the quotient of the **corrected retention time** $t_i - t_0$ and the **void time** t_0.

$$k_i' = \frac{(t_i - t_0)}{t_0}$$

5.8.7.1.10 Resolution

Variable name: RS.'Analysis name'.'Component name'.RES

The aim of an analysis is to separate the components into individual signals. The resolution R between two neighboring peaks is a parameter for evaluating the quality of a chromatographic separation. It is defined as the quotient of the distance of two peak maxima (difference of the two gross retention times) and the arithmetic mean of the two associated base widths.

EP

(European pharmacopoeia)

$$R = 1.18 \frac{(t_{i+1} - t_i)}{W_{0.5i} + W_{0.5i+1}}$$

USP

(US pharmacopoeia)

$$R = 2 \frac{(t_{i+1} - t_i)}{W_b + W_{bi+1}}$$

JP

(Japanese pharmacopoeia)

$$R = 1.18 \frac{(t_{i+1} - t_i)}{W_{0.5i} + W_{0.5i+1}}$$

Variable symbol	Variable name	Unit	Description
R	Resolution	—	Resolution of two neighboring peaks
t_i	Gross retention time	min	Gross retention time of signal *i*
t_{i+1}	Gross retention time	min	Gross retention time of signal *i+1*
$W_{0.5i}$	Peak width	min	Width of the peak *i* at half height
$W_{0.5i+1}$	Peak width	min	Width of the peak *i+1* at half height

5.8.7.1.11 Theoretical plates

Variable name: RS.'Analysis name'.'Component name'.PLA

The theoretical plates describes the separating capacity of a column. It is calculated from the peak width and the associated retention time.

EP 7.5

(European pharmacopoeia)

$$N_i = 5.54\left(\frac{t_i}{W_{0.5i}}\right)^2$$

JP 15

(Japanese pharmacopoeia)

$$N_i = 5.54\left(\frac{t_i}{W_{0.5i}}\right)^2$$

EP

(European pharmacopoeia)

$$N_i = 5.54\left(\frac{t_i}{W_{0.5i}}\right)^2$$

USP

(US pharmacopoeia)

$$N_i = 16\left(\frac{t_i}{W_{bi}}\right)^2$$

JP

(Japanese pharmacopoeia)

$$N_i = 5.55\left(\frac{t_i}{W_{0.5i}}\right)^2$$

Variable symbol	Variable name	Unit	Description
N_i	Theoretical plates	—	The theoretical plates describes the separating capacity of a column
t_i	Gross retention time	min	Gross retention time of signal *i*
$W_{0.5i}$	Peak width	min	Width of the peak *i* at half height

Variable symbol	Variable name	Unit	Description
W_{bi}	Peak base width	min	Width of the peak *i* between the inflection tangents as a section on the baseline.

5.8.7.1.12 Theoretical plates per meter

Variable name: RS.'Analysis name'.'Component name'.PLAM

Theoretical plates per meter of the column for the corresponding peak (theoretical plates divided by the length of the separation column).

$$N_i' = \frac{N_i \cdot 1000}{L_{Column}}$$

Variable symbol	Variable name	Unit	Description
N_i'	Theoretical plates per meter	1/m	The theoretical plates per meter describes the separating capacity of a column
N_i	Theoretical plates	—	The theoretical plates describes the separating capacity of a column
L_{Column}	Length	mm	Length of the column

5.8.7.1.13 Gauss factor

Variable name: RS.'Analysis name'.'Component name'.PGF

The peak Gauss factor PGF is the ratio of the peak width at half signal height $W_{0.5i}$ to the peak width at a tenth of the signal height $W_{0.1i}$ multiplied by a reciprocal value of the ratio for a peak with ideal Gauss profile. The formula in acc. with EPA is:

$$PGF = 1.83 \frac{W_{0.5i}}{W_{0.1i}}$$

Variable symbol	Variable name	Unit	Description
PGF	Peak-Gauss factor	—	
$W_{0.5i}$	Peak width	min	Width of the peak *i* at half height

Variable symbol	Variable name	Unit	Description
$W_{0.1i}$	Peak width	min	Width of a peak *i* at a tenth of the signal height

5.8.7.1.14 Asymmetry

Variable name: RS.'Analysis name'.'Component name'.ASY

The form of a peak is described in an initial approximation as a Gauss curve. In practice, this ideal form is seldom reached. The peaks generally have a certain asymmetry defined by the following formulae.

EP 7.5

(European pharmacopoeia)

$$A_s = \frac{W_{0.05i}}{2a_{0.05i}}$$

JP 15

(Japanese pharmacopoeia)

$$A_s = \frac{W_{0.05i}}{2a_{0.05i}}$$

EP

(European pharmacopoeia)

$$A_s = \frac{b_{0.05i}}{a_{0.05i}}$$

USP

(US pharmacopoeia)

$$A_s = \frac{W_{0.05i}}{2a_{0.05i}}$$

JP

(Japanese pharmacopoeia)

$$A_s = \frac{b_{0.05i}}{a_{0.05i}}$$

Variable symbol	Variable name	Unit	Description
A_s	Peak asymmetry	—	

Variable symbol	Variable name	Unit	Description
$b_{0.05i}$	Peak width	min	Width of the peak *i* between the top of the peak and the end at 5% peak height
$a_{0.05i}$	Peak width	min	Width of the peak *i* between peak start and top of peak at 5% peak height
$W_{0.05i}$	Peak width	min	Width of the entire peak *i* at 5% peak height

A peak asymmetry with a A_s - value > 1 is referred to as **Tailing**. The front inclination is steeper than the drop of the peak. The tailing effect is mainly due to adsorption forces.

A peak asymmetry with a A_s - value < 1 is referred to as **Fronting**. The front inclination is gentler than the drop of the peak.

A good separation column has an asymmetry factorA_s between 0.9 and 1.2.

5.8.7.2 Further peak results

The following further peak results are automatically calculated/defined for each component and are available as variables:

5.8.7.2.1 Peak start

Variable name: RS.'Analysis name'.'Component name'.START

Moment of the peak start.

5.8.7.2.2 Peak end

Variable name: RS.'Analysis name'.'Component name'.END

Moment of the peak end.

5.8.7.2.3 a(0.x)

Variable name	Variable	Description
RS.'Analysis name'.'Component name'.A044	$a_{0.044}$	Width of the peak between peak start and peak maximum at 4.4% peak height.
RS.'Analysis name'.'Component name'.A05	$a_{0.05}$	Width of the peak between peak start and peak maximum at 5% peak height.

RS.'Analysis name'.'Component name'.A10	$a_{0.10}$	Width of the peak between peak start and peak maximum at 10% peak height.
RS.'Analysis name'.'Component name'.A134	$a_{0.134}$	Width of the peak between peak start and peak maximum at 13.4% peak height.
RS.'Analysis name'.'Component name'.A324	$a_{0.324}$	Width of the peak between peak start and peak maximum at 32.4% peak height.
RS.'Analysis name'.'Component name'.A50	$a_{0.5}$	Width of the peak between peak start and peak maximum at 50% peak height.
RS.'Analysis name'.'Component name'.A61	$a_{0.61}$	Width of the peak between peak start and peak maximum at 61% peak height.

5.8.7.2.4 b(0.x)

Variable name	Variable	Description
RS.'Analysis name'.'Component name'.B044	$b_{0.044}$	Width of the peak between peak maximum and peak end at 4.4% peak height.
RS.'Analysis name'.'Component name'.B05	$b_{0.05}$	Width of the peak between peak maximum and peak end at 5% peak height.
RS.'Analysis name'.'Component name'.B10	$b_{0.10}$	Width of the peak between peak maximum and peak end at 10% peak height.
RS.'Analysis name'.'Component name'.B134	$b_{0.134}$	Width of the peak between peak maximum and peak end at 13.4% peak height.
RS.'Analysis name'.'Component name'.B324	$b_{0.324}$	Width of the peak between peak maximum and peak end at 32.4% peak height.
RS.'Analysis name'.'Component name'.B50	$b_{0.5}$	Width of the peak between peak maximum and peak end at 50% peak height.
RS.'Analysis name'.'Component name'.B61	$b_{0.61}$	Width of the peak between peak maximum and peak end at 61% peak height.

5.8.7.2.5 Base width

Variable name: RS.'Analysis name'.'Component name'.WIDTH

Base width of the peak.

5.8.7.2.6 Hva

Variable name: RS.'Analysis name'.'Component name'.HVA

Height of the foot point at peak start over the baseline of the chromatogram.

5.8.7.2.7 Hvb

Variable name: RS.'Analysis name'.'Component name'.HVB

Height of the foot point at peak end over the baseline of the chromatogram.

5.8.7.2.8 P/V ratio A

Variable name: RS.'Analysis name'.'Component name'.PVA

Peak to valley ratio of the peak height of the foot point at peak start over the baseline of the chromatogram.

This ratio serves for quality assessment if two peaks are not divided by a baseline. If a peak is divided by a baseline, this variable is invalid (division by zero).

$$R_{PVa} = \frac{H_P}{H_{Va}}$$

Variable symbol	Description
R_{PVa}	Ratio of the peak height to the height of the foot point over the baseline at peak start.
H_P	Peak height.
H_{Va}	Height of the foot point over the baseline at peak start.

5.8.7.2.9 P/V ratio B

Variable name: RS.'Analysis name'.'Component name'.PVB

Peak to valley ratio of the peak height to the height of the foot point at peak end over the baseline of the chromatogram.

This ratio serves for quality assessment if two peaks are not divided by a baseline. If a peak is divided by a baseline, this variable is invalid (division by zero).

$$R_{PVb} = \frac{H_P}{H_{Vb}}$$

Variable symbol	Description
R_{PVb}	Ratio of the peak height to the height of the foot point over the baseline at peak end.
H_P	Peak height.
H_{Vb}	Height of the foot point over the baseline at peak end.

5.8.7.2.10 Type

Variable name: RS.'Analysis name'.'Component name'.TYPE

The parameter **Type** designates some of the properties of a peak with the aid of a letter code. This variable can be shown under **Database ▸ Results ▸ Results**.

Table 1 Alphabet code

	Description
1st pos.	
B	The peak starts at the baseline.
D	The peak starts on the drop line.
T	The peak is a rider. It starts at a tangent of the main peak.
2nd position	
B	The peak ends at the baseline.
D	The peak ends on the drop line.
T	The peak is a rider. It ends at a tangent of the main peak.
Places after the point	
H	The peak is a main peak on which there is a rider.
I	The peak has a shoulder (impurity)

M	The peak was integrated manually
N	Negative peak (the conductance for the peak sinks).
R	A reference component was used for peak identification.
?	The points of the corresponding peaks are outside the measuring range of the detector.

The **first position** of the code always describes the type of **Peak start**.

The **second position** of the code always describes the type of **Peak end**.

The **following positions** are optional and describe other **peak properties**.

5.8.7.3 Concentration results

The following concentration results are automatically calculated/defined for each component and are available as variable:

5.8.7.3.1 Concentration with calibration with external standards

Variable name: RS.'Analysis name'.'Component name'.CONC

Concentration with calibration with external standard

With external calibration, calibration curves are recorded for all ions to be determined. A calibration curve is applied to calculate the concentration for a sample. The signal of the detector correlates to the injected amount of an ion and not to that of its concentration. Since the injected volume can vary, it is necessary to calculate with the amount of substance.

Calculation of the amount of substance for standards

The quantity of substances Q_i is calculated for all components for all standards used in the calibration:

$$Q_i = C_i \cdot V'$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
Q_i	Amount of substance	mol	Amount of substance in the component *i*, used for calculating the calibration curve.
c_i	Concentration	mol/L	Concentration of the components *i* in the selected standard.
V'	Volume, corrected	µL	Corrected volume of injected standard. The injected volume is corrected by the dilution coefficient D.
V	Volume	µL	Injected volume of the standard. **Volume** from the sample data.
D	Dilution coefficient		The dilution coefficient indicates by what factor the standard was diluted before injection. **Dilution** from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. **Sample amount** from the sample data,

Calculation of the calibration curve

Calculation of the calibration curve depends on the function type:

Function type (1):

The amount of substance Q_i of the nth ion as a function of the response R_i (surface or height) of the nth ion.

$$Q_i = f(R_i)$$

Function type (2):

The response R_i (surface or height) of the nth ion as a function of the amount of substance Q_i of the nth ion.

$$R_i = f(Q_i)$$

The calibration parameters **Measured quantity**, **Curve type** and **Weighting** are taken into account.

If **Blank value correction for Inline calibration** is enabled, the blank value Q_{bi} is calculated from the calibration curve. The blank value is the negative value on the x-axis (x-axis = amount of substance).

Function type (1):

$$Q_i = f(R_i) + Q_{bi}$$

Function type (2):

$$Q_i = \frac{1}{f}(R_i) + Q_{bi}$$

The **Correlation coefficient** *(see Chapter 5.8.7.4.2, page 478)* and the **percentage standard deviation** *(see Chapter 5.8.7.4.3, page 478)* are calculated for each calibration curve:

Calculation of the amount of substance for samples

Function type (1):

The amount of substance can be calculated directly from the calibration curve.

$$Q_i = f(R_i)$$

Function type (2):

The amount of substance must be calculated using the inverse function.

$$Q_i = \frac{1}{f}(R_i)$$

If **Blank value correction for Inline calibration** is enabled, then the blank value Q_{bi} is added.

Function type (1):

$$Q_i = f(R_i) + Q_{bi}$$

Function type (2):

$$Q_i = \frac{1}{f}(R_i) + Q_{bi}$$

Calculation of the concentration for samples

Variable name: RS.'Analysis name'.'Component name'.CONC

For the concentration calculation, the amount of substance must be divided by the corrected volume V':

$$C_i = \frac{Q_i}{V'} = Q_i \frac{D}{V \cdot A}$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
c_i	Concentration	mol/L	Calculated concentration, components *i* in the sample
Q_i	Amount of substance	mol	Amount of substance of the component *i* in the sample.
V'	Volume, corrected	µL	Corrected volume of the injected sample. The injected sample volume is corrected by the dilution coefficient D.
V	Volume	µL	Injected sample volume. **Volume** from the sample data.
D	Dilution coefficient		The dilution coefficient indicate by what factor the standard was diluted before injection. **Dilution** from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. **Sample amount** from the sample data,

5.8.7.3.2 Calibration with calibration with internal standard

Variable name: RS.'Analysis name'.'Component name'.CONC

Concentration with calibration with internal standard

With internal calibration, a standard substance of known concentration is injected with every sample and every standard. The standard substance does not show in the analysis sample. To calculate the calibration curve and the concentration of samples, the signal and quantity ratios of the sample ion and of the standard are compared.

Calculation of the amount of substance for standards

In a similar manner as the external calibration, the quantities of substances of the standards are calculated for every component Q_i and for the internal standard ion Q_s.

$$Q_i = C_i \cdot V'$$

with

$$V' = \frac{V}{D} A$$

$$Q_S = C_S \cdot V'$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
Q_i	Amount of substance	mol	Amount of substance in the component *i*, used for calculating the calibration curve.
C_i	Concentration	mol/L	Concentration of the components *i* in the selected standard.
Q_s	Amount of substance, internal standard	mol	Amount of substance of the internal standard.
C_S	Concentration, internal standard	mol/L	Concentration of the internal standard.

Variable symbol	Variable name	Unit	Description
V'	Volume, corrected	µL	Corrected volume of injected standard. The injected volume is corrected by the dilution coefficient D.
V	Volume	µL	Injected volume of the standard. **Volume** from the sample data.
D	Dilution coefficient		The dilution coefficient indicates by what factor the standard was diluted before injection. **Dilution** from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. **Sample amount** from the sample data,

Calculation of the calibration curve

Function type (1):

$$Q_i = f\left(Q_s \frac{R_i}{R_s}\right)$$

Function type (2):

$$Q_s \frac{R_i}{R_s} = f(Q_i)$$

Variable symbol	Description
Q_i	Amount of substance of the nth ion used to formulate the calibration function.
$Q_S = C_S \cdot V'$	Amount of substance of the standard ion
R_i	Response of the nth ion

Variable symbol	Description
R_s	Response of the standard ion

When calibration curves are calculated, account is taken of the calibration parameters **Response**, **Curve type** and **Weighting**.

If **Blank correction for inline calibration** is enabled, the blank value is calculated from the calibration curve Q_{bi} in a similar manner to the external calibration.

Calculation of the amount of substance for samples

Function type (1):

$$Q_i = f\left(Q_s \frac{R_i}{R_s}\right)$$

The amount of substance can be calculated directly from the calibration curve.

Function type (2):

The amount of substance must be calculated using the inverse function.

$$Q_i = \frac{1}{f}\left(Q_s \frac{R_i}{R_s}\right)$$

If **Blank value correction for Inline calibration** is enabled, then the blank value Q_{bi} is added.

Function type (1):

$$Q_i = f\left(Q_s \frac{R_i}{R_s}\right) + Q_{bi}$$

Function type (2):

$$Q_i = \frac{1}{f}\left(Q_s \frac{R_i}{R_s}\right) + Q_{bi}$$

Calculation of the concentration for samples

Variable name: RS.'Analysis name'.'Component name'.CONC

For the concentration calculation, the amount of substance must be divided by the corrected volume V':

$$C_i = \frac{Q_i}{V'} = Q_i \frac{D}{V \cdot A}$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
C_i	Concentration	mol/L	Calculated concentration, components *i* in the sample
Q_i	Amount of substance	mol	Amount of substance of the component *i* in the sample.
V'	Volume, corrected	µL	Corrected volume of the injected sample. The injected sample volume is corrected by the dilution coefficient D.
V	Volume	µL	Injected sample volume. **Volume** from the sample data.
D	Dilution coefficient		The dilution coefficient indicate by what factor the standard was diluted before injection. **Dilution** from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. **Sample amount** from the sample data,

5.8.7.3.3 Concentration ratio

Variable name: RS.'Analysis name'.'Component name'.CONC%

Normalization of the concentrations for all peaks to 100%.

$$C_i = \frac{100 \cdot C_i}{\sum C_i}$$

Note

For normalization, only those peaks are used to which a component has been assigned.

5.8.7.3.4 Standard concentration

Variable name: RS.'Analysis name'.'Component name'.STDCONC

Concentration of the components in acc. with the standard table. It is not a calculated result and is only output for standards.

5.8.7.3.5 Mean value of the concentrations

Variable name: RS.'Analysis name'.'Component name'.CONCMEAN

Concentration mean value from a single or multiple determination

$$\overline{C}_{sa} = \sum C_{sa,i} / m$$

Variable symbol	Description
$\overline{C}_{sa}$	Concentration mean value from a single or multiple determination, **RS.'Analysis name'.'Component name'.CONCMEAN**.
$C_{sa,i}$	Concentration of the nth sample.
m	Number of injections carried out for a single or multiple determination, **RS.'Analysis name'.'Component name'.INJCOUNTFIN**.

5.8.7.3.6 Standard deviation of the concentration mean value

Variable name: RS.'Analysis name'.'Component name'.CONCMEANSD

Standard deviation of the concentration mean value, including calibration errors. The calculation is in accordance with DIN 38402 Part 51 (1986).

Note

The standard deviation **RS.' 'Analysis name'.'Component name'.COINC.ASA** (if statistics for concentration is activated) does not take into account the additional calibration function. It is therefore *smaller* than **RS.'Analysis name'.'Component name'.CONCMEANSD**.

Calculation of the standard deviation of the mean value of the amount of substance, with the use of function type (1)

The calculation of the standard deviation of the mean value of the amount of substance proceeds as follows when the **Concentration = f(measured quantity)** function type has been selected *(see Chapter 5.8.5.3, page 429)* in the properties of the calibration:

It is assumed for this that:

- Only the *amounts of substance* Q_i are affected by normal-distribution errors.
- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

$$\bar{x}_{sa} = \left(\overline{C}_{sa} \times \frac{V \times A}{D} - k_0 \right) \Big/ k_1$$

$$s_{\overline{Q}_{sa}} = s_y \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(\bar{x}_{sa} - \bar{x})^2}{(n-1) \times s_x^2}}$$

Variable symbol	Description
$\bar{x}_{sa}$	Mean value of the x values of the sample measurements.
$\overline{C}_{sa}$	Mean value of the sample concentration found, **RS.'Analysis name'.'Component name'.CONCMEAN**.
V	Injection volume from the sample data, **SD.VOLUME**
A	Sample amount from the sample data, **SD.AMOUNT**.
D	Dilution according to the sample table, **SD.DILUTION**.
k_0	Axis intercept of the calibration lines, **RS.'Analysis name'.'Component name'.CALK0**
k_1	Slope of the calibration lines, **RS.'Analysis name'.'Component name'.CALK1**.

Variable symbol	Description
$s_{\overline{Q}_{sa}}$	Standard deviation of the mean value of the amounts of substance found.
s_y	Residual standard deviation of the y values of the calibration points used, **RS.'Analysis name'.'Component name'.CALYRSD** *(see Chapter 5.8.7.4.9, page 479)*.
n	Number of standards used, **RS.'Analysis name'.'Component name'.CALNUM**.
m	Number of injections carried out for a single or multiple determination, **RS.'Analysis name'.'Component name'.INJCOUNTFIN**.
$\overline{x}$	Mean value of the x values of the calibration points **RS.'Analysis name'.'Component name'.CALXMEAN**
s_x	Standard deviation of the x values of the calibration points used. **RS.'Analysis name'.'Component name'.CALXSD**

Calculation of the standard deviation of the mean value of the amount of substance, with the use of function type (2)

The calculation of the standard deviation of the mean value of the amount of substance proceeds as follows when the **Response= f(concentration)** function type has been selected *(see Chapter 5.8.5.3, page 429)* in the properties of the calibration:

It is assumed for this that:

- Only the *Response values* R_i are affected by normal-distribution errors.
- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

$$\overline{y}_{sa} = k_0 + \overline{C}_{sa} \times \frac{V \times A}{D} \times k_1$$

$$s_{\overline{Q}_{sa}} = \frac{s_y}{k_1} \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(\overline{y}_{sa} - \overline{y})^2}{(n-1) \times k_1^2 \times s_x^2}}$$

Variable symbol	Description
$\overline{y}_{sa}$	Mean value of the y values of the sample measurements.
k_0	Axis intercept of the calibration lines, **RS.'Analysis name'.'Component name'.CALK0**

Variable symbol	Description
$\overline{C}_{sa}$	Mean value of the sample concentration found, **RS.'Analysis name'.'Component name'.CONCMEAN**.
V	Injection volume from the sample data, **SD.VOLUME**
A	Sample amount from the sample data, **SD.AMOUNT**.
D	Dilution according to the sample table, **SD.DILUTION**.
k_1	Slope of the calibration lines, **RS.'Analysis name'.'Component name'.CALK1**.
$s_{\overline{Q}_{sa}}$	Standard deviation of the mean value of the amounts of substance found.
s_y	Residual standard deviation of the y values of the calibration points used, **RS.'Analysis name'.'Component name'.CALYRSD** *(see Chapter 5.8.7.4.9, page 479)*.
n	Number of standards used, **RS.'Analysis name'.'Component name'.CALNUM**.
m	Number of injections carried out for a single or multiple determination, **RS.'Analysis name'.'Component name'.INJCOUNTFIN**.
$\overline{y}_{sa}$	Mean value of the y values of the sample measurements.
$\overline{y}$	Mean value of the y values of the calibration points
s_x	Standard deviation of the x values of the calibration points used. **RS.'Analysis name'.'Component name'.CALXSD**

Calculation of the result

$$s_{\overline{C}_{sa}} = s_{\overline{Q}_{sa}} \times \frac{1}{V'} = s_{\overline{Q}_{sa}} \times \frac{D}{V \times A}$$

Variable symbol	Description
$s_{\overline{C}_{sa}}$	Standard deviation of the mean value of the sample concentration with calibration error, **RS.'Analysis name'.'Component name'.CONCMEANSD**.
$s_{\overline{Q}_{sa}}$	Standard deviation of the mean value of the amounts of substance found.
V'	Standardized volume

Variable symbol	Description
D	Dilution according to the sample table, **SD.DILUTION**.
V	Injection volume from the sample data, **SD.VOLUME**
A	Sample amount from the sample data, **SD.AMOUNT**.

Note

The calculation takes place only when the following conditions have been fulfilled:

1. The calibration function **Linear** is used.
2. At least 3 valid (used) calibration points exist.
3. The weighting is **unweighted**.
4. The calibration mode is **Replace**.
5. The blank value correction is *not* activated.
6. The determinations have been included with MagIC Net 2.0 or newer.

5.8.7.3.7 Confidence range for the concentration mean value

Variable name: RS.'Analysis name'.'Component name'.CONCMEANCONF95

Half width of the confidence interval for the concentration mean value, at 95% confidence.

Calculation

$$\Delta\overline{C}_{sa}(95\%) = s_{\overline{C}_{sa}} \times \text{tquantile}(0.95, p = n - 2)$$

Where $\text{tquantile}(0.95, p = n - 2)$ is the inverse function of the *Student's t-distribution (see Chapter 2.4.4.5.10, page 65)*.

Variable symbol	Description
$\Delta\overline{C}_{sa}(95\%)$	Half width of the confidence interval for the concentration mean value, at 95% confidence, **RS.'Analysis name'.'Component name'.CONCMEANCONF95**.
$s_{\overline{C}_{sa}}$	Standard deviation of the concentration mean value, including calibration errors, **RS.'Analysis name'.'Component name'.CONCMEANSD**.
p	Number of degrees of freedom
n	Number of independent standards used, **RS.'Analysis name'.'Component name'.CALNUM**.

5.8.7.3.8 Detection limit from linear calibration function

Variable name: RS.'Analysis name'.'Component name'.LDTCCONF95

Detection limit from linear calibration function, at 95% confidence.

Calculation with the use of function type (1)

The calculation proceeds as follows when the **Concentration = f(response)** function type has been selected *(see Chapter 5.8.5.3, page 429)* in the properties of the calibration:

It is assumed for this that:

- Only the *amounts of substance* Q_i are affected by normal-distribution errors.
- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

The expected response from regression with sample concentration 0:

$$x_0 = -k_0 / k_1$$

$$s_{Q=0} = s_y \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(x_0 - \bar{x})^2}{(n-1) \times s_x^2}}$$

Variable symbol	Description
x_0	The expected response from regression with sample concentration 0
k_0	Axis intercept of the calibration lines, **RS.'Analysis name'.'Component name'.CALK0**
k_1	Slope of the calibration lines, **RS.'Analysis name'.'Component name'.CALK1**.
$s_{Q=0}$	Standard deviation at amount of substance 0
s_y	Standard deviation of the y values of the calibration points used, **RS.'Analysis name'.'Component name'.CALYRSD**
n	Number of standards used, **RS.'Analysis name'.'Component name'.CALNUM**.
m	Number of injections carried out for a single or multiple determination, **RS.'Analysis name'.'Component name'.INJCOUNTFIN**.

Variable symbol	Description
$\bar{x}$	Mean value of the x values of the calibration points **RS.'Analysis name'.'Component name'.CALX-MEAN**
s_x	Standard deviation of the x values of the calibration points used. **RS.'Analysis name'.'Component name'.CALXSD**

Calculation with the use of function type (2)

The calculation proceeds as follows when the **Response = f(concentration)** function type has been selected *(see Chapter 5.8.5.3, page 429)* in the properties of the calibration:

It is assumed for this that:

- Only the *Response values* R_i are affected by normal-distribution errors.
- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

The expected response from regression with sample concentration 0:

$$y_0 = k_0$$

$$s_{Q=0} = \frac{s_y}{k_1} \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(y_0 - \bar{y})^2}{(n-1) \times k_1^2 \times s_x^2}}$$

where:

$$\frac{(\bar{y}_0 - \bar{y})^2}{k_1^2} = (x_0 - \bar{x})^2$$

Variable symbol	Description
y_0	The expected response from regression with sample concentration 0
k_0	Axis intercept of the calibration lines, **RS.'Analysis name'.'Component name'.CALK0**
$s_{Q=0}$	Standard deviation at amount of substance 0
k_1	Slope of the calibration lines, **RS.'Analysis name'.'Component name'.CALK1**.
s_y	Standard deviation of the y values of the calibration points used, **RS.'Analysis name'.'Component name'.CALYRSD**

Variable symbol	Description
n	Number of standards used, **RS.'Analysis name'.'Component name'.CALNUM**.
m	Number of injections carried out for a single or multiple determination, **RS.'Analysis name'.'Component name'.INJCOUNTFIN**.
$\bar{y}$	Mean value of the y values of the calibration points
s_x	Standard deviation of the x values of the calibration points used. **RS.'Analysis name'.'Component name'.CALXSD**

Calculation of the result

$$s_{C=0} = s_{Q=0} \times \frac{1}{V'} = s_{Q=0} \times \frac{D}{V \times A}$$

$$NG(95\%) = s_{C=0} \times \text{tquantile}(0.90, p = n - 2)$$

where: $t_{oneside}(0.95, p) = t_{two\text{-}side}(0.90, p)$.

Variable symbol	Description
$s_{C=0}$	Standard deviation at sample concentration 0
$NG(95\%)$	Detection limit from linear calibration function, at 95% confidence, **RS.'Analysis name'.'Component name'.LDTCCONF95**.
V'	Standardized volume
D	Dilution according to the sample table, **SD.DILUTION**.
V	Injection volume from the sample data, **SD.VOLUME**
A	Sample amount from the sample data, **SD.AMOUNT**.

5.8.7.4 Calibration curves results

The following calibration curve results are automatically calculated/defined for each component and are available as variables:

5.8.7.4.1 k(0) - k(3)

Variable name: RS.'Analysis name'.'Component name'.CALK# (**#= 0 to 3**)

Variable symbol	Description
k_0	Coefficient of zero order of the calibration curve

Variable symbol	Description
k_1	Coefficient of first order of the calibration curve
k_2	Coefficient of second order of the calibration curve
k_3	Coefficient of third order of the calibration curve

5.8.7.4.2 Correlation coefficient

Variable name: RS.'Analysis name'.'Component name'.CALCORR

$$r = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \bar{y})^2 - \sum_{i=1}^{n}(y_i - \hat{y}_i)^2}{\sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

Variable symbol	Description
r	Correlation coefficient
y_i	y value of calibration point i
$\bar{y}$	Mean value of all y values of the calibration points
$\hat{y}_i$	The y value of calibration point i calculated with the calibration curve

5.8.7.4.3 Percentage standard deviation

Variable name: RS.'Analysis name'.'Component name'.CALPSD

$$\%RSD = 100 \times \frac{1}{\bar{y}} \times \sqrt{\frac{\sum_{i=1}^{n}(y_i - \hat{y}_i)^2}{n - p}}$$

Variable symbol	Description
$\%RSD$	Percentage standard deviation
y_i	y value of calibration point i
$\bar{y}$	Mean value of all y values of the calibration points
$\hat{y}_i$	The y value of calibration point i calculated with the calibration curve
n	Number of calibration points of the calibration curve
p	Number of terms of the calibration equation that are not equal to zero

5.8.7.4.4 Mean X

Variable name: RS.'Analysis name'.'Component name'.CALX-MEAN

$\bar{x}$ is the mean value of all x values of the calibration points.

5.8.7.4.5 Mean Y

Variable name: RS.'Analysis name'.'Component name'.CALY-MEAN

$\bar{y}$ is the mean value of all y values of the calibration points.

5.8.7.4.6 Number of calibration points

Variable name: RS.'Analysis name'.'Component name'.CALNUM

Number of measured values of the calibration curve.

5.8.7.4.7 Calibration terms

Variable name: RS.'Analysis name'.'Component name'.CALTERM

Number of terms of the calibration curve.

5.8.7.4.8 Standard deviation X

Variable name: RS.'Analysis name'.'Component name'.CALXSD

$$s_x = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$$

Variable symbol	Description
s_x	Standard deviation of the X values of the calibration points.
x_i	x value of calibration point i
$\bar{x}$	Mean value of the X values of the calibration points
n	Number of calibration points of the calibration curve

5.8.7.4.9 Residual standard deviation Y

Variable name: RS.'Analysis name'.'Component name'.CALYRSD

$$s_y = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \hat{y}_i)^2}{n-p}}$$

Variable symbol	Description
s_y	Residual standard deviation of the y values of the calibration points from the y values of the corresponding calibration point calculated with the calibration curve.
y_i	y value of calibration point i
$\hat{y}_i$	The y value of calibration point i calculated with the calibration curve
n	Number of calibration points of the calibration curve
p	Number of terms of the calibration equation that are not equal to zero

5.8.7.5 Recovery results

The following recovery results are automatically calculated/defined for each component and are available as variables:

5.8.7.5.1 Recovery (Check standard)

Variable name: RS.'Analysis name'.'Component name'.REC

For calculation of the recovery $W_{CS_n i}$ via a check standard, a check standard (with known concentration) is determined like a sample. The recovery is calculated by dividing the established concentration by the actual concentration of the check standard.

$$W_{CS_n i} = \frac{C_{CS_n i}}{C'_{CS_n i}}$$

Variable symbol	Description
$W_{CS_n i}$	Recovery of the ion i, calculated with the check standard i.
$C_{CS_n i}$	Measured concentration of ion i in check standard n.
$C'_{CS_n i}$	Defined concentration of ion i in the check standard n.

5.8.7.5.2 Recovery (spiking)

Variable name: RS.'Analysis name'.'Component name'.SREC

To calculate recovery W_{Ai} by spiking, the sample is spiked with a spiking solution. The concentrations of the sample and the spiked sample are calculated by means of external and internal calibration. Recovery is calculated for every component from these two values.

This peak parameter is calculated when a sample of sample type **Spiking** is determined. Recovery is only ever calculated for one standard addition

solution. A more extensive automatic offsetting of the recoveries of various standard addition solutions does not take place. The calculation always affects the sample last measured.

$$W_{A_n i} = \frac{C_{A_n Pi} \cdot \left(V_{A_{nInject}} + V_{P_{nInject}}\right) - C_{Pi} \cdot V_{P_{nInject}}}{C_{A_n i} \cdot V_{A_{nInject}}}$$

$$V_{A_{nInject}} = \frac{V_{A_n}}{\left(V_{A_n} + V_{P_n}\right)} \cdot V$$

$$V_{P_{nInject}} = \frac{V_{P_n}}{\left(V_{A_n} + V_{P_n}\right)} \cdot V$$

Variable symbol	Description
$W_{A_n i}$	Recovery of ion i, calculated with the standard addition solution A_n
$C_{A_n Pi}$	Measured concentration of ion i in the sample, which was spiked with A_n.
C_{Pi}	Measured concentration of ion i in the sample, without spiking.
$C_{A_n i}$	Defined concentration of ion i in the standard addition solution.A_n.
$V_{A_{nInject}}$	Injected volume of the spiking solution A_n in the spiked sample.
$V_{P_{nInject}}$	Injected volume of the sample in the standard addition solution.
V_{A_n}	Volume of the standard addition solution in the spiked sample.
V_{P_n}	Volume of the sample in the spiked sample.
V	Volume from the sample data.

5.8.8 Evaluation - UV/VIS

5.8.8.1 UV/VIS - General

Subwindow section: **Method ▸ Evaluation ▸ UV/VIS**

Application

In the section **UV/VIS**, the special evaluation parameters for UV/VIS analyses are defined.

Tabs

- *Spectra*

5.8.8.2 UV/VIS - Spectra

Tab: **Method ▸ Evaluation ▸ Calibration ▸ Calibration curves**

For each analysis using the 887 Professional UV/VIS detector ("UV/VIS analysis"), spectra can be defined.

Analysis

Selection list of UV/VIS analyses. The *Table of spectra p. 482* below corresponds to the selected analysis.

Table of spectra

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *(see Chapter 5.8.8.3, page 482)* (is also triggered by a double-click on an empty line).
Edit	Edits selected line in separate dialog *(see Chapter 5.8.8.3, page 482)* (is also triggered by a double-click on a non-empty line).
Copy [CTRL-C]	Copy selected line to the clipboard.
Paste [CTRL-V]	Insert line from the clipboard below in the table.
Cut [CTRL-X]	Cut selected line and copy it to the clipboard.
Delete [Delete]	Deletes the selected line.

5.8.8.3 Editing spectrum

Tab: **Method ▸ Evaluation ▸ UV/VIS ▸ Spectrum**

Here the properties of a spectrum defined before can be edited or the properties of a new spectrum can be defined.

For each spectrum you can define the wavelength ranges in which maxima are to be evaluated *(see "Evaluation of maxima", page 483)*.

Spectrum

Time

Time when the spectrum is to be recorded in accordance to the timeline of the corresponding analysis.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Name

Name for the spectrum. Must be unique within the corresponding analysis.

Entry	**1 .. 40 characters**

Start wavelength

Lower limit of the wavelength range in which the spectrum is to be measured.

Input range	**190 - 900 nm** (Increment: **1**)
Default value	**190 nm**

End wavelength

Upper limit of the wavelength range in which the spectrum is to be measured.

Input range	**190 - 900 nm** (Increment: **1**)
Default value	**900 nm**

Evaluation of maxima

Per spectrum up to 10 wavelength ranges can be defined in which the wavelength at the absorbance maximum is to be evaluated.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *(see Chapter 5.8.8.4, page 484)* (is also triggered by a double-click on an empty line).
Edit	Edits selected line in separate dialog *(see Chapter 5.8.8.4, page 484)* (is also triggered by a double-click on a non-empty line).
Delete [Delete]	Deletes the selected line.

5.8.8.4 Evaluation of the wavelength at the absorbance maximum

Tab: **Method ▸ Evaluation ▸ UV/VIS ▸ Spectrum ▸ Maximum evaluation**

Here a wavelength range can be defined in which MagIC Net automatically detects the wavelength at the maximum measured absorbance for the corresponding spectrum. The wavelength range must have a width of at least 10 nm.

Start wavelength

Lower limit of the wavelength range in which the wavelength at the absorbance maximum is to be detected.

Input range	**190 - 900 nm** (Increment: **1**)
Default value	**900 nm**

End wavelength

Upper limit of the wavelength range in which the wavelength at the absorbance maximum is to be detected.

Input range	**190 - 900 nm** (Increment: **1**)
Default value	**900 nm**

In the case that several *equal* maxima are found in the wavelength range, the one located on the most "right" will be given (the one at the highest wavelength).

For each maximum evaluation a result variable is created:

RS.'Analysis name'.SPEC.'Spectrum name'.WVLMAX{x}

5.9 Subwindow Chromatograms

5.9.1 Chromatograms - General

Subwindow: **Method ▸ Chromatograms**

Subwindow Chromatograms

The last chromatogram and the associated calibration curves are displayed in the subwindow **Chromatograms** for every analysis which was recorded with this method and saved in the database. The blanks with which the chromatograms have been corrected and the standards (or standard addition solutions) which were used to calibrate the sample can also be displayed. The subwindow also supports data import from the chromatogram to the method parameters.

When a method is opened, the evaluation parameters of the method are immediately applied to the chromatograms and calibration curves shown.

Graphics window

The interface, functions and properties of the subwindow **Chromatograms** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Choose color*

5.9.2 Chromatograms - Update

Menu item: **Method ▸ Edit ▸ Update**

With the symbol or the menu item **Edit ▸ Update**, the latest chromatograms are reloaded from the database and evaluated with the altered method parameters, and the calibration data is recalculated.

5.9.3 Chromatograms - Calculating

Menu item: **Method ▸ Edit ▸ Calculate**

With the symbol or with the menu item **Edit ▸ Calculate**, the existing chromatograms are evaluated with the altered method parameters and the calibration data is recalculated.

6 Configuration

6.1 Configuration - General

6.1.1 Configuration - Definition

Program part: **Configuration**

Definition

The term **Configuration** is used in **MagIC Net** to refer to all comprehensive settings for devices, columns, eluents, accessories, common variables, rack data and solutions. Included in the configuration are also methods, security settings, user management, program administration, templates and Audit Trail.

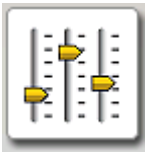
Organization

All configuration data is saved in the **Configuration database**. In the case of local server systems (**MagIC Net Professional**), these are to be found in the Programs directory of the computer on which the program was installed. In the case of client server systems (**MagIC Net Multi**), the configuration data base is saved centrally on the server and contains all of the configuration data of all computers (Clients) which are connected to this server.

6.1.2 Configuration - Desktop

Program part: **Configuration**

Configuration symbol



Clicking on the configuration symbol in the vertical bar at the left opens the program part **Configuration** while, at the same time the configuration symbol is shown in color.

Elements

The desktop of the program part **Configuration** comprises the following elements:

- Configuration-specific menu bar.
- Configuration-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

6.1.3 Configuration - Menu bar

6.1.3.1 Configuration - Main menus

Program part: **Configuration**

The menu bar in the program part **Configuration** contains the following main items:

- *File*
  Export, import, backup, restore configuration data.
- *View*
  Change layout, load view, save view, quick access to subwindows.
- *Tools*
  User administration, security settings, program administration, Audit Trail, templates, options.
- *Help*
  Open program help, display program information.

6.1.3.2 Configuration - Menu File

Program part: **Configuration**

Export...	Export configuration data *(see Chapter 6.3.1.1, page 519)*.
Import...	Import configuration data *(see Chapter 6.3.1.2, page 521)*.
Backup ▸	
Automatically	Backup configuration data automatically *(see Chapter 6.3.2.1, page 523)*.
Manually	Backup configuration data manually *(see Chapter 6.3.2.2, page 524)*.
&Print (PDF)... ▸	
User administration	Put out user administration data as PDF file *(see Chapter 6.2.1.1, page 494)*.
Security settings	Put out security settings as PDF file *(see Chapter 6.2.2.1, page 503)*.
Log&out...	Logout user *(see Chapter 2.2.3, page 24)*.
&Exit	Exit the program.

6.1.3.3 Configuration - Menu View

Program part: **Configuration**

Change &layout...	Modify layout of loaded configuration view *(see Chapter 3.1.7.2, page 114)*.

Load &view...	Load a saved configuration view *(see Chapter 3.1.7.3, page 115)*.
&Save view...	Save current configuration view *(see Chapter 3.1.7.4, page 115)*.
Quick access	Open a subwindow not contained in the current configuration view.
&Toolbar	Switch the toolbar display on/off.

6.1.3.4 Configuration - Menu Tools

Program part: **Configuration**

User administration...	Manage users and groups of users with access rights, signature rights and options *(see Chapter 6.2.1.1, page 494)*.
Security settings...	Options for login, password protection, Audit Trail and electronic signature *(see Chapter 6.2.2.1, page 503)*.
Program administration...	General settings for local/server and client/server settings *(see Chapter 6.2.3.1, page 514)*.
Audit Trail...	Open the Audit Trail *(see Chapter 6.4, page 534)*.
Templates ▸	
Input lines...	Generate templates for scanning remote lines *(see Chapter 6.3.3.1.1, page 526)*.
Output lines...	Generate templates for setting remote lines *(see Chapter 6.3.3.2.1, page 527)*.
E-mail templates...	Generate templates for sending e-mails *(see Chapter 6.3.3.3, page 529)*.
Options...	Set program options *(see Chapter 6.3.4, page 531)*.

6.1.3.5 Menu Help

Program parts: **Workplace / Database / Method / Configuration**

MagIC Net&Help	Open MagIC Net Help.
&About	Display information about the program and the installation.

6.1.4 Configuration - Toolbar

Program part: **Configuration**

Change layout...	Modify layout of loaded configuration view *(see Chapter 3.1.7.2, page 114)*.
Load view...	Load a saved configuration view *(see Chapter 3.1.7.3, page 115)*.
Save view	Save current configuration view *(see Chapter 3.1.7.4, page 115)*.
User administration...	Manage users and groups of users with access rights, signature rights and options *(see Chapter 6.2.1.1, page 494)*.
Security settings...	Options for login, password protection, Audit Trail and electronic signature *(see Chapter 6.2.2.1, page 503)*.
Audit Trail...	Open the Audit Trail *(see Chapter 6.4, page 534)*.
Logout...	Logout user *(see Chapter 2.2.3, page 24)*.
MagIC Net Help	Open MagIC Net Help.

6.1.5 Configuration - Subwindows

Program part: **Configuration**

Selection

The following subwindows can be displayed in the main window:

- *Devices*
  Display of the automatically recognized and manually added devices.
- *Columns*
  Display of the automatically recognized and manually added separation columns.
- *Eluents*
  Display of the manually added eluents.
- *Accessories*
  Display of the data for all defined accessories parts.
- *Common variables*
  Display of the data for all defined common variables.
- *Rack data*
  Display of the data for all Metrohm sample racks.
- *Solutions*
  Display of the manually added solutions.

- *Amperometric cells*
  Display of the automatically recognized and manually added amperometric cells.

Presentation

The subwindows can be enlarged or made smaller to suit by dragging the separating bar between the windows.

By clicking on the button ❑ above at the right, the subwindows can be maximized so that only one subwindow is displayed in the main window. The original view of all subwindows is restored when the ❑ button in the maximized subwindow is clicked on again.

Via the menu item **View ▸ Quick access...** subwindows that are not in the current configuration view can be shown as a single window.

6.1.6 Configuration - Functions

Program part: **Configuration**

In the program part **Configuration**, the following functions can be carried out:

Views

- *Change the layout of the configuration view*
- *Load configuration view*
- *Save configuration view*
- *Rename configuration view*
- *Delete configuration view*

User administration

- *Manage user groups*
- *Access rights*
- *Signatures*
- *Options*
- *Users*

Security settings

- *Login/Password protection*
- *Audit Trail/Changes*
- *Electronic signature*
- *Default reasons*

Program administration

- *Backup directories*
- *Clients*
- *Licenses*

Export/Import of configuration data

- *Export configuration data*

- *Import configuration data*

Backup/Restore configuration data

- *Backup configuration data automatically*
- *Backup configuration data manually*
- *Restore configuration data*

Templates

- *Input lines*
- *Output lines*
- *E-mail templates*

Options

- *General program properties*

6.1.7 Views

6.1.7.1 Views - General

Program parts: **Workplace / Database / Configuration**

Definition

The term **View** defines the contents and design of the main window in the program parts **Workplace**, **Database** and **Configuration**. The following elements belong to a view:

- Number, arrangement, sequence and size of the subwindows.
- Representation within the individual subwindows, i.e. column sequence, column width, sorting and filter.

Functions

The following functions are possible for views:

- *Change layout*
  Define the number, arrangement and sequence of the subwindows for the current view.
- *Save view*
  Save current view.
- *Load view*
  Load a saved view.
- *Rename view*
  Rename a saved view.
- *Delete view*
  Delete a saved view.

Automatic save

If the corresponding option is activated in the program part **Configuration** under **Tools ▸ Options...** on the tab **Save** under **Save on closing**,

then the current view will be saved automatically when the program is closed.

Automatic load

The standard procedure is that the view saved when the program is terminated will be loaded automatically the next time that the program is opened. As an alternative a standard view can be defined for each user group that is loaded automatically the first time that the program part is opened.

The standard procedure is that the view with the following subwindow is opened with the very first program start:

- **Workplace**
  Run, **Live display 1**, **Report**, **Watch window**, **Time program**
- **Database**
  Determination overview, **Curves 1**, **Information**, **Results**
- **Configuration**
  Devices, **Columns**, **Eluents**, **Accessories**

Export/Import

Views can also be exported and imported. In this way these views can be exchanged between different client / server systems.

6.1.7.2 Change layout

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Change &layout... ▸ Change layout**

The symbol or the menu item **&View ▸ Change &layout...** opens the dialog window **Change layout**.

Select layout

Selection of a graphical symbol for the number, arrangement and sequence of the subwindows.

Selection	**'Selection of the possible combinations'**

Available subwindows

Displaying the subwindows that are still available for displaying the view.

Selection	**'Selection of the subwindows'**

Displayed subwindows

Displaying the subwindows that are shown in the view.

Selection	**'Subwindows'**

Add the selected subwindow to the view.

Remove the selected subwindow from the view.

Move the selected subwindow upward (modifies sequence).

Move the selected subwindow downward (modifies sequence).

6.1.7.3 Loading a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Load &view... ▸ Load view**

The symbol or the menu item **&View ▸ Load &view...** opens the dialog window **Load view**.

Name

Name of the view to be loaded.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Load]

Load the selected view.

6.1.7.4 Saving a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ &Save view... ▸ Save view**

The symbol or the menu item **&View ▸ &Save view...** opens the dialog window **Save view**.

Name

Name under which the view is to be saved.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Save]

Save the view under the given name. The saved views are globally valid and available for client/server systems.

6.1.7.5 Renaming a view

Dialog window: **Workplace / Database / Configuration ▸ &View ▸ Load &view... ▸ Load view ▸ [Rename] ▸ Rename view**

To be able to rename a view, either the dialog window **Load view** or **Save view** must be opened and the button **[Rename]** must be pressed down. Afterwards, the window **Rename view** opens.

Rename view '%1' to

Entry of a new name for the view.

Entry	**50 characters**

6.1.7.6 Deleting a view

Function: **Workplace / Database / Configuration ▸ &View ▸ Load/save view… ▸ [Delete]**

To delete a view, either the dialog window **Load view** or **Save view** must be opened and the button **[Delete]** must be pressed down. The delete procedure must then be confirmed.

6.2 Administration

6.2.1 User administration

6.2.1.1 User administration

Dialog window: **Configuration ▸ Tools ▸ User administration...**

Overview

User groups and their users can be managed in the dialog window **User administration**. For each user group, access rights can be defined for menu items and functions, signature rights and default views can be defined for individual program parts. For client/server systems, the user administration is globally valid for all connected clients (central user administration).

During installation, the three user groups **Administrators** (with the user **Admin1**), **Users** and **Removed users** (each without any users) are automatically created. All groups can be renamed; the **Administrators** group is the only group that cannot be deleted.

The user administration data can be exported and imported. In this way this data can be exchanged between different client/server systems.

With the menu item **&File ▸ &Print (PDF)... ▸ User administration**, the user administration data can be output as PDF file.

Structure

The dialog window **User administration** is divided into two parts, the size of which can be modified with the mouse. In the left-hand part the user groups with their assigned users are listed in tree-form, the right-hand side shows details of the selected items.

Each user group, with the exception of the **Removed users** group, contains the following items:

- *Access rights*
  Assign access rights to the four program parts and their menu bars.
- *Signatures*
  Assign signature rights for methods and determinations.
- *Options*
  Definition of the view for the individual program parts.
- *Users*
  Details of the users.

Functions

In the dialog window **User administration**, the following functions can be carried out:

- *Add user groups*
- *Copy user groups*
- *Rename user groups*
- *Delete user groups*
- *Define access rights for user groups*
- *Define signature rights for user groups*
- *Define options for user groups*
- *Add user*
- *Set start password for new user*
- *Deactivate user*
- *Activate user*
- *Remove user*

6.2.1.2 User groups

6.2.1.2.1 User groups - Details

Dialog window: **Configuration ▸ Tools ▸ User administration...**

If a user group is selected in the left-hand side of the **User administration** dialog window then details of this user group will be shown on the right-hand side together with a table containing all its members.

Group data

Group name

Display of the name of the user group.

Description

Description of the user group.

Entry	**256 characters**

[Rename group]

Rename the selected user group.

[Delete group]

Delete the selected user group.

[Copy group]

Copy the selected user group.

[Add group]

Add a new user group.

User group members

The table showing the group members contains information about all members of the selected user group. The table can neither be edited nor sorted.

User

Short name of the user.

Full name

Full name of the user.

Status

Current user status.

Selection	**enabled** | **disabled**

enabled
The user can log in as usual.

disabled
The user can no longer log in. The administrator must first assign him/her the status **enabled** and provide a new start password.

[Add user]

Add a new user to the user group.

6.2.1.2.2 User administration - Access rights

Dialog window: **Configuration ▸ Tools ▸ User administration...**

If in the left-hand part of the dialog window **User administration** the item **Access rights** is highlighted for a user group then the access rights of this group for program parts, menu items and functions will be shown in tree-form in the right-hand side of the window and can be modified

there. If one item is deactivated, then all the subitems belonging to it will also be automatically deactivated. If a subitem, e.g. the menu **Tools** is deactivated in the configuration then the box for the configuration is colored gray. Blocked functions are deactivated for the particular user, i.e. shown in gray.

Meaning of the symbols:

	Enlarge view	P	Program part
	Reduce view	M	Menu item
	Full access to function(s)	F	Function
	Limited access to function(s)		
	No access to function(s)		

Note

In the **Administrators** group all access rights are switched on as default and cannot be modified.

6.2.1.2.3 User administration - Signatures

Dialog window: **Configuration** ▸ **Tools** ▸ **User administration...**

If in the left-hand part of the dialog window **User administration** the item **Signatures** is highlighted for a user group, then the rights of this group will be shown in the right-hand part and can be modified there.

Permissions for methods

Signature level 1

If this check box is activated, then users in this user group can electronically sign methods at level 1.

Selection	**off** | **on**
Default value	**off**

Signature level 2 (Lock)

If this check box is activated, then users in this user group can electronically sign methods at level 2 and at the same time lock them against further modifications.

Selection	**off** | **on**
Default value	**off**

Delete signatures level 2

If this check box is activated, then users in this user group can delete all signatures at level 2. The method can be edited again.

Selection	**off** | **on**
Default value	**off**

Permissions for determinations

Signature level 1

If this check box is activated, then users in this user group can electronically sign determinations at level 1.

Selection	**off** | **on**
Default value	**off**

Signature level 2 (Lock)

If this check box is activated, then users in this user group can electronically sign determinations at level 2 and at the same time lock them against further modifications.

Selection	**off** | **on**
Default value	**off**

Delete signatures level 2

If this check box is activated, then users in this user group can delete all signatures at level 2. The determination can be edited again.

Selection	**off** | **on**
Default value	**off**

Permissions for Audit Trail

Delete records

If this check box is activated, then users in this user group can confirm the deletion of Audit Trail entries with their signature.

Selection	**off** | **on**
Default value	**off**

Note

In the **Administrators** group all signature rights are switched on as default, but they can also be switched off.

Executable methods

Only methods with signature level 2

If this check box is activated, then only methods with signature level 2 can be started at the workplace by users in this user group.

Selection	**off** | **on**
Default value	**off**

6.2.1.2.4 User administration - Options

Dialog window: **Configuration ▸ Tools ▸ User administration...**

If in the left-hand part of the dialog window **User administration** the item **Options** is highlighted for a user group, then options for this group will be shown in the right-hand part and can be modified there.

Default workplace view

Selection of the view that will open in the program part **Workplace** as default when the user logs in.

Selection	**Selection of the defined workplace views**

Default database view

Selection of the view that will open in the program part **Database** as default when the user logs in.

Selection	**Selection of the defined database views**

Default configuration view

Selection of the view that will open in the program part **Configuration** as default when the user logs in.

Selection	**Selection of the defined configuration views**

Default method group

Selection of the method group to be opened as default for opening and saving methods.

Selection	**Selection of the defined method groups**

6.2.1.2.5 Adding a user group

Dialog window: **Configuration ▸ Tools ▸ User administration... ▸ [Add group] ▸ Add group**

In order to add a new user group with default settings an existing group must be selected and either the context-sensitive menu item **Add group** or the **[Add group]** button must be pressed. The dialog window **Add group** is then opened.

Group name

Name of the new group.

Entry	**24 characters**

With **[OK]** a new group with default settings is created under this name; it does not contain any users. The **Description** field and the table of group members are empty.

6.2.1.2.6 Copying a user group

Dialog window: **Configuration ▸ Tools ▸ User administration... ▸ [Copy group] ▸ Copy group**

Dialog window:

In order to copy a user group and save it under a new name, an existing group must be selected and either the context-sensitive menu item **Copy group** or the **[Copy group]** button must be pressed. The dialog window **Copy group** is then opened.

Group name

Name of new group.

Entry	**24 characters**

With **[OK]** a new group is created under this name with same properties (access rights, signature rights, etc.) as the selected group; it does not contain any users. The **Description** field and the table of group members are empty.

6.2.1.2.7 Renaming a user group

Dialog window: **Configuration ▸ Tools ▸ User administration... ▸ [Rename group] ▸ Rename group**

In order to rename a selected user group either the context-sensitive menu item **Rename group** or the **[Rename group]** button must be pressed. The dialog window **Rename group** is then opened.

Group name

Entry of the new group name.

Entry	**24 characters**

6.2.1.2.8 Deleting a user group

Function: **Configuration ▸ Tools ▸ User administration... ▸ [Delete group]**

In order to delete a selected user group either the context-sensitive menu item **Delete group** or the **[Delete group]** button must be pressed. The group is then deleted.

Note

Deleting user groups is only possible if the group no longer contains any users.

6.2.1.3 User

6.2.1.3.1 User - Details

Dialog window: **Configuration ▸ Tools ▸ User administration...**

If a user in a user group is selected in the left-hand side of the **User administration** dialog window then details of this user will be shown on the right-hand side.

User

Display of the short name of the user that must be entered at login in the field **User**. This name is defined when a new user is entered for the first time and cannot be subsequently modified.

Entry	**24 characters**

Full name

Full name of the user.

Entry	**256 characters**

Status

Display of the current status of the user. Only users of the group **Administrators** can modify the status.

Selection	**enabled** | **disabled** | **removed**

enabled
Users in the status **enabled** can log in in the normal way. An exception is the first login after the change of status from **disabled** or **removed** to **enabled**. If this is the case, then a **Start password** must be assigned with which this user can log in again.

disabled
Users in the status **disabled** can no longer log in. They will be automatically set to this status as soon as the number of login attempts defined in the **Security settings** has been exceeded.

removed
Users in the status **removed** can no longer log in. If the set status of a user is changed from **enabled** or **disabled** to **removed**, then the user will automatically be shifted to the **Removed users** group. If the status of a removed user is changed back to **enabled** or **disabled**, then a dialog window will appear for selecting the group to which the user is to be assigned.

Start password

The invisible start password is displayed with 6 ***** characters which must be entered by a new user the first time that new user logs on or after a change in status from **disabled** or **removed** to **enabled**. The administra-

tor must assign a new start password when adding a new user or when there is a change in status to **enabled**. If the user has logged in with the start password and afterwards entered a new password, then the start password will be deleted once again.

Entry	**50 characters**

[Set start password]

Opens the dialog window **Start password**. This button is active only for users with the status **enabled**. If a user has forgotten his password, then the Administrator can assign a new start password.

User group

Current user group. The administrator can modify the group assignment of the user. The user is automatically moved to the new group. A user can also be moved to a new group with Drag&Drop.

Selection	**Selection of the defined user group**

Remarks

Possibility to enter additional information for the user (e.g. function, address).

Entry	**1000 characters**

6.2.1.3.2 Adding a user

Dialog window: **Configuration ▸ Tools ▸ User administration... ▸ [Add user] ▸ Add user**

There are two possibilities how to add a new user:

- Select a user group and then the context-sensitive menu item **Add user**.
- Select a user group and press the **[Add user]** button.

In both cases the dialog window **Add user** is then opened.

User

Short name of the new user that must be used to log in at program start. After the name has been entered a **Start password** must be issued with which the user is entered in the list of users.

Entry	**24 characters**

6.2.1.3.3 Setting a start password

Dialog window: **Configuration ▸ Tools ▸ User administration... ▸ [Set start password] ▸ Start password**

A start password can be assigned for the selected user with the button **[Set start password]** in the dialog window **User administration**. It is active only for newly created users or for those who once again have had their status set to **enabled**. The dialog window **Start password** opens.

Start password

Entry of a new start password. Password options are not used for the start password.

Entry	**50 characters**

Confirm password

Confirmation of the start password.

Entry	**50 characters**

6.2.2 Security settings

6.2.2.1 Security settings

Dialog window: **Configuration ▸ Tools ▸ Security settings**

Overview

Parameters for login, password protection, Audit Trail and electronic signatures can be configured in the dialog window **Security settings**. They are used primarily to ensure that work is performed in accordance with the safety requirements contained in FDA Directive 21 CFR Part 11.

With client/server systems the security settings are globally valid for all connected clients.

Security settings can be exported and imported. This means that these settings can be exchanged between different client/server systems.

With the menu item **&File ▸ &Print (PDF)... ▸ Security settings**, the security settings can be put out as PDF file.

Settings according to 21 CFR Part 11

Settings according to 21 CFR Part 11

on | off (Default value: **off**)

If this check box is activated, then the default settings pursuant to 21 CFR Part 11 will be activated on all tabs. At the same time, those check boxes which are required to be switched on pursuant to 21 CFR Part 11 will be displayed against a gray background, i.e. they can no longer be edited.

Tabs

The security settings are configured on the following tabs:

- *Login/Password protection*
  Settings for login and password protection.
- *Audit Trail/Changes*
  Activation/Deactivation of the Audit Trail and comments when methods, determinations or sample data are modified.
- *Signatures*
  Options for electronic signatures
- *Default reasons*
  Definition of reasons for signing and modifying methods, determinations and sample data.

6.2.2.2 Login/Password protection

Tab: **Configuration ▸ Tools ▸ Security settings ▸ Login/Password protection**

Definition is made on the tab **Login/Password protection** as to whether the user must log in with name only or with name and password and how the password must be monitored and constructed.

Login policies

Enforce login with user name

If this check box is **activated** then every time that the program starts, the login window will appear in which the user must enter his/her user name. If this check box is **deactivated** no login is necessary and the user logged in under Windows will be adopted as user name. In this case all subsequent parameters are deactivated.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Enforce login with password

If this check box is **activated**, then every time there is a program start the login window will appear in which the user must enter not only his or her user name but also a password. If this option is **switched off**, then all of the subsequent parameters will be inactive.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Password monitoring by StabNet

If this option is **switched on**, then the password will be monitored in accordance with the subsequent parameters by **MagIC Net**.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (editable)

Password monitoring by Windows

If this option is **switched on**, then the password will be monitored in accordance with the parameters defined in Windows. The parameters for password protection are in this case inactive.

Selection	**on** | **off**
Default value	**off** FDA default: **off** (editable)

Caution

In order to prevent an unwanted login by means of the **Guest** user category which is defined by default in Windows when performing password monitoring with Windows, it is imperative that also be assigned a password or (even better) deactivated.

Caution

If this option is switched on, then the user names in **Windows** and **MagIC Net** must necessarily match, because otherwise the user in **MagIC Net** will not longer be able to log in. In order to ensure this, once this selection has been made, the dialog window **Test login** *(see Chapter 6.2.2.3, page 509)* appears in which the logged-in user must log in with his or her Windows password. If this test login fails, then the **Security settings** dialog window opens.

Note

With Windows 2000, proceed as follows for password monitoring by Windows:

1. Run/Execute "secpol.msc".
2. Under "Local Policies/User Rights Assignment", switch on the guideline "Act as part of the operating system" for all desired user groups.
3. Restart the computer.

Maximum number of login attempts

If this check box is **activated**, then a user will be set to the status **disabled** as soon as the number of login attempts defined here has been exceeded. A user with the status **disabled** can no longer start the program. The counter for the login attempts is set to zero for all users each time the program is restarted.

Selection	**on** | **off**
Default value	**off**
	FDA default: **off** (can no longer be edited)

Input range	**2 - 5**
Default value	**3**
	FDA default: **3** (editable)

Message by e-mail

If this check box is **activated**, then an E-mail will be sent to the address defined under **[E-mail...]** as soon as the defined number of of login attempts has been exceeded.

Selection	**on** | **off**
Default value	**off**
	FDA default: **off** (editable)

[E-mail...]

This button opens the dialog window **Send e-mail** *(see Chapter 6.2.2.7, page 512)* for defining the E-mail parameters.

Logout policies

New login only for same user

If this check box is **activated**, then only the same user can log in again after a manual logout. Users with administrator rights can always log in. If this option is enabled, then the following option is switched on automatically and inactive.

Selection	**on** | **off**
Default value	**off**
	FDA default: **off** (editable)

Note

If the automatic logout is switched on (see below), then only the same user or a user with administrator rights can log on again, no matter what the setting for this option is.

No editing of workplaces in 'BUSY' status

If this check box is **activated** then, after a user has logged out manually, a newly logged-in user on the workplaces still open with running determinations can neither edit data nor trigger actions. These workplaces will only be available again when all determinations are finished. For running determinations the old user name always applies (Audit Trail entries, Save, Export, etc.). Exceptions are the stop of a determination with **[Stop]** and the emergency stop, which are always possible for all running determinations and series.

If this check box is **deactivated**, then the newly registered user has all of the rights for the opened workplaces which he has on the basis of his group membership. The new user name is valid, effective immediately, for the ongoing determinations (Audit Trail entries, Save, Export, etc.).

Selection	**on** | **off**
Default value	**off** FDA default: **off** (editable)

Automatic logout after

If this check box is **activated** then the user will be logged out automatically when no operating functions have been carried out with the keyboard or the mouse within this time. After this automatic logout, only a member of the same user group as the one to which the previously logged-off user belongs or a user with administrator rights can log in again.

Selection	**on** | **off**
Default value	**off** FDA default: **off** (editable)

Input range	**1 - 60 min**
Default value	**10 min** FDA default: **10 min** (editable)

Note

The immediate stop of all ongoing determinations at all active workplaces with the **emergency stop button** remains possible, even after an automatic logout.

Password policies

Note

If the option **Password monitoring by Windows** is switched on, then the parameters for password protection are inactive. Compliance with the regulations in accordance with 21 CFR Part 11 must then be ensured by the administrator in Windows.

Enforce unique password

If this check box is **activated** then this ensures that a user can use a given password only once.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Enforce use of special characters

If this check box is **activated** then this ensures that the password must contain at least one special character (@, #, ~ etc.).

Selection	**on** | **off**
Default value	**off** FDA default: **off** (editable)

Minimum password length

If this check box is **activated** then this ensures that the password must contain the indicated number of characters.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (editable)

Input range	**1 - 10 characters**
Default value	**6 characters** FDA default: **6 characters** (editable)

Passwords expire every

If this check box is **activated** then this ensures that the user must enter a new password before the validity period expires. When a user logs in whose password will expire within the next 10 days a corresponding message will appear. If the validity period has expired, the user can only log in if he changes the password.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Input range	**1 - 999 Days**
Default value	**365 Days** FDA default: **365 days** (editable)

6.2.2.3 Test login for password monitoring by Windows

Tab: **Configuration ▸ Tools ▸ Security settings ▸ Login/Password protection ▸ Test login**

When switching on the option **Password monitoring by Windows** *(see Chapter 6.2.2.2, page 504)*, the Windows password of the user must be entered in this dialogue window. The test login is used to check whether the user name matches the Windows user name.

User

Display of the current user name.

Password

Entry of the Windows password.

It is only when the test login is successful that the **Password monitoring by Windows** can be used.

6.2.2.4 Audit Trail/Modifications

Tab: **Configuration ▸ Tools ▸ Security settings ▸ Audit Trail/Modifications**

The recording of the Audit Trail is switched on and off on the tab **Audit Trail/Modifications**. Here a definition can also be set up as to whether or not, in the event of changes to methods, determinations or sample data, a reason for the change and a change comment are required.

Audit Trail

Enable Audit Trail

If this check box is **activated** then all program actions will be automatically recorded; these are defined as Audit Trail actions.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Modifications

Comment on modification of methods

If this check box is **activated** then each time that a method is modified a modification reason and a modification comment must be entered; these

are saved in the method and shown in the method history. The reason and comments are also recorded in the Audit Trail.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Comment on modification of determinations

If this check box is **activated**, then a reason for a change and a change comment must be entered with each change to a determination which will then be saved in the determination and displayed in the database in the subwindow **Information** on the tab **Determination**. Reason and comment will also be recorded in the Audit Trail.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Comment on modification of sample data (live)

If this check box is **activated** then each time that a determination is modified a modification reason and a modification comment must be entered; these are saved in the determination and shown in the database in the subwindow **Information** on the tab **Sample**. The reason and comments are also recorded in the Audit Trail.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Reprocessing with history

on | off (Default value: **on**)

The behavior during recalculation is set with this parameter for the complete MagIC Net installation (server and all clients). In the case of **on**, a new version of the determination will be generated and saved in the database each time a recalculation is performed. In the case of **off**, *no* new determination version will be generated (unless only the original version exists).

Selection	**on** | **off**
Default value	**off** FDA default: **on**

6.2.2.5 Signatures

Tab: **Configuration ▸ Tools ▸ Security settings ▸ Signatures**

On the tab **Signatures**, the parameters for the electronic signature can be configured.

Inactivity delay

If this check box is **activated** then the dialog window for signing will be automatically closed when the entered time limit has expired.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (editable)

Input range	**1 - 60 min**
Default value	**10 min** FDA default: **10 min** (editable)

Remove password after signature

If this check box is **activated** then the password must be entered again after each signature.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

Sign each determination separately

If this check box is **activated** then each determination selected in the determination overview must be signed individually.

Selection	**on** | **off**
Default value	**off** FDA default: **on** (can no longer be edited)

6.2.2.6 Default reasons

Tab: **Configuration ▸ Tools ▸ Security settings ▸ Default reasons**

On the tab **Default reasons**, the reasons are defined which must be entered when signing methods and determinations or when changing methods, determinations and sample data.

Category

Selection of the category for which the reasons are to be defined.

Selection	**Signature level 1** | **Signature level 2** | **Modification of methods** | **Modification of determinations** | **Modification of sample data**
Default value	**Signature level 1**

Reasons

Display of the reasons defined for the selected category.

Entry	**50 characters**

Move text upward (modifies sequence).

Move text downward (modifies sequence).

[New]

Add a new reason.

[Edit]

Edit the selected reason.

[Delete]

Delete the selected reason.

6.2.2.7 Sending an e-mail

Dialog window: **Configuration ▸ Tools ▸ Security settings ▸ Login/Password protection ▸ [E-mail...] ▸ Send e-mail**

Mail to

E-mail address of the recipient.

Entry	**200 characters**

Subject

Title for describing the message.

Entry	**200 characters**

Message

The message defined here is sent as an e-mail when the maximum permitted number of login attempts has been exceeded.

The text editor for entering or changing the message is opened with or by double-clicking into the text field.

Selection	**Text (unlimited)**

Sender

Mail from

E-mail address of the sender.

Entry	**200 characters**

SMTP Server

Address of the SMTP mail server.

Entry	**200 characters**

Port

Port number of the SMTP mail server.

Input range	**1 - 65536**
Default value	**25**

Authentication

on | off (Default value: **off**)

Check box for activating the authentication of the sender when sending the e-mail or selection of the authentication method.

Selection	**SMTP** | **SMTP after POP**
Default value	**SMTP**

POP server

Address of the POP mail server.

Entry	**200 characters**

Port

Port number of the POP mail server.

Input range	**1 - 65536**
Default value	**110**

User

Name of the user for access to mail server. The name need not agree with the Windows user name.

Entry	**200 characters**

Password

Password for the access to the mail server. This password does not necessarily have to be identical to the Windows password.

Entry	**200 characters**

6.2.3 Program administration

6.2.3.1 Program administration

Dialog window: **Configuration ▸ Tools ▸ Program administration**

Overview

In the dialog window **Program administration**, backup directories and licenses can be managed.

Tabs

The parameters for program administration are defined on the following tabs:

- *Backup directories*
  List of the defined backup directories.
- *Clients*
  List of computers on which **MagIC Net** is installed.
- *Licenses*
  List of installed licenses with number of clients. This tab is only shown on the server of a client/server installation.

6.2.3.2 Backup directories

6.2.3.2.1 Backup directories

Tab: **Configuration ▸ Tools ▸ User administration... ▸ Backup directories**

Table with the defined backup directories. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The directory **Default backup directory** is created during installation.

Note

The following buttons are only active when **MagIC Net** is running on the server, they are inactive for the individual clients.

[New]

Add a new backup directory *(see Chapter 6.2.3.2.2, page 515)*.

[Edit]

Edit the selected backup directory *(see Chapter 6.2.3.2.3, page 515)*.

[Delete]

Delete the selected backup directory.

Note

The **Default backup directory** cannot be deleted.

6.2.3.2.2 Creating a new backup directory

Dialog window: **Configuration** ▸ **Tools** ▸ **User administration...** ▸ **Backup directories** ▸ **[New]** ▸ **New backup directory**

Name

Name for the backup directory.

Entry	**50 characters**

Directory

Entry or selection (with ...) of the path for the backup directory.

Entry	**1000 characters**

Note

If the backup directory is on a network drive the saving date should be added manually to the **Backup name** because the saving date information is not available when the directory is restored.

Note

Make sure that you have read and write permission on the selected directory.

6.2.3.2.3 Editing a backup directory

Dialog window: **Configuration** ▸ **Tools** ▸ **User administration...** ▸ **Backup directories** ▸ **[Edit]** ▸ **Edit backup directory**

Name

Name for the backup directory.

Entry	**50 characters**

Note

The **Default backup directory** created during installation cannot be renamed.

Directory

Entry or selection (with ...) of the path for the backup directory.

Entry	**1000 characters**

Note

If the backup directory is on a network drive the saving date should be added manually to the **Backup name** because the saving date information is not available when the directory is restored.

Note

Make sure that you have read and write permission on the selected directory.

6.2.3.3 Clients

Tab: **Configuration** ▸ **Tools** ▸ **Program administration** ▸ **Clients**

Table with information about the computers on which **MagIC Net** is installed. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.

Client ID

Display of the ID for the client that has been entered for the client/server installation.

Computer name

Display of the name of the computer on which the client has been installed.

Status

Display as to whether **MagIC Net** has been started on the client (**active**) or not (**inactive**).

Note

The content of the tab **Clients** can also be displayed via the shortcut in the directory **..\Metrohm\magic\bin** (available only on the server) if **MagIC Net** is not running.

6.2.3.4 Licenses

Tab: **Configuration** ▸ **Tools** ▸ **Program administration** ▸ **Licenses**

Table with the licenses that are installed on the server (for **MagIC Net Multi**) or local server (for **MagIC Net Professional**). The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.

Note

In client/server systems this tab is only visible on the server and only for members of the **Administrators** user group.

License code

Display of the entered license code.

Number of clients

Display of the number of clients to have been enabled with the license code.

[Add licenses]

Add new, additional licenses *(see Chapter 6.2.3.5, page 518)*.

Note

Since Windows Vista, Microsoft has introduced the UAC (User Account Control), which permits running tasks either as non-administrator or as administrator (without changes of user, switching off or similar). This function can however cause difficulties with client/server installations of **MagIC Net** on computers with Windows Vista or Windows 7. Proceed as follows to add additional licenses:

- **For new installations**
  To enter additional licenses, the program must be started as administrator (position the mouse on the Program icon and press down the right-hand mouse button – select **Run as administrator** there). If one then adds the license code for additional licenses in the usual way, then the file **license.mlic** in the directory **C:\Program Files \Metrohm\'Program name'\bin** will contain both license codes.
- **For existing installations**
  First of all, the file **license.mlic** in the directory **C:\Users \'User'\AppData\Local\VirtualStore\Program Files\Metrohm \'Program name'\bin** must be deleted. This file must not be present in the **VirtualStore** of any user – a check must be made to make sure of this, and any such files which may be found must be deleted.
  Afterwards, the program must be started as administrator (position the mouse on the Program icon and click the right mouse button – select **Run as administrator**). If one then adds the license code for additional licenses in the usual way, then the file **license.mlic** in the directory **C:\Program Files\Metrohm\'Program name'\bin** will contain both license codes.

Additional information on this topic can be found in the Installation Manual, which is saved in the directory **C:\Program Files\Metrohm \MagIC Net\doc**.

6.2.3.5 Adding licenses

Dialog window: **Configuration ▸ Tools ▸ Program administration ▸ Licenses ▸ [Add licenses] ▸ Add licenses**

The menu **Tools ▸ Program administration ▸ Licenses ▸ [Add licenses]** in the program part **Configuration** opens the dialog window **Add licenses** in which the new license code can be entered.

License code

Entry of the license code.

6.3 Configuration data

6.3.1 Exporting/Importing

6.3.1.1 Exporting configuration data

Dialog window: **Configuration ▸ &File ▸ Export... ▸ Export configuration data**

With **&File ▸ Export...** the dialog window **Export configuration data** opens, in which the following parts of the configuration database can be selected for export:

Devices

on | off (Default value: **on**)

Export configuration data for devices *(see Chapter 6.5.1, page 550)*.

Solutions

on | off (Default value: **on**)

Export configuration data for solutions *(see Chapter 6.8.1, page 576)*.

Common Variables

on | off (Default value: **on**)

Export configuration data for common variables *(see Chapter 6.11.1, page 604)*.

Rack data

on | off (Default value: **on**)

Export configuration data for sample changer racks *(see Chapter 6.10.1, page 596)*.

Columns

on | off (Default value: **on**)

Export configuration data for separation columns *(see Chapter 6.6.1, page 556)*.

Eluents

on | off (Default value: **on**)

Export configuration data for eluents *(see Chapter 6.7.1, page 568)*

Accessories

on | off (Default value: **on**)

Export configuration data for accessories *(see Chapter 6.9.1, page 589)*.

Configuration views

on | off (Default value: **on**)

Export saved configuration views *(see Chapter 3.1.7, page 113)*.

Workplace views

on | off (Default value: **on**)

Export saved workplace views *(see Chapter 3.1.7.1, page 113)*.

Database views

on | off (Default value: **on**)

Export saved database views *(see Chapter 3.1.7, page 113)*.

Export templates

on | off (Default value: **on**)

Export saved export templates *(see Chapter 4.6.1, page 262)*.

Control chart templates

on | off (Default value: **on**)

Export saved control card templates *(see Chapter 4.5.1, page 256)*.

E-mail templates

on | off (Default value: **on**)

Export saved e-mail templates *(see Chapter 6.3.3.3, page 529)*.

Text templates

on | off (Default value: **on**)

Export saved text templates *(see Chapter 3.6, page 144)*.

Sample assignment table

on | off (Default value: **on**)

Export the saved sample assignment table *(see Chapter 3.5, page 142)*.

Security settings

on | off (Default value: **on**)

Export security settings *(see Chapter 6.2.2.1, page 503)*.

User administration

on | off (Default value: **on**)

Export user administration *(see Chapter 6.2.1.1, page 494)*.

[OK]

The dialog window **Save** for saving data opens, in which the name and directory for the export file must be entered. The selected configuration data is then saved in a file with the extension **.mcfg**.

6.3.1.2 Importing configuration data

Dialog window: **Configuration ▸ &File ▸ Import... ▸ Import configuration data**

With **File ▸ Import...** and after selection of the file ***.mcfg** to be imported, the dialog window **Import configuration data** opens, in which the following parts of the configuration database can be selected for import:

Note

Data that is not present in the export file cannot be selected.

Devices

on | off (Default value: **on**)

Import configuration data for devices *(see Chapter 6.5.1, page 550)*.

Solutions

on | off (Default value: **on**)

Import configuration data for solutions *(see Chapter 6.8.1, page 576)*.

Common Variables

on | off (Default value: **on**)

Import configuration data for common variables *(see Chapter 6.11.1, page 604)*.

Rack data

on | off (Default value: **on**)

Import configuration data for sample changer racks *(see Chapter 6.10.1, page 596)*.

Columns

on | off (Default value: **on**)

Import configuration data for separation columns *(see Chapter 6.6.1, page 556)*.

Eluents

on | off (Default value: **on**)

Import configuration data for eluents *(see Chapter 6.7.1, page 568)*.

Accessories

on | off (Default value: **on**)

Import configuration data for accessories *(see Chapter 6.9.1, page 589)*.

Configuration views

on | off (Default value: **on**)

Import saved configuration views *(see Chapter 3.1.7, page 113)*.

Workplace views

on | off (Default value: **on**)

Import saved workplace views *(see Chapter 3.1.7.1, page 113)*.

Database views

on | off (Default value: **on**)

Import saved database views *(see Chapter 3.1.7, page 113)*.

Export templates

on | off (Default value: **on**)

Import saved export templates *(see Chapter 4.6.1, page 262)*.

Control chart templates

on | off (Default value: **on**)

Import saved control card templates *(see Chapter 4.5.1, page 256)*.

E-mail templates

on | off (Default value: **on**)

Import saved e-mail templates *(see Chapter 6.3.3.3, page 529)*.

Text templates

on | off (Default value: **on**)

Import saved text templates *(see Chapter 3.6, page 144)*.

Sample assignment table

on | off (Default value: **on**)

Import a saved sample assignment table *(see Chapter 3.5, page 142)*.

Security settings

on | off (Default value: **on**)

Import security settings *(see Chapter 6.2.2.1, page 503)*.

User administration

on | off (Default value: **on**)

Import user administration *(see Chapter 6.2.1.1, page 494)*.

[OK]

The selected data is imported.

6.3.2 Backup/Restore

6.3.2.1 Backing up configuration data automatically

Dialog window: **Configuration ▸ &File ▸ Backup ▸ Automatically ▸ Backup configuration data automatically**

Automatic backup

on | off (Default value: **off**)

If this check box is **activated**, then the configuration database is saved automatically to the defined backup directory at the desired time interval. The entire configuration database (including method groups and methods) is saved at this time.

If this check box is **deactivated** then the following parameters cannot be edited.

Last backup

Display of date and time of the last configuration data backup.

Next backup

Date and time at which the next backup is to be carried out. The ... opens the window **Next backup** to select the date *(see Chapter 2.5.1, page 81)*.

Default value	**Last backup + 1 month**

Interval

Entry of the time interval after which an automatic backup will take place. After each automatic or manual backup the interval entered here will be added to the date of the **Last backup** and shown in the field **Next backup**.

Input range	**1 - 999**
Default value	**1**
Selection	**day(s)** | **week(s)** | **month** | **year(s)**
Default value	**month**

Backup directory

Selection of a pre-defined backup directory *(see Chapter 6.2.3.2.1, page 514)*.

Note

Make sure that you have read and write permission on the selected directory.

6.3.2.2 Backing up configuration data manually

Dialog window: **Configuration ▸ &File ▸ Backup ▸ Manually ▸ Backup configuration data manually**

Backup target

Backup directory

Selection of a pre-defined backup directory *(see Chapter 6.2.3.2.1, page 514)*.

Note

Make sure that you have read and write permission on the selected directory.

Backup name

Selection of an existing name for the backup file or entry of a new name. If an existing backup file is selected it will be overwritten.

Entry	**50 characters**
Selection	**'Backup name'**

Note

If the backup directory is located on a network drive, then the date of the backup should be added in the **Backup name**, because the information regarding the backup date is not available when the information is restored.

[Start]

Start the manual backup of the complete configuration database (including method groups and methods).

6.3.2.3 Restoring configuration data

Dialog window: **Restore configuration data**

Dialog window "Restore configuration data"

Backup directory

Selection of a directory predefined in the program administration that contains the backed up configuration database.

Selection	**'Backup directories'**

Backup name

Selection of a backup file.

Selection	**'Backup files'**

Backup date

Display of the moment at which the configuration database was backed up. If the backup file is located on a network drive, this information is not available.

Database name

Display of the name of the configuration database. If the backup file is located on a network drive, this information is not available.

Size

Display of the size of the configuration database in KB.

Save As

Display of the name under which the configuration database will be restored.

[Start]

Start the recovery of the configuration database. After the start, a progress bar appears in the window. When the backup has been completed, the dialog window closes automatically.

6.3.3 Templates

6.3.3.1 Templates - Input lines

6.3.3.1.1 Managing templates for input lines

Dialog window: **Configuration ▸ Tools ▸ Templates ▸ Input lines ▸ Templates for input lines**

In the dialog window **Templates for input lines**, client-specific bit patterns for scanning remote input signals can be defined which can be selected with the time program command **Scan lines** and in Manual Control. The table with the defined templates cannot be edited, although it can be sorted according to the selected column in increasing or decreasing sequence by clicking on the column title

[New]

Create a new template *(see Chapter 6.3.3.1.2, page 526)*.

[Edit]

Edit the selected template *(see Chapter 6.3.3.1.2, page 526)*.

[Delete]

Delete the selected template.

6.3.3.1.2 Editing templates for input lines

Dialog window: **Configuration ▸ Tools ▸ Templates ▸ Input lines ▸ Templates for input lines ▸ [New] / [Edit] ▸ New template / Edit template**

With **[New]** or **[Edit]** the dialog window **New template** or **Edit template** opens for entering a new template or for editing an existing template.

Signal name

Name of the pattern for the input signal.

Entry	**25 characters**

Input signal

Entry of the bit pattern for the input signal with exactly 8 characters. It is possible to enter the characters

0 = Line inactive,

1 = Line active and

***** = Any line status.

Selection	**Bit pattern with 8 characters (0, 1, *) | **********
Default value	************

The input lines and bits are numbered from right to left:

Input	7 6 5 4 3 2 1 0
Bit	7 6 5 4 3 2 1 0

Note

Input lines that are of no interest or for which no defined condition can be predicted should also be masked with an asterisk *****.

6.3.3.2 Templates - Output lines

6.3.3.2.1 Managing templates for output lines

Dialog window: **Configuration ▸ Tools ▸ Templates ▸ Output lines... ▸ Templates for output lines**

The client-specific bit pattern for setting remote output signals can be defined in the dialog window **Templates for output lines** opens; these can be selected with the time program command **Set lines** and in Manual Control. The table with the defined templates cannot be edited, although it can be sorted according to the selected column in increasing or decreasing sequence by clicking on the column title

[New]

Create a new template *(see Chapter 6.3.3.2.2, page 527)*.

[Edit]

Edit the selected template *(see Chapter 6.3.3.2.2, page 527)*.

[Delete]

Delete the selected template.

6.3.3.2.2 Editing templates for output lines

Dialog window: **Configuration ▸ Tools ▸ Templates ▸ Output lines ▸ Templates for output lines ▸ [New] / [Edit] ▸ New template / Edit template**

With **[New]** or **[Edit]** the dialog window **New template** or **Edit template** opens for entering a new template or for editing an existing template.

Creating new template or editing template

With **<New>** or **<Edit>** the dialog window **New template** or **Edit template** opens for entering a new template or for editing an existing template.

Signal name

Name of the pattern for the output signal.

Entry	**25 characters**

Output signal

Entry of the bit pattern for the output signal with exactly 14 characters.

It is possible to enter the characters

0 = Line inactive,

1 = Line active,

***** = Any line status and

p = Set pulse

Selection	**Bit pattern with exactly 14 characters (0, 1, *, p)** | ******************
Default value	******************

The output lines are numbered from right to left:

Output	13 12 11 10 9 8 7 6 5 4 3 2 1 0
Bit	13 12 11 10 9 8 7 6 5 4 3 2 1 0

Note

We recommend masking the irrelevant output lines with an asterisk ***** so as not to modify these line conditions.

Pulse length

Duration of the transmitted pulse.

Input range	**100 - 1000 ms**
Default value	**200 ms**

6.3.3.3 Templates - E-mail

6.3.3.3.1 Managing e-mail templates

Dialog window: **Configuration ▸ Tools ▸ Templates ▸ E-mail templates... ▸ E-mail templates**

The saved e-mail templates are displayed in a table in the dialog window **E-mail templates**. The table cannot be edited, but with a click on the column title the table can be sorted according to the selected column in either increasing or decreasing order.

[New]

Create a new template. The **Edit e-mail template** window opens in which a new template can be defined *(see Chapter 6.3.3.3.2, page 529)*.

[Edit]

Edit the selected template. The **Edit e-mail template** window opens in which the template can be edited *(see Chapter 6.3.3.3.2, page 529)*.

[Delete]

Delete the selected template.

[Copy]

Copy the selected template which is saved under the name **Copy of %1**.

6.3.3.3.2 Editing e-mail templates

Dialog window: **Configuration ▸ Tools ▸ Templates ▸ E-mail templates... ▸ E-mail templates ▸ [New] / [Properties] ▸ Edit e-mail template**

With **[New]** or **[Edit]** in the dialog window **E-mail templates**, the dialog window **Edit e-mail template** opens for entering a new template or for editing an existing template.

E-mail template

Name of the e-mail template.

Entry	**1 … 16 characters**

Recipient

E-mail address

E-mail address of the recipient.

Entry	**1 … 200 characters**

Sender

E-mail address

E-mail address of the sender.

Entry	**1 … 200 characters**

SMTP server

Address of the SMTP mail server.

Entry	**1 … 200 characters**

Port

Port number of the SMTP mail server.

Input range	**1 - 1 … 65536**
Default value	**25**

Authentication

on | off (Default value: **off**)

Check box for activating the authentication of the sender when sending the e-mail or selection of the authentication method.

Selection	**SMTP** | **SMTP after POP**
Default value	**SMTP**

POP server

Address of the POP mail server.

Entry	**3 … 200 characters**

Port

Port number of the POP mail server.

Input range	**1 - 1 … 65536**
Default value	**110**

User

Name of the user for access to mail server. The name need not agree with the Windows user name.

Entry	**2 … 50 characters**

Password

Password for the access to the mail server. This password does not necessarily have to be identical to the Windows password.

Entry	**0 … 50 characters**

6.3.4 Options

6.3.4.1 Options - Overview

Dialog window: **Configuration** ▸ **Tools** ▸ **Options...** ▸ **Options**

Under **Tools** ▸ **Options...**, general program properties can be set on the following tabs:

- *General*
  Selection of the dialog language and pressure unit.
- *Error handling*
  Settings for emergency stop button and safety shutdown.
- *Save*
  Saves settings on exiting the program.
- *PDF*
  Settings for PDF files.

6.3.4.2 Options - General

Tab: **Configuration** ▸ **Tools** ▸ **Options...** ▸ **Options** ▸ **General**

Dialog language

Dialog language

Selection of the dialog language.

Selection	**German** | **English** | **additional languages (dependent on installed language patches)**
Default value	**English**

Note

For the modified setting to become effective the program must be restarted.

Unit

Pressure

Selection of the unit for the pressure.

Selection	**MPa** | **bar** | **psi**
Default value	**MPa**

6.3.4.3 Options - Error handling

Tab: **Configuration ▸ Tools ▸ Options... ▸ Options ▸ Error handling**

Emergency stop button

If this option is activated, then the emergency stop button will be shown in all program parts.

Selection	**on** | **off**
Default value	**off**

This button can be moved to any position with the left mouse button pressed down and is shown right at the top on the screen both in the program window and outside it on the Windows desktop. A mouse click on this button immediately stops all running determinations on all activated workplaces and stops all running devices. The emergency stop is effective even if no user is logged in, e.g. when the user has been logged out automatically.

Safety shutdown with device malfunctions

on | off (Default value: **off**)

If this option is activated, the devices are automatically shut down in the event of device malfunctions.

Shut-down hardware if messages are not acknowledged:

Choice of the moment when the devices should be shut down.

Selection	**immediately** | **after x hours**
Default value	**after x hours**

after x hours

Time delay until the devices are shut down.

Input range	**0.1 - 100.0 Hours**
Default value	**0.1 Hours**

6.3.4.4 Options - Save

Tab: **Configuration ▸ Tools ▸ Options... ▸ Options ▸ Save**

Save on closing

Here you can define the settings to be saved when the program is exited. If the option is **activated**, the current view with its settings will be saved automatically when the program is exited. If the option is **deactivated**, then any modifications that may have been made to the view will not be

saved and at the next program start the original, manually saved view will be loaded.

Workplace settings

on | off (Default value: **off**)

Switches Save workplace view on/off when exiting the program.

Database settings

on | off (Default value: **off**)

Switches Save database view on/off when exiting the program.

Configuration settings

on | off (Default value: **off**)

Switches Save configuration view on/off when exiting the program.

6.3.4.5 Options - PDF

Tab: **Configuration ▸ Tools ▸ Options... ▸ Options ▸ PDF**

Security permissions for PDF files

Content copying or extraction allowed

on | off (Default value: **on**)

If this check box is **deactivated**, then content cannot be copied or removed from the PDF file.

Printing allowed

on | off (Default value: **on**)

If this check box is **deactivated**, then the PDF file cannot be printed.

Adding or changing comments allowed

on | off (Default value: **on**)

If this check box is **deactivated**, then comments and form fields can neither be added nor changed.

Modifying the document allowed

on | off (Default value: **on**)

If this check box is **deactivated**, then no changes can be made to the PDF file.

6.4 Audit Trail

6.4.1 Audit Trail - General

6.4.1.1 Audit Trail - Definition

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

Definition

The term **Audit Trail** means the FDA-compliant protocolling of all user actions with which in **MagIC Net** data is generated, modified or deleted. Each of these actions is saved as a line in the Audit Trail table together with the date, time and name of the logged-in user.

Organization

All the Audit Trail data is saved in the configuration database and can be backed up and restored together with this database. In the **local server systems** (**MagIC Net Professional**) this is stored in the program directory of the computer on which the program has been installed. In the **client/server systems** (**MagIC Net multi**) the Audit Trail data is stored centrally on the server and contains all the actions taking place on all the computers (clients) that are connected to this server.

Configuration

Recording the Audit Trail actions can be switched on and off in the Security settings *(see Chapter 6.2.2.4, page 509)*.

6.4.1.2 Audit Trail - Desktop

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

Elements

The desktop of the program window **Audit Trail** comprises the following elements:

- *Menu bar*
- *Toolbar*
- *Filter selection*
- *Audit Trail table*
- *Navigation bar*

6.4.1.3 Audit Trail - Menu bar

6.4.1.3.1 Audit Trail - Main menus

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

The menu bar in the program window **Audit Trail** contains the following main items:

- *File*
  Print, export, archive, delete Audit Trail
- *View*
  Update table, define column display.
- *Filter*
  Define and use special filters and quick filters.
- *Tools*
  Monitor Audit Trail
- *Help*
  Open program help, display program information.

6.4.1.3.2 Audit Trail - Menu File

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

&Print (PDF)...	Put out Audit Trail data sets as PDF file *(see Chapter 6.4.2.8, page 548)*.
&Export...	Export Audit Trail data sets *(see Chapter 6.4.2.5, page 546)*.
&Archive...	Archive Audit Trail data sets *(see Chapter 6.4.2.6, page 546)*.
&Delete	Delete archived Audit Trail data sets *(see Chapter 6.4.2.7, page 547)*.
&Close	Close the Audit Trail window.

6.4.1.3.3 Audit Trail - Menu View

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

&Update	Update Audit Trail table *(see Chapter 6.4.2.4, page 545)*.
&Column display	Define the columns for the Audit Trail table *(see Chapter 6.4.2.2, page 540)*.

6.4.1.3.4 Audit Trail - Menu Filter

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

&Last filter	Apply the last quick or special filter again *(see Chapter 6.4.2.3.2, page 541)*.
&Quick filter	Apply the quick filter *(see Chapter 6.4.2.3.3, page 541)*.

&Special filter...	Define and apply a special filter *(see Chapter 6.4.2.3.4.1, page 542)*.
&Remove filter	Remove the current filter *(see Chapter 6.4.2.3.5, page 545)*.

6.4.1.3.5 Audit Trail - Menu Tools

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

&Monitoring	Define Audit Trail table monitoring *(see Chapter 6.4.2.9, page 549)*.
&Installation Log	Open the folder with the log files of the installation.
&Verify export / archive	Check the checksum of an exported or stored Audit Trail file *(see Chapter 6.4.2.10, page 549)*.

6.4.1.3.6 Audit Trail - Menu Help

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

MagIC Net&Help	Open MagIC Net Help.
&About	Display information about the program and the installation.

6.4.1.4 Audit Trail - Toolbar

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

&Print (PDF)...	Put out Audit Trail data sets as PDF file *(see Chapter 6.4.1.3.2, page 535)*.
&Last filter	Apply the last quick or special filter again *(see Chapter 6.4.2.3.2, page 541)*.
&Quick filter	Apply the quick filter *(see Chapter 6.4.2.3.3, page 541)*.
&Special filter...	Define and apply a special filter *(see Chapter 6.4.2.3.4.1, page 542)*.
&Remove filter	Remove the current filter *(see Chapter 6.4.2.3.5, page 545)*.
&Update	Update Audit Trail table *(see Chapter 6.4.2.4, page 545)*.
MagIC Net&Help	Open Program Help.

6.4.1.5 Audit Trail - Filter selection

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

Filter

Selection of the filter with which the Audit Trail table is to be filtered:

Selection	**All entries** | **Quick filter** | **Temporary filter** | **Filter name**
Default value	**All entries**

All entries
The table is shown unfiltered.

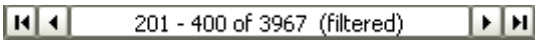
Quick filter
The table is filtered according to the last defined quick filter *(see Chapter 6.4.2.3.3, page 541)*.

Temporary filter
The table is filtered according to the last defined, not saved special filter *(see Chapter 6.4.2.3.4.1, page 542)*.

Filter name
The table is filtered according to the selected and saved special filter *(see Chapter 6.4.2.3.4.1, page 542)*.

6.4.1.6 Audit Trail - Navigation bar

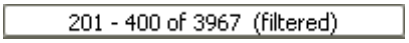
Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**



The navigation bar shown beneath the Audit Trail table is used for navigating through extensive tables in which not all the entries can be shown at the same time. It contains the following elements:

Jumps to first set of entries in the Audit Trail table.

Returns to previous set of entries in the Audit Trail table.



Display of the selected set **#### - ####** of entries in the Audit Trail table. If the table has not been filtered then the total number of entries will also appear. If the table has been filtered then the total number of filtered entries will appear with the info **(filtered)**.

Moves to next set of entries in the Audit Trail table.

Jumps to last set of entries in the Audit Trail table.

6.4.1.7 Audit Trail - Functions

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

In the **Audit Trail** program window the following functions can be carried out:

- *Filter Audit Trail*
- *Update Audit Trail*
- *Export Audit Trail*
- *Archive Audit Trail*
- *Delete Audit Trail*
- *Print Audit Trail*

6.4.2 Audit Trail table

6.4.2.1 Audit-Trail - Table

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

Open

The Audit-Trail table is opened with **Tools** ▸ **Audit Trail...** or with the symbol in the **Configuration** program part.

Note

The table can be opened only if the option **Enable Audit Trail** is switched on in the security settings *(see Chapter 6.2.2.4, page 509)*.

Contents

In the Audit Trail table, the following information regarding user actions is displayed in the default settings:

Type

Symbol for characterizing the action:

Information about the action, which is neither relevant to the security nor has modified any data.

Information about the action, which is either relevant to the security or has modified any data.

Information about errors or incorrect actions. These actions are additionally shown with a red background to their line numbers.

Date

Date, time and time zone of the action.

User

Short name of the logged-in user.

Full name

Full name of the logged-in user.

Client

Name of the Client on which the action was carried out or which is affected by the action.

Category

Program part to which the action belonged.

Action

Short description of the action.

Details

Detailed information about the action.

Archived

Shows whether the action has already been archived or not (only archived actions can be deleted).

Unwanted columns can be removed with the menu item **&View ▸ &Column display**.

Table view

The Audit Trail table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width
- **Double-click on the margin between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width, then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The following functions can be carried out:

- *Filter Audit Trail*
- *Update Audit Trail*
- *Export Audit Trail*
- *Archive Audit Trail*
- *Delete Audit Trail*
- *Print Audit Trail*
- *Monitor Audit Trail*
- *Verify Audit Trail*

6.4.2.2 Audit Trail - Column display

Dialog window: **Audit Trail ▸ &View ▸ &Column display ▸ Column display**

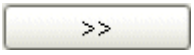
Use **&View ▸ &Column display** to open the dialog window **Column display**. Here the columns can be defined which are to be displayed in the Audit Trail table.

Columns available

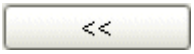
Shows all the fields that can be displayed as columns in the Audit Trail table.

Columns displayed

Shows all the fields that are displayed as columns in the Audit Trail table. All available columns are shown as the default.



Add the selected column to the table.



Remove the selected column from the table.

Modify the sequence of displayed columns by moving the selected column up.

Modify the sequence of displayed columns by moving the selected column down.

6.4.2.3 Filtering the Audit Trail

6.4.2.3.1 Filter Audit Trail

Program window: **Configuration** ▸ **Tools** ▸ **Audit Trail...** ▸ **Audit Trail**

The following possibilities exist for filtering entries in the Audit Trail table:

- *Filter selection in filter bar*
- *Quick filter*
- *Special filter*
- *Last filter*
- *Remove filter*

6.4.2.3.2 Audit Trail - Last filter

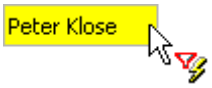
Menu item: **Audit Trail** ▸ **F&ilter** ▸ **&Last filter**

The most recently applied filter is reactivated with the menu item **F&ilter** ▸ **&Last filter** or with the symbol in the program window **Audit Trail**.

6.4.2.3.3 Audit Trail - Quick filter

Menu item: **Audit Trail** ▸ **F&ilter** ▸ **&Quick filter**

A rapid filtration can be carried out in accordance with the content of the selected table field using the menu item **F&ilter** ▸ **&Quick filter** or the symbol in the program window **Audit Trail**. After this function has been selected, the field in which the cursor is located will have a colored background when navigating within the Audit Trail table. At the same time, the following special filter symbol appears:



By double clicking on it with the left mouse button, the contents of the field selected in the table will be set as the filter criterion and this filter will be applied directly to the table.

Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

6.4.2.3.4 Audit Trail - Special filter

6.4.2.3.4.1 Special filter table

Dialog window: **Audit Trail ▸ F&ilter ▸ &Special filter... ▸ Special filter - Database 'ConfigDB'**

The menu item **F&ilter ▸ &Special filter...** or the symbol in the program window **Audit Trail** is used to open the dialog window **Special filter - Database 'ConfigDB'** for the definition of user-specific filters.

Filter

Selection of the filter to be loaded for editing. An empty table with the name **New filter** is loaded per default.

Selection	**'Filter name'** | **New filter**
Default value	**New filter**

[Save filter]

Open the dialog window **Save filter** in which the filter criteria entered in the table can be saved as a special filter under the required name *(see Chapter 6.4.2.3.4.3, page 545)*.

[Delete filter]

The currently loaded special filter will be deleted.

Table view

The overview table shows all the defined filter criteria and cannot be directly edited. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
  Sets the column width
- **Double-click on the margin between column titles:**
  Sets the optimal column width

If the contents of a field is larger than the column width, then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

For the meaning of the columns, see *Edit filter criterion*.

Functions

The menu **[Edit]** beneath the filter table contains the following menu items:

Edit line	Open the dialog window **Edit filter criterion %1**, in which the filter conditions of the line selected in the table can be edited *(see Chapter 6.4.2.3.4.2, page 543)*.

Insert new line	Insert a new empty line above the line selected in the table. The dialog window **Edit filter criterion** opens automatically *(see Chapter 6.4.2.3.4.2, page 543)*.
Cut lines	Transfer the selected lines to the clipboard.
Copy lines	Copy the selected lines to the clipboard.
Paste lines	Insert lines from the clipboard above the selected line.
Delete lines	Delete the selected lines.

[Apply filter]

Apply the filter conditions to the Audit Trail table.

6.4.2.3.4.2 Special filter - Editing filter criterion

Dialog window: **Audit Trail ▸ F&ilter ▸ &Special filter... ▸ Special filter - Database 'ConfigDB' ▸ [Edit] ▸ Edit line ▸ Edit filter criterion %1**

[Edit] ▸ Edit line is used to open the dialog window **Edit filter criterion %1** in which the filter condition selected in the filter table can be edited.

Link

Selection of the type of link (logical operation) with the preceding filter condition.

Selection	**AND** | **OR**
Default value	**AND**

Field

Selection of the field according to which the filtering is to be carried out.

Selection	**Last 10 selected fields**

[More...]

Opens the dialog window **Filter - Field selection** in which all fields according to which filtration can be performed are listed in the form of a tree. A field can be applied in the filter condition by highlighting it and closing the dialog window with **[OK]**.

Condition

Type

Selection of the type of format for columns in which several types are possible. For columns with a fixed type only this type will be shown.

Selection	**Text** | **Number** | **Date**
Default value	**Text**

Operator

Selection of the comparison operator for the filter criterion.

for fields of type 'Text'

Selection	**=** | **<>** | **empty** | **not empty**
Default value	**=**

for fields of type 'Number'

Selection	**=** | **<>** | **<** | **>** | **<=** | **>=** | **invalid** | **out of limits**
Default value	**=**

for fields of type 'Date'

Selection	**=** | **<>** | **<** | **>** | **<=** | **>=** | **Today**
Default value	**=**

Note

If selection is made for the **Date** column of the **Operator Today**, then filtration will be carried out in accordance with the current date. A range in days (**-9999 ... 9999**) can also be defined in the field **Comparative value**, according to which filtration should be carried out starting from the current date.

Comparative value

Selection or entry of the comparative value for the filter criterion.

for fields of type 'Text'

Entry	**250 characters** **^*** can be used as a wildcard for any strings.

for fields of type 'Number'

Entry	**Numerical value**

for fields of type 'Date'

The opens the window **Select date** to select the date *(see Chapter 2.5.1, page 81)*.

for fields of type 'Date' and 'Operator = Today'

Input range	**-9999 - 9999**
Default value	**0**

Match case

on | off (Default value: **off**)

If this option is activated, then upper/lower case will be differentiated when filtering fields with **Type** = **Text**.

Use asterisk (*) as wildcard

on | off (Default value: **off**)

If this option is switched on, then the asterisk ***** is used as a placeholder for any character sequences when filtering fields for which **Type** = **Text**.

6.4.2.3.4.3 Special filter - Saving filter

Dialog window: **Audit Trail** ▸ **F&ilter** ▸ **&Special filter...** ▸ **Special filter - Database 'ConfigDB'** ▸ **[Save filter]** ▸ **Save filter**

The button **[Save filter]** is used to open the dialog window **Save filter** for saving a special filter.

Filter name

Name under which the special filter is to be saved.

Entry	**50 characters**

[Save]

Save the filter under the given name.

Note

The filters are saved globally in the configuration database and are therefore available for all clients.

6.4.2.3.5 Audit Trail - Removing filter

Menu item: **Audit Trail** ▸ **F&ilter** ▸ **&Remove filter**

The most recently applied filter is removed again with the menu item **F&ilter** ▸ **&Remove filter** or with the symbol in the program window **Audit Trail** and all entries are displayed.

6.4.2.4 Updating Audit Trail

Menu item: **Audit Trail** ▸ **&View** ▸ **&Update**

The Audit Trail table is updated with the menu item **&View** ▸ **&Update** or with the symbol .

Note

The Audit Trail table is automatically updated when it is opened, but not afterwards.

6.4.2.5 Exporting Audit Trail

Dialog window: **Audit Trail ▸ &File ▸ &Export... ▸ Export Audit Trail**

With the menu item **&File ▸ &Export...**, the dialog window **Export Audit Trail** opens.

Save file as

Entry or selection (with …) of the complete path and the file name for saving the export file.

Entry	**1000 characters**

Selection

Selection	**All records** | **Selected records**
Default value	**All records**

All records
All the entries from the filtered Audit Trail table are exported.

Selected records
Only the entries selected in the Audit Trail table will be exported.

Note

Audit Trail entries are exported in text format and cannot be imported back into the Audit Trail table. The export file contains a checksum which allow to verify whether the file has been modified later on.

6.4.2.6 Archiving Audit Trail

Dialog window: **Audit Trail ▸ &File ▸ &Archive... ▸ Archive Audit Trail**

With the menu item **&File ▸ &Archive...**, the dialog window **Archive Audit Trail** opens.

Target directory

Entry or selection (with …) of the directory in which the Audit Trail entries are to be archived.

Entry	**1000 characters**

Selection

Selection	**All records** | **Records until**
Default value	**All records**

All records
All entries from the filtered Audit Trail table will be archived.

Records until
Only data sets from the Audit Trail table up to the selected date will be archived.

Note

Archiving Audit Trail entries is identical to exporting them, i.e. the Audit Trail entries are stored in text format and cannot be imported back into the Audit Trail Table. The difference between this and exporting is that the archived entries can be marked in the column **Archived** and then deleted. The archive file contains a checksum which allows to verify whether the file has been modified later on.

6.4.2.7 Deleting Audit Trail

Dialog window: **Audit Trail** ▸ **&File** ▸ **&Delete** ▸ **Delete Audit Trail**

With the menu item **&File** ▸ **&Delete**, the dialog window **Delete Audit Trail** opens.

Selection

Selection	**All archived records** | **Archived records until**
Default value	**All archived records**

All archived records
All the archived entries will be deleted from the Audit Trail table.

Archived records until
Only the archived entries created up to the entered date will be deleted from the Audit Trail table.

User 1

User

Short name of the first user who has the right to delete Audit Trail entries.

Entry	**24 characters**

Password

Password of the first user who has the right to delete Audit Trail entries.

Entry	**24 characters**

User 2

User

Short name of the second user who has the right to delete Audit Trail entries.

Entry	**24 characters**

Password

Password of the second user who has the right to delete Audit Trail entries.

Entry	**24 characters**

6.4.2.8 Print Audit Trail

Dialog window: **Audit Trail ▸ &File ▸ &Print (PDF)... ▸ Print Audit Trail (PDF)**

With the menu item **&File ▸ &Print (PDF)...** or the symbol PDF in the program window **Audit Trail**, the dialog window **Print Audit Trail (PDF)** opens.

Selection

Selection	**All records** | **Selected records**
Default value	**Selected records**

All records
All the entries from the filtered Audit Trail table will be printed.

Selected records
Only the entries selected in the Audit Trail table will be printed.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Output of the Audit Trail table in portrait format.

Landscape
Output of the Audit Trail table in landscape format.

[OK]

The Audit Trail table output is as a PDF file in the chosen format which is opened directly with Acrobat Reader; it can then be printed out or saved.

Note

The Audit Trail table is automatically updated when it is opened, but not afterwards.

6.4.2.9 Monitoring Audit Trail

Dialog window: **Audit Trail ▸ Tools ▸ &Monitoring ▸ Audit Trail monitoring**

With the menu item **Tools ▸ &Monitoring**, the dialog window **Audit Trail monitoring** opens.

Monitor number of entries

on | off (Default value: **on**)

If this option is **activated**, then the number of entries in the Audit Trail table will be monitored.

Maximum number

Maximum number of entries allowed in the Audit Trail table. If this number is exceeded an error message appears.

Input range	**10 - 500000**
Default value	**100000**

6.4.2.10 Verifying Audit Trail

Dialog window: **Audit Trail ▸ Tools ▸ &Verify export / archive ▸ Verify audit trail export / archive**

The menu item **Tools ▸ &Verify export / archive** is used to open the dialog window **Verify audit trail export / archive** in which the checksum of a file which is exported from the Audit Trail or archived can be checked.

Select file

Entry or selection (with ...) of the file that is to be verified.

[Verify]

Trigger the checking of the selected file.

Result

The result of the checking of the checksum is displayed.

6.5 Subwindow Devices

6.5.1 Configuration - Devices

Subwindow: **Configuration ▸ Devices**

Subwindow Devices

The subwindow **Devices** contains the device table with all automatically recognized and manually added devices and is always shown in the program part **Configuration**, i.e. it cannot be removed from the Configuration view. The subwindow can be enlarged and reduced as required; it can also be maximized.

USB devices

Devices connected to the PC via USB are automatically recognized at the start of the program and entered in the device table. If the connection between PC and device or the current supply is interrupted then the device will remain in the device table with the status **not ok**. If it is reconnected then it will be recognized automatically by its serial number and again assigned to the existing device entries. The status will change to **ok**.

Peripheral devices of USB devices

Peripheral devices connected to USB devices (e.g. dosing devices, stirrers, etc.) are also recognized automatically. If they are connected or removed while a program is running, then after confirming a corresponding message, either the device must be reinitialized, the USB connection must be interrupted and then re-established or the program must be restarted.

RS-232 devices

Devices that are connected to the PC via an RS-232 interface will not be recognized automatically. They must be added manually to the device table as new devices. If the connection between PC and device or if the current supply is interrupted, the device will nevertheless remain in the device table with the status **ok**. In order to update the status to **not ok**, the properties window of the device must be opened and then closed again. The same applies when the device is connected again or switched on.

6.5.2 Device table

6.5.2.1 Device table - Desktop

Subwindow: **Configuration ▸ Devices**

Contents

In the device table the following information about automatically recognized or manually added devices is shown per default:

Device name

Designation of the device.

Device type

Type of device.

Device serial number

Serial number of the device.

Status

Device status. A device that is ready has the status **ok** shown in green, a device that is not ready has the status **not ok** shown in red.

Note

The device status is permanently monitored and updated for USB devices only. For Metrohm devices with RS-232 connection, the current status at the last access to the device is shown always. For barcode readers, the status cannot be monitored. It will be set to **ok** after confirmation of the connection test.

Set to work

Date on which the device was added to the device table.

Next GLP test

Date on which the next GLP test is due. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Remarks

Remarks about the device.

Note

Lines that contain red entries will also show the line number with a red background.

As soon as a determination is started all the devices or device modules used in the method will be reserved. Generally speaking, they can then neither be used at a different workplace nor used or configured in manual control until the determination has been finished. The line for a reserved device is shown in gray letters. An array of devices and device modules does however support the time program command **Enable** with which they can once again be enabled even before the end of the determination.

Table view

The device table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

If the contents of a field is larger than the column width, then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The menu **[Edit]** beneath the device table contains the following menu items:

New...	Add manually a new device connected to the PC via an RS-232 interface *(see Chapter 6.5.2.2, page 553)*.
Delete	Delete the selected device. Only devices that are not connected can be deleted *(see Chapter 6.5.2.3, page 553)*.
Properties...	Edit the selected device *(see Chapter 6.5.3, page 555)*.
Column display...	Define columns for the device table *(see Chapter 6.5.2.4, page 553)*.
&Print (PDF)...	Output of the device table as a PDF file *(see Chapter 6.5.2.6, page 555)*.

Ignored devices	Open the list of ignored devices *(see Chapter 6.5.2.5, page 554)*.
Initialize	Initialize the selected device. Only possible for the following devices: 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 846 Dosing Interface, 858 Professional Sample Processor, 919 IC Autosampler plus. Has the same effect as once again connecting the device with a USB port; the (newly) connected MSB devices will also be recognized at this time.

6.5.2.2 Adding a new device

Menu item: **Configuration ▸ Devices ▸ [Edit] ▸ New...**

Devices that are connected to the PC via an RS-232 interface must be added manually to the device table with **[Edit] ▸ New...**. This opens the dialog window **Device selection**.

The required new device must be selected from the list that is shown, which contains all the devices known to the program. When the dialog window has been closed with **[OK]** the properties window opens automatically for entering additional device data.

After the properties window has been closed the new device with its set parameters is entered in the device table and the connection is tested. If the connection is **ok**, then the further device information is read in from the device.

6.5.2.3 Deleting a device

Menu item: **Configuration ▸ Devices ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete**, the device selected in the device table is deleted.

Note

Only devices that are not connected can be deleted.

6.5.2.4 Devices - Column display

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Column display... ▸ Column display**

With **[Edit] ▸ Column display...**, the dialog window **Column display** is opened. Here you can define the columns that are to be shown in the device table.

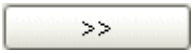
Columns available

Display of all the fields that can be shown as columns in the device table.

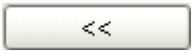
Columns displayed

Display of all the fields that will be shown as columns in the device table. Per default, the columns **Device name**, **Device type**, **Device serial**

number, **Status**, **Set to work**, **Next GLP test** and **Remarks** are displayed. The columns **Device name** and **Device type** are always present and cannot be removed.



Add the selected column to the table.



Remove the selected column from the table.

Modify the sequence of the displayed columns by moving the selected column up.

Modify the sequence of the displayed columns by moving the selected column down.

6.5.2.5 Editing ignored devices

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Ignored devices ▸ Ignored devices**

With **[Edit] ▸ Ignored devices**, the dialog window **Ignored devices** is opened. Here the list of ignored devices can be edited.

Ignored devices are devices which are recognized automatically upon connection but are ones which the user does not wish to have permanently displayed in the device table. Ignored devices will no longer be recognized automatically at the time of the next program start.

Table contents

The following information concerning the ignored devices is shown in the table:

Device type

Type of device.

Device serial number

Serial number of the device.

[Delete]

The highlighted device is removed from the list. It will be recognized automatically again at the time of the next program start and can be included in the list of devices.

6.5.2.6 Printing the device list

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ &Print (PDF)... ▸ Print list of devices (PDF)**

With **[Edit] ▸ &Print (PDF)...**, the dialog window **Print list of devices (PDF)** is opened.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Output of the device table in portrait format.

Landscape
Output of the device table in landscape format.

[OK]

The table of devices is shown in the required format as a PDF file and can be opened directly with the Acrobat Reader; it can then be printed out and/or saved.

6.5.3 Device properties

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

With the menu item **[Edit] ▸ Properties...** in the subwindow **Devices**, the properties window opens for the device selected in the device table in which the parameters of the device can be edited. It consists of several tabs. The tabs **General** and **GLP** are always present, the remaining tabs depend on the selected device. Properties can be set for the following devices:

- *850 Professional IC*
- *881 Compact IC pro*
- *882 Compact IC plus*
- *883 Basic IC plus*
- *814 USB Sample Processor and 815 Robotic USB Sample Processor XL*
- *858 Professional Sample Processor*
- *863 Compact Autosampler*
- *889 IC Sample Center*
- *889 IC Sample Center*
- *886 Professional Thermostat / Reactor*
- *887 Professional UV/VIS Detector*
- *896 Professional Detector*
- *872 Extension Module IC Pump*
- *872 Extension Module IC Module*
- *872 Extension Module Sample Prep*
- *872 Extension Module Liquid Handling*

- *872 Extension Module Suppression*
- *872 Extension Module Suppression – MCS*
- *771 IC Interface*
- *846 Dosing Interface*
- *RS-232 device*

The device properties of the **891 Professional Analog Out** *(see Chapter 7.1.2.7, page 627)* are assigned to the main device it is connected to.

6.6 Subwindow Columns

6.6.1 Configuration - Columns

Subwindow: **Configuration ▸ Columns**

Subwindow Columns

The subwindow **Columns** contains the column table with automatically recognized and manually added separation columns. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Automatically recognized columns

Intelligent Metrohm separation columns, which have a data chip with the stored column data, are automatically recognized when connected to the **850 Professional IC** and are saved in the column table.

Manually added columns

Non-intelligent Metrohm separation columns without data chip must be added manually to the column table.

6.6.2 Column table

6.6.2.1 Column table - Desktop

Contents

In the column table the following information about automatically recognized or manually added separation columns is shown as standard:

Column name

Name of the separation column

Column type

Type of separation column. For automatically recognized separation columns, the type is shown in green.

Connector

Name of the device to which the separation column is connected (only for automatically recognized columns).

Maximum pressure

Maximum permitted pressure for the separation column.

Precolumn type

Type of precolumn used for the separation column.

Determinations

Number of determinations carried out with the separation column.

Working hours

Number of working hours for the separation column.

Next GLP test

Shows the date on which the next GLP test is due for the separation column. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The column table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width
- **Double-click on the border between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

If a column is reserved for a running determination or for manual operation then the line will be shown in gray and the column cannot be edited until the determination has been finished.

Functions

The menu **[Edit]** beneath the column table contains the following menu items:

New…	Manually adds a new column *(see Chapter 6.6.2.2, page 558)*.
Delete	Deletes the selected column *(see Chapter 6.6.2.3, page 558)*.
Properties…	Edits the selected column *(see Chapter 6.6.3.1, page 559)*.
Column display…	Defines columns for the column table *(see Chapter 6.6.2.4, page 558)*.
Print (PDF)…	Outputs the column table as a PDF file *(see Chapter 6.6.2.5, page 559)*.

6.6.2.2 Adding new column

Menu item: **Configuration ▸ Columns ▸ [Edit] ▸ New…**

A new non-intelligent separation column is added to the column table manually with **[Edit] ▸ New…**. A pick window opens to select the column type.

Add new column

List of column types available from Metrohm.

Selection	**unknown** | **List of column types**
Default value	**unknown**

The Properties window then opens for editing the column. After closing the properties window, the column is entered in the column table. The parameters can be altered at any time with **[Edit] ▸ Properties...**

6.6.2.3 Deleting column

Menu item: **Configuration ▸ Columns ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete**, the selected column in the table is deleted.

6.6.2.4 Columns - Column display

Dialog window: **Configuration ▸ Columns ▸ [Edit] ▸ Column display… ▸ Column display**

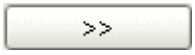
With **[Edit] ▸ Column display…** the dialog window **Column display** opens. Here you can define the columns that are to be shown in the column table.

Available columns

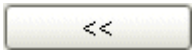
Shows all the fields that can be shown as columns in the column table.

Displayed columns

Shows all the fields that will be shown as columns in the column table. By default, the columns **Column name**, **Column type**, **Connection**, **Maximum pressure**, **Precolumn type**, **Determinations**, **Working hours** and **Next GLP test** are shown. The column **Column name** is always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.

Modifies the sequence of displayed columns by moving the selected column up.

Modifies the sequence of displayed columns by moving the selected column down.

6.6.2.5 Print column list

Menu item: **Configuration ▸ Columns ▸ [Edit] ▸ Print (PDF)...**

[Edit] ▸ Print (PDF)... opens the dialog window **Print list of columns (PDF)**.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Landscape**

Portrait
Prints the column table in portrait format.

Landscape
Prints the column table in landscape format.

[OK]

The column table is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

6.6.3 Column properties

6.6.3.1 Editing column properties

Dialog window: **Configuration ▸ Columns ▸ [Edit] ▸ Properties... ▸ Column - 'Name'**

The parameters for the selected column are defined on the following tabs:

- *Column*
  Parameters of the separation column.
- *Properties*
  Operating characteristics and technical specifications of the separation column.

- *Guard column*
  Parameters of the guard column used.
- *Monitoring*
  Parameters for monitoring the separation column.
- *GLP*
  GLP parameters.

6.6.3.2 Properties - Column

Tab: **Configuration ▸ Columns ▸ [Edit] ▸ Properties... ▸ Column - 'Name' ▸ Column**

Column name

Name of the separation column.

Entry	**24 characters**

Column type

Type of the separation column (entry only possible for **Column type** = **unknown**).

Entry	**40 characters**

Order number

Order number of the separation column (entry only possible for **Column type** = **unknown**).

Entry	**10 characters**

Serial number

Serial number of the separation column (entry only possible for manually added columns).

Entry	**16 characters**

Batch number

Batch number of the separation column (entry only possible for manually added columns).

Entry	**16 characters**

Set to work

Date on which the column was first used for a determination. This date can be edited for manually added columns only by pressing ….

Comment

Comments on the separation column.

Entry	**24 characters**

6.6.3.3 Properties - Properties

Tab: **Configuration** ▸ **Columns** ▸ **[Edit]** ▸ **Properties...** ▸ **Column - 'Name'** ▸ **Properties**

Maximum operation values

Pressure

Maximum value

Maximum permitted pressure for this type of column (entry only possible for **Column type** = **unknown**).

Input range	**0.0 - 50.0 MPa**

Highest measured value

Display of the highest pressure measured with this separation column.

Flow

Maximum value

Maximum permitted flow for this type of column (entry only possible for **Column type** = **unknown**).

Input range	**0.00 - 5.00 mL/min**

Highest measured value

Display of the highest flow value measured with this separation column.

Recommended operation values

Standard flow

Recommended flow for the separation column (entry only possible for **Column type** = **unknown**).

Input range	**0.00 - 5.00 mL/min**

Standard start-up time

Recommended duration for a column-gently starting-up of the high pressure pump in [min].

Input range	**0.00 - 99 min** (Increment: **1**)
Default value	**0 min**

Standard injection volume

Recommended injection volume for the separation column (entry only possible for **Column type** = **unknown**).

Input range	**0.1 - 999.9 µL**
Default value	**20.0 µL**

Standard temperature

Recommended temperature for operating the separation column (entry only possible for **Column type** = **unknown**).

Input range	**0 - 30 °C**
Default value	**100 °C**

Standard eluent

Recommended eluent for operating the separation column (entry only possible for **Column type** = **unknown**).

Entry	**100 characters**

pH range

Recommended pH range for operating the separation column (entry only possible for **Column type** = **unknown**).

Input range	**0.0 - 14.0**

Technical specifications

Inner diameter

Inner diameter of the separation column (entry only possible for **Column type** = **unknown**).

Input range	**0.0 - 999.9 mm**

Length

Length of the separation column (entry only possible for **Column type** = **unknown**).

Input range	**0.1 - 9999.9 mm**

Particle size

Particle size of the separation column (entry only possible for **Column type** = **unknown**). Either a numerical value (in µm) or a text (e.g. **monolithic**) can be entered here.

Entry	**10 characters**

6.6.3.4 Properties - Guard column

Tab: **Configuration** ▸ **Columns** ▸ **[Edit]** ▸ **Properties...** ▸ **Column - 'Name'** ▸ **Guard column**

Using the guard column

on | off (Default value: **off**)

If this option is activated, use of the selected guard column is activated. This means that the data of the guard column can be saved both on the

column chip and in every determination. The use of a guard column also influences certain calculations.

Guard column type

Type of the guard column.

Entry	**40 characters**
Selection	**unknown** | **Selection of the guard columns**

Order number guard column

Order number of the guard column.

Entry	**10 characters**

Serial number guard column

Serial number of the guard column.

Entry	**16 characters**

Batch number

Batch number of the guard column.

Entry	**16 characters**

Set to work

Date on which the guard column was first used for a determination. This date can be edited by pressing ....

Technical specifications

Inner diameter guard column

Inner diameter of the guard column.

Input range	**0.0 - 999.9 mm**

Length

Length of the guard column.

Input range	**0.1 - 9999.9 mm**

6.6.3.5 Properties - Monitoring

Tab: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Properties...** ▶ **Column - 'Name'** ▶ **Monitoring**

Column

Determinations

Limit value

Maximum number of determinations permitted with this separation column. If this value is exceeded, the message or action defined below will be triggered.

Input range	**1 - 99999**

Current value

Display of the number of determinations carried out with this separation column. If the **Limit value** is exceeded, the **Current value** is displayed **in red**.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

Operating hours

Limit value

Maximum permitted operating hours with this separation column. If this value is exceeded, the message or action defined below will be triggered.

Input range	**1 - 99999**

Current value

Display of the current number of operating hours with this separation column. If the **Limit value** is exceeded, the **Current value** is displayed **in red**.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

Guard column

Determinations

Limit value

Maximum permitted number of determinations with this guard column. If this value is exceeded, the message or action defined below will be triggered.

Input range	**1 - 99999**

Current value

Display of the number of determinations carried out with this guard column. If the **Limit value** is exceeded, the **Current value** is displayed **in red**.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

Operating hours

Limit value

Maximum permitted operating hours with this guard column. If this value is exceeded, the message or action defined below will be triggered.

Input range	**1 - 99999**

Current value

Display of the current number of operating hours with this guard column. If the **Limit value** is exceeded, the **Current value** is displayed **in red**.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

[Reset]

Reset the current values for the guard column to 0.

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted additionally to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that a limit value has been exceeded then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that a limit value has been exceeded will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued then the message that the limit value has been exceeded will be saved automatically with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.6.3.6 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.7 Subwindow Eluents

6.7.1 Configuration - Eluents

Subwindow: **Configuration ▸ Eluents**

Subwindow Eluents

The subwindow **Eluents** contains the table with the eluents defined by the user. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Using eluents

The eluents defined in the eluent table can be assigned to each high pressure pump in the method in the devices subwindow. The eluent data is then saved in the determination. The working life of the eluents can also be monitored.

6.7.2 Eluent table

6.7.2.1 Eluent table - Desktop

Contents

In the eluent table the following information about manually added eluents is shown as standard:

Eluent name

Name of the eluent

Composition

Composition of the eluent

Production date

Date on which the eluent was added to the table.

Expiry date

Expiry date of the eluent. If eluent monitoring is switched on and the set date is before the current date (i.e. the working life has expired), then the date will be shown in red.

Next GLP test

Shows the date on which the next GLP test is due for the eluent. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The eluent table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width
- **Double-click on the border between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

If an eluent is reserved for a running determination then the line will be shown in gray and the eluent cannot be edited until the determination has been finished.

Functions

The menu **[Edit]** below the eluent table contains the following menu items:

New…	Adds a new eluent manually *(see Chapter 6.7.2.2, page 570)*.
Delete	Deletes the selected eluent *(see Chapter 6.7.2.3, page 570)*.
Properties…	Edits the selected eluent *(see Chapter 6.7.3.1, page 571)*.
Column display…	Defines columns for the eluent table *(see Chapter 6.7.2.4, page 570)*.
Print (PDF)…	Outputs the eluent table as a PDF file *(see Chapter 6.7.2.5, page 571)*.

6.7.2.2 Adding new eluent

Menu item: **Configuration ▸ Eluents ▸ [Edit] ▸ New…**

A new eluent is added manually with **[Edit] ▸ New…** to the eluent table. The Properties window then opens automatically for editing the eluent. After closing the Properties window, the eluent is entered in the eluent table. The parameters can be altered at any time with **[Edit] ▸ Properties…**

6.7.2.3 Deleting eluent

Menu item: **Configuration ▸ Eluents ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete** the eluent selected in the table is deleted.

6.7.2.4 Eluents - Column display

Dialog window: **Configuration ▸ Eluents ▸ [Edit] ▸ Column display… ▸ Column display**

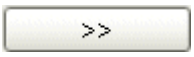
With **[Edit] ▸ Column display…** the dialog window **Column display** opens. Here you can define the columns that are to be shown in the eluent table.

Available columns

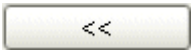
Shows all the fields that can be shown as columns in the eluent table.

Displayed columns

Shows all the fields that will be shown as columns in the eluent table. By default, the columns **Eluent name**, **Composition**, **Set to work**, **Expiry date** and **Next GLP test** are displayed. The column **Eluent name** is always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.

Modifies the sequence of displayed columns by moving the selected column up.

Modifies the sequence of displayed columns by moving the selected column down.

6.7.2.5 Printing eluent list

Menu item: **Configuration ▸ Eluents ▸ [Edit] ▸ Print (PDF)…**

[Edit] ▸ Print (PDF)… opens the dialog window **Print list of eluents (PDF)**.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Prints the eluent table in portrait format.

Landscape
Prints the eluent table in landscape format.

[OK]

The eluent table is shown in the required format as a PDF file and can be opened directly with the Acrobat Reader; it can then be printed out and/or saved.

6.7.3 Eluent properties

6.7.3.1 Editing eluent properties

Dialog window: **Configuration ▸ Eluents ▸ [Edit] ▸ Properties… ▸ Eluent - 'Name'**

The parameters for the selected eluent are defined on the following tabs:

- *Eluent*
  Parameters of the eluent.
- *Monitoring*
  Parameters for monitoring the eluent.
- *GLP*
  GLP parameters.

6.7.3.2 Properties - Eluent

Tab: **Configuration ▸ Eluents ▸ [Edit] ▸ Properties... ▸ Eluent - 'Name' ▸ Eluent**

Eluent name

Name of the eluent.

Entry	**40 characters**

Order number

Order number of the eluent.

Entry	**25 characters**

Manufacturer

Manufacturer of the eluent.

Entry	**25 characters**

Batch number

Batch number of the eluent.

Entry	**25 characters**

Composition

Composition of the eluent.

Entry	**250 characters**

Comment

Comment on the eluent.

Entry	**250 characters**

6.7.3.3 Properties - Monitoring

Tab: **Configuration ▶ Eluents ▶ [Edit] ▶ Properties... ▶ Eluent - 'Name' ▶ Monitoring**

Production date

Display of date and time when the eluent was produced. This date can be edited by pressing .

Eluent monitoring

on | off (Default value: **off**)

If this option is activated, then the working life of the eluent will be monitored.

Working life

Working life of the eluent in days. If a value is entered here then the field **Expiry date** will be automatically adapted.

Input range	**0 - 999 Days**
Default value	**999 Days**

Expiry date

Expiry date of the eluent. The date can be selected by pressing in the dialog window **Select date**. After a date has been entered the **Working life** will be automatically adapted.

Selection	**Date selection**

Message

The message options can only be edited if monitoring of eluent is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted additionally to the message defined above.

Action

The actions can only be edited if monitoring of eluent is switched on.

If during eluent monitoring it is found that the working life has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the working life of the eluent has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued, the message that the working life of the eluent has expired will be saved automatically with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.7.3.4 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.8 Subwindow Solutions

6.8.1 Configuration - Solutions

Subwindow: **Configuration ▸ Solutions**

Subwindow Solutions

The subwindow **Solutions** contains the solution table with all automatically recognized and manually added solutions. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Solutions for dosing units

Solutions can be dosed in **MagIC Net** dosing units of the **800 Dosino** type with **807 Dosing Unit** fitted. These intelligent dosing units have a data chip with stored solution data. When connected to Metrohm devices (e.g. 850 Professional IC, 858 Sample Processor), they are automatically recognized and saved in the solution table.

Solutions for pumps

Solutions that are dosed using, for example, **peristaltic pumps** (850 Professional IC, 858 Sample Processor) or **external pumps** (858 Sample Processor) instead of dosing devices, must be added to the solution table manually.

6.8.2 Solution table

6.8.2.1 Solution table

Subwindow: **Configuration ▸ Solutions**

Contents

In the solution table the following information about automatically recognized or manually added solutions is shown as standard:

Solution name

Name of the solution.

Concentration

Concentration (value and unit) of the solution.

Cylinder volume

Cylinder volume of the dosing unit in mL.

Type

Type of solution (**manual** = manually added solution, **IDU** = Solution intelligent dosing equipment).

Dosing device

Device name and connection of the dosing device on which the dosing unit is fitted.

Expiry date

Expiry date of the solution. If solution monitoring is switched on and the set date is before the current date (i.e. the expiry date has elapsed), then the date will be shown in red.

With menu item **[Edit]** ▶ **Column display...** further columns from the solution properties can be shown.

Note

Lines that contain red entries will also show the line number with a red background.

Table view

The solution table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width
- **Double-click on the margin between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The menu **[Edit]** below the solution table contains the following menu items:

New...	Adds new solution manually *(see Chapter 6.8.2.2, page 578)*.
Delete	Deletes selected solution *(see Chapter 6.8.2.3, page 578)*.

Properties…	Edits selected solution *(see Chapter 6.8.3.1, page 579)*.
Column display…	Defines the columns for the solution table *(see Chapter 6.8.2.4, page 578)*.
Print (PDF)	Shows the solution table as a PDF file *(see Chapter 6.8.2.5, page 579)*.

6.8.2.2 Add new solution

Menu item: **Configuration ▸ Solutions ▸ [Edit] ▸ New…**

A new solution not transported by means of dosing device is entered manually with **[Edit] ▸ New…** in the solution table. The Properties window then opens automatically for editing the solution. After the Properties window has been closed, the solution will be entered in the solution table. The parameters can be altered at any time with **[Edit] ▸ Properties…**

6.8.2.3 Delete solution

Menu itemw: **Configuration ▸ Solutions ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete**, the solution selected in the solution table is deleted.

6.8.2.4 Solutions - Column display

Dialog window: **Configuration ▸ Solutions ▸ [Edit] ▸ Column display… ▸ Column display**

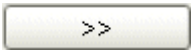
With**[Edit] ▸ Column display…**, the dialog window **Column display** opens. Here you can define the columns that are to be shown in the solution table..

Columns available

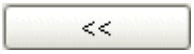
Shows all the fields that can be shown as columns in the solution table.

Columns displayed

Shows all the fields that will be shown as columns in the solution table. The default situation is that the columns **Solution name**, **Concentration**, **Cylinder volume**, **Type**, **Dosing device**, and **Expiry date** are shown. The column **Solution name** is always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.

Modifies the sequence of displayed columns by moving the selected column up.

Modifies the sequence of displayed columns by moving the selected column down.

6.8.2.5 Print list of solutions

Dialog window: **Configuration ▸ Solutions ▸ [Edit] ▸ Print (PDF)… ▸ Print list of solutions (PDF)**

[Edit] ▸ Print (PDF)… opens the dialog window **Print list of solutions (PDF)**.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Prints the solution table in portrait format.

Landscape
Print the solution table in landscape format.

[OK]

The solution table is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed out and/or saved.

6.8.3 Solution properties

6.8.3.1 Editing solution properties

Dialog window: Configuration ▸ Solutions ▸ [Edit] ▸ Properties… ▸ Solution - 'Name'

The parameters for the selected solution are defined on the following tabs:

- *Solution*
  Properties of the solution and solution monitoring.
- *Exchange unit*
  Properties of the exchange unit containing the solution.
- *Dosing unit*
  Properties of the dosing unit containing the solution.
- *GLP*
  Properties of GLP test and GLP monitoring.

6.8.3.2 Properties - Solution

Tab: Configuration ▸ Solutions ▸ [Edit] ▸ Properties... ▸ Solution - 'Name' ▸ Solution

Solution name

Name of the solution.

Entry	**24 characters**

Concentration (value)

Concentration value of the solution. The concentration value of a solution used in a time program by the corresponding commands, is available as a variable (**'TP.command number.CONC'**, **'TP.command number.CONC1'** or **'TP.command number.CONC2'**) for calculations.

Input range	**0.0 - 1E+13**
Default value	**1.000**

Concentration (unit)

Concentration unit of solution.

Entry	**10 characters**
Selection	**mol/L** | **g/L** | **µg/mL** | **µmol/L** | **µmol/mL** | **mEq/L** | **mg/L** | **mg/mL** | **mmol/L** | **%** | **ppb** | **ppm**
Default value	**mol/L**

Comment

Remarks about the solution (e.g. batch number).

Entry	**24 characters**

Production date

Date on which the solution was produced. This date can be edited for manually added solutions only by pressing ....

Selection	**Date selection**

Monitoring the solution

on | off (Default value: **off**)

If this option is activated, then the working life of the solution will be monitored.

Working life

Working life of the solution in days. If a value is entered here then the **Expiry date** will be automatically adapted.

Input range	**0 - 999 Days**
Default value	**999 Days**

Expiry date

Expiry date of the solution. The date can be selected by pressing … in the dialog window **Select date**. After a date has been entered the **Working life** will be automatically adapted.

Selection	**Date selection**

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send E-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted additionally to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the working life has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the working life has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued, the message that the working life has expired is automatically saved in the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.8.3.3 Properties - Dosing unit

Tab: **Configuration** ▸ **Solutions** ▸ **Properties...** ▸ **Dosing unit**

Hardware

Name

Freely definable name for the dosing unit.

Entry	**24 characters**
Default value	**'empty'**

Type

Shows the type of dosing unit:

Selection	**IDU**

IDU
Intelligent 807 Dosing Unit with data chip.

Order number

Shows order number of dosing unit.

Serial number

Shows serial number of dosing unit.

Cylinder volume

Shows the cylinder volume for the dosing unit:

Cylinder serial number

Shows the serial number of the cylinder that is read out automatically. It is printed on new cylinders and can be altered at any time, e.g. if the cylinder has to be replaced.

Entry	**8 characters**

Parameters for preparation

Configures the parameters to be used in the commands **Prepare** and **Empty**.

Dosing port Prep/Empty

Dosing port via which the cylinder contents are to be ejected during preparation and emptying.

Selection	**Dosing port 1** | **Dosing port 2** | **Fill port** | **Special port**
Default value	**Dosing port 1**

Dosing rate Dosing port 1

Speed at which dosing is to be carried out at **Dosing port 1**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Dosing rate Dosing port 2

Speed at which dosing is to be carried out at **Dosing port 2**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Dosing rate Fill port

Speed at which dosing or filling is to be carried out at the **Fill port**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Dosing rate Special port

Speed at which dosing is to be carried out at the **special port**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

The maximum dosing rate depends on the cylinder volume of the dosing unit used (see below):

Cylinder volume	Maximum rate
2 mL	6.67 mL/min
5 mL	16.67 mL/min

10 mL	33.3 mL/min
20 mL	66.6 mL/min
50 mL	166.0 mL/min

Note

Enter lower rates for high-viscosity liquids.

Tubing parameters

Defines the length and diameter of the tubing connected to the dosing unit. The port assignment can also be altered. These parameters are important for carrying out the dosing unit commands **Prepare** and **Empty** correctly, as the volumes of the tubing connections have to be taken into account.

Note

Default values have already been entered for the tubing parameters; these correspond to the dimensions of the standard tubing supplied. If you do not make any alterations to the tubing connections then you do not need to modify the tubing parameters. For information on length and diameter of other tubings see **Products/Accessories and columns** under*http://products.metrohm.com*.

Dosing port 1

Port

Port to be used as Dosing port 1.

Selection	**Port 1** | **Port 2** | **Port 3** | **Port 4**
Default value	**Port 1**

Length

Length of tubing attached to Dosing port 1.

Input range	**0.0 - 999.9 cm**
Default value	**40.0 cm**

Diameter

Diameter of tubing attached to Dosing port 1.

Input range	**0.0 - 9.9 mm**
Default value	**2.0 mm**

Dosing port 2

Port

Port to be used as Dosing port 2.

Selection	**Port 1** | **Port 2** | **Port 3** | **Port 4**
Default value	**Port 3**

Length

Length of tubing attached to Dosing port 2.

Input range	**0.0 - 999.9 cm**
Default value	**0.0 cm**

Diameter

Diameter of tubing attached to Dosing port 2.

Input range	**0.0 - 9.9 mm**
Default value	**2.0 mm**

Fill port

Port

Port to be used as Fill port for aspirating the solution.

Selection	**Port 1** | **Port 2** | **Port 3** | **Port 4**
Default value	**Port 2**

Length

Length of tubing attached to Fill port.

Input range	**0.0 - 999.9**
Default value	**25.0**

Diameter

Diameter of tubing attached to Fill port.

Input range	**0.0 - 9.9 mm**
Default value	**2.0 mm**

Special port

Port

Port to be used as special port.

Selection	**Port 1** | **Port 2** | **Port 3** | **Port 4**
Default value	**Port 4**

Length

Length of tubing attached to special port.

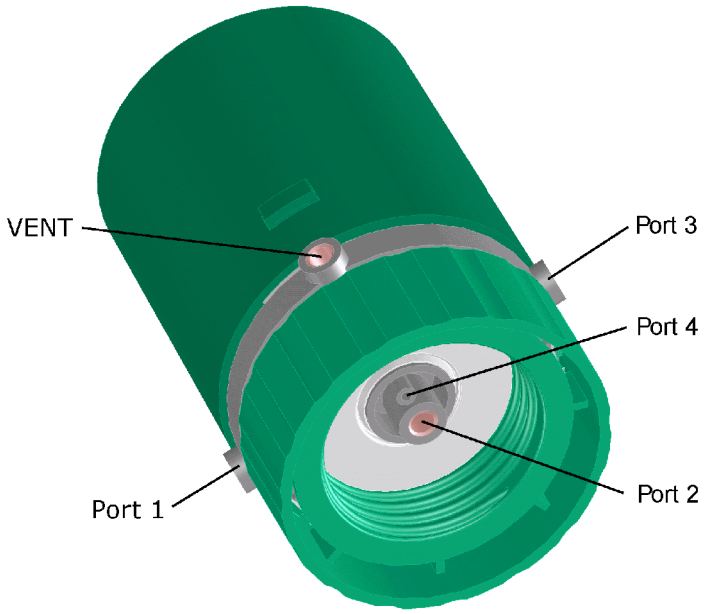
Input range	**0.0 - 999.9 cm**
Default value	**0.0 cm**

Diameter

Diameter of tubing attached to special port.

Input range	**0.0 - 9.9 mm**
Default value	**2.0 mm**

Port assignment of dosing unit:



Valve disc

Rotating direction

Specification of the shift direction of the valve disc. **Automatic** is the shift direction with the shortest distance.

Selection	**ascending** | **descending** | **automatic** | **not over**
Default value	**automatic**

Not over

Here you can choose the protected port. The protected port is the one which is not driven at during rotation.

Selection	**Port 1** | **Port 2** | **Port 3** | **Port 4**
Default value	**Port 4**

6.8.3.4 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.9 Subwindow Accessories

6.9.1 Configuration - Accessories

Subwindow: **Configuration ▸ Accessories**

Subwindow Accessories

The subwindow **Accessories** contains the table with the accessories defined by the user. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **&View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Use of accessories

The accessories defined in the accessories table can be assigned to each analysis in the method in the devices subwindow. The accessories data is then saved in the determination. The working life of the accessories can also be monitored.

6.9.2 Accessories table

6.9.2.1 Accessories table - Desktop

Contents

In the accessories table the following information about automatically recognized or manually added accessories parts is shown as standard:

Accessory name

Name of the accessories part.

Set to work

Date on which the accessories part was added to the table.

Expiry date

Expiry date of the accessories part. If accessories monitoring is switched on and the set date is before the current date (i.e. the working life has expired), then the date will be shown in red.

Next GLP test

Display of the date on which the next GLP test is due for the accessories part. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The accessories table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width
- **Double-click on the margin between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width, then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

If the accessories part is reserved for a running determination then the line will be shown in gray and the accessories part cannot be edited until the determination has been finished.

Functions

The menu **[Edit]** beneath the accessories table contains the following menu items:

New...	Add manually a new accessories *(see Chapter 6.9.2.2, page 590)*.
Delete	Delete the selected accessories *(see Chapter 6.9.2.3, page 591)*.
Properties...	Edit the selected accessories *(see Chapter 6.9.3.1, page 592)*.
Column display...	Define the columns for the accessories table *(see Chapter 6.9.2.4, page 591)*.
&Print (PDF)...	PDF file output of the accessories table *(see Chapter 6.9.2.5, page 591)*.

6.9.2.2 Adding new accessories

Menu item: **Configuration ▸ Accessories ▸ [Edit] ▸ New...**

A new accessories part is added manually with **[Edit] ▸ New...** to the accessories table. The properties window then opens automatically for editing the accessories part. After closing the properties window, the accessories part is entered in the accessories table. The parameters can be modified at any time with **[Edit] ▸ Properties...**.

6.9.2.3 Deleting accessories

Menu item: **Configuration ▸ Accessories ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete**, the accessories part selected in the table is deleted.

6.9.2.4 Accessories - Column display

Dialog window: **Configuration ▸ Accessories ▸ [Edit] ▸ Column display... ▸ Column display**

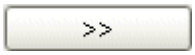
With **[Edit] ▸ Column display...**, the window **Column display** is opened. Here you can define the columns that are to be shown in the accessories table.

Columns available

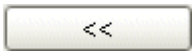
Display of all the fields that can be shown as columns in the accessories table.

Columns displayed

Display of all the fields that will be shown as columns in the accessories table. Per default, the columns **Accessory name**, **Set to work**, **Expiry date** and **Next GLP test** are displayed. The column **Accessory name** is always present and cannot be removed.



Add the selected column to the table.



Remove the selected column from the table.

Modify the sequence of the displayed columns by moving the selected column up.

Modify the sequence of the displayed columns by moving the selected column down.

6.9.2.5 Printing the accessories list

Menu item: **Configuration ▸ Accessories ▸ [Edit] ▸ &Print (PDF)... ▸ Print list of accessories (PDF)**

With **[Edit] ▸ &Print (PDF)...**, the dialog window **Print list of accessories (PDF)** is opened.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Output of the accessories table in portrait format.

Landscape
Output of the accessories table in landscape format.

[OK]

The accessories table is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

6.9.3 Accessories properties

6.9.3.1 Editing accessories properties

Dialog window: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name'**

The parameters for the selected accessories part are defined in the following tabs:

- *Accessories*
  Parameters of the accessories part.
- *Monitoring*
  Parameters for monitoring the accessories part.
- *GLP*
  GLP parameters.

6.9.3.2 Properties - Accessories

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ Accessory**

Accessory name

Name of the accessories part.

Entry	**40 characters**

Order number

Order number of the accessories part.

Entry	**25 characters**

Manufacturer

Manufacturer of the accessories part.

Entry	**25 characters**

Comment

Comment on the accessories part.

Entry	**250 characters**

6.9.3.3 Properties - Monitoring

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ Monitoring**

Set to work

Display of date and time when the accessories part was used for the first time. This date can be edited by pressing ....

Accessory monitoring

on | off (Default value: **off**)

If this option is activated, then the working life of the accessories part will be monitored.

Working life

Working life of the accessories part in days. If a value is entered here then the field **Expiry date** will be automatically adapted.

Input range	**0 - 999 days**
Default value	**999 days**

Expiry date

Expiry date of the accessories part. The date can be selected by pressing ... in the dialog window **Select date**. After a date has been entered the **Working life** will be automatically adapted.

Selection	**Date selection**

Message

The message options can only be edited if monitoring of accessories parts is switched on.

Message by e-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail...]** if this option is activated. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted additionally to the message defined above.

Action

The actions can only be edited if monitoring of accessories parts is switched on.

If during accessories part monitoring it is found that the working life has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the working life of the accessories part has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued then the message that the working life of the accessories part has expired will be saved automatically with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.9.3.4 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.10 Subwindow Rack data

6.10.1 Configuration - Rack data

Subwindow: **Configuration ▸ Rack data**

Rack data subwindow

The subwindow **Rack data** contains the Rack table with all the sample racks for Metrohm sample changers defined for the client. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Display of sample racks

The rack table is empty in the default settings. Sample racks which are placed on sample processors, are recognized automatically and included in the rack table. Additional racks can be imported manually.

6.10.2 Rack table

6.10.2.1 Rack table

Subwindow: **Configuration ▶ Rack data**

Contents

The rack data table shows the following information about the racks configured as standard:

Rack name

Name of the rack.

Rack code

Rack code of the rack.

Number of positions

Number of sample positions on the rack.

Beaker radius samples

Radius of the beakers on the rack.

Beaker sensor

Defines the beaker sensors for the rack.

Device

Shows the devices to which the rack is attached.

Table view

The rack table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles**:
  Sets the column width
- **Double-click on the border between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

With sample racks that are placed on a Sample Processor and are recognized automatically the corresponding device name will be shown in the

Instrument column. In addition the line number will be shown with a green background.

If a rack is reserved for a running determination or for manual control then the line will be shown in gray and the rack cannot be edited until the determination has been finished.

Functions

The menu **[Edit]** beneath the rack table contains the following menu items:

New…	Adds new rack manually *(see Chapter 6.10.2.2, page 598)*.
Delete	Deletes the selected rack *(see Chapter 6.10.2.3, page 598)*.
Properties…	Edits the selected rack *(see Chapter 6.10.3.1, page 599)*.
Print (PDF)…	Outputs the rack table as a PDF file *.(see Chapter 6.10.2.4, page 599)*

6.10.2.2 Adding new rack

Dialog window: **Configuration ▸ Rack data ▸ [Edit] ▸ New… ▸ New rack**

A new rack can only be generated as a copy of an already existing rack under a new rack name and with a new rack code. **[Edit] ▸ New…** opens the dialog window **New rack**.

Template

Selection of the rack to be used as a template for the new rack.

Selection	**All existing racks**

Rack name

Name for the new rack. The selected name must not already exist.

Entry	**25 characters**

Rack code

Code of the new rack. The selected rack code must not already exist.

Entry	**6-figure binary pattern made up of 0 and 1**

6.10.2.3 Deleting rack

Menu item: **Configuration ▸ Rack data ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete** the rack selected in the rack list will be deleted.

6.10.2.4 Printing list of racks

Dialog window: **Configuration ▸ Rack data ▸ [Edit] ▸ Print (PDF)… ▸ Print list of racks (PDF)**

[Edit] ▸ Print (PDF)… opens the dialog window **Print list of racks (PDF)**.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Prints rack table in portrait format.

Landscape
Prints rack table in landscape format.

[OK]

The rack table is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

6.10.3 Rack properties

6.10.3.1 Editing rack properties

Dialog window: **Configuration ▸ Rack data ▸ [Edit] ▸ Properties… ▸ Rack data**

Rack name

Shows the name of the rack attached. If no rack is in position then "**-----**" will be shown.

Rack code

Shows the number of positions on the rack in position. The rack code corresponds to the arrangement of magnets on the base of the rack and is read in by the Sample Processor in order to recognize the rack. If no rack is in position then the display will be empty.

Number of positions

Shows the number of positions on the rack. If no rack is in position then the display will be empty.

The parameters for the rack in position are defined in the following tabs:

- *Rack parameters*
  Defines the parameters that are valid for all rack positions.
- *Lift positions*
  Defines the work, rinse, shift and special positions for Tower 1 and Tower 2 (if present).
- *Special beakers*
  Special beaker Settings for all special beakers on the rack in position.

6.10.3.2 Properties - Rack parameters

Tab: **Configuration ▶ Rack data ▶ [Edit] ▶ Properties... ▶ Rack data ▶ Rack parameters**

Beaker radius samples

Radius of the sample beakers on the rack. If the lift is moved to the work position then this value will be compared with the parameter **Min. beaker radius** *(see Chapter 7.5.3.2, page 838)* that can be specifically defined for each tower. If **Beaker radius samples < min. beaker radius**, then a corresponding error message will appear. With **off** the beaker radius will not be checked.

Input range	**1.0 - 100.0 mm**
Selection	**off**

Beaker sensor

When a sample position is moved to with the command **MOVE** then the beaker sensor (**Tower**, **Robotic arm**) checks whether the special beaker is present or not. With **off** no check will be made. For the option **Robotic arm** a swing head with beaker sensor must be installed and a suitable work position with beaker contact must be defined for the lift, as this must move to the beaker recognition position.

With the parameter **Beaker test** in the command **MOVE** you can determine whether the determination is to be terminated if a beaker is missing with or without the display of a corresponding message and whether the series is to be continued or also terminated.

Selection	**Tower** | **Robotic arm** | **off**

Rack offset

The rack offset is a production-dependent tolerance value between the upper part of the rack and the lower part. The value is determined by a rack adjustment and displayed here. If necessary, it can be edited.

Input range	**-5.00 - 5.00 °**

6.10.3.3 Properties - Lift positions

Tab: **Configuration ▶ Rack data ▶ [Edit] ▶ Properties... ▶ Rack data ▶ Lift positions**

Tower 1

Defines the lift positions for Tower 1. These apply for all rack positions except those that are defined as **Special beaker**.

Work position

Work position for Lift 1. At this lift position the electrodes, stirrer and buret tips are optimally positioned for work.

Input range	**0 - 235 mm**

Rinse position

Rinse position for Lift 1. This lift position is used for rinsing the electrodes.

Input range	**0 - 235 mm**

Shift position

Shift position for Lift 1. Each time that the rack shifts, the lift will move to this position if it is located at a lower lift position. If the lift is located at a higher lift position than that defined here, then the shifting will take place at the current lift position. This means that the shift position must be selected so that a safe movement across the entire rack is possible at any time.

Input range	**0 - 235 mm**

Special position

Special position for Lift 1. This additional definable position can be used e.g. during pipetting so that the tip is just immersed in the sample solution.

Input range	**0 - 235 mm**

Tower 2

Defines the lift positions for Tower 2. These apply for all rack positions except those that are defined as **Special beaker**.

Work position

Work position for Lift 2. At this lift position the electrodes, stirrer and buret tips are optimally positioned for work.

Input range	**0 - 235 mm**

Rinse position

Rinse position for Lift 2. This lift position is used for rinsing the electrodes.

Input range	**0 - 235 mm**

Shift position

Shift position for Lift 2. Each time that the rack shifts, the lift will move to this position if it is located at a lower lift position. If the lift is located at a higher lift position than that defined here, then the shifting will take place at the current lift position. This means that the shift position must be

selected so that a safe movement across the entire rack is possible at any time.

Input range	**0 - 235 mm**

Special position

Special position for Lift 2. This additional definable position can be used e.g. during pipetting so that the tip is just immersed in the sample solution.

Input range	**0 - 235 mm**

6.10.3.4 Properties - Special beaker

Tab: **Configuration ▸ Rack data ▸ [Edit] ▸ Properties... ▸ Rack data ▸ Special beakers**

The table shows all the data of all the special beakers of the attached rack in tabular form. Each special beaker can be assigned to any position on the rack. The table cannot be edited directly.

Note

Special beakers should preferably be set at high rack positions so that sample series can start from rack position 1. Rack positions which are defined as special beakers are no longer available as sample positions. A specific work position can be defined for each special beaker at Tower 1 and Tower 2 (if present). The shift, rinse and special positions of the affected tower are taken from the general rack positions.

The following columns are shown in the table:

Special beaker

Number of the special beaker for the selected rack.

Rack position

Number of the rack position for the special beaker.

Work position Tower 1

Work position for the special beaker at Tower 1.

Work position Tower 2

Work position for the special beaker at Tower 2.

Beaker radius

Radius of the special beaker.

Beaker sensor

Shows whether and which beaker sensor is to be used for the special beaker.

[Edit]

Opens the dialog window **Special beaker #** *(see Chapter 6.10.3.5, page 603)* for editing the data of the selected special beaker.

6.10.3.5 Special beaker

Dialog window: **Configuration** ▸ **Rack data** ▸ **[Edit]** ▸ **Properties...** ▸ **Rack data** ▸ **Special beaker** ▸ **[Edit]** ▸ **Special beaker #**

The parameters for the special beaker selected in the table of special beakers can be defined in the dialog window **Special beaker #**.

Rack position

Number of rack position for selected special beaker.

Input range	**0 - n (n is rack-dependent)**

Note

Special beakers should preferably be set at high rack positions so that sample series can start from rack position 1. Rack positions which are defined as special beakers are no longer available as sample positions. They will be skipped during an automatic movement to a sample position.

Work position Tower 1

Work position of the selected special beaker at Tower 1.

Input range	**0 - 235 mm**

Work position Tower 2

Work position of the selected special beaker at Tower 2.

Input range	**0 - 235 mm**

Beaker radius

Radius of the selected special beaker on the rack. If the lift is moved to the work position then this value will be compared with the parameter **Min. beaker radius** *(see Chapter 7.5.3.2, page 838)* that can be specifically defined for each tower. If **Beaker radius samples < min. beaker radius**, then a corresponding error message will appear. With **off** the beaker radius will not be checked.

Input range	**1.0 - 100.0 mm**

Selection	**off**

Beaker sensor

When the selected special beaker is moved to with the command **Move** then the beaker sensor (**Tower**, **Robotic arm**) checks whether the special beaker is present or not. With **off** no check will be made. For the option **Robotic arm** a swing head with beaker sensor must be installed and a suitable work position with beaker contact must be defined for the lift, as this must move to the beaker recognition position.

With the parameter **Beaker test** in the command **Move** you can determine whether the determination is to be terminated if a beaker is missing with or without the display of a corresponding message and whether the series is to be continued or also terminated.

Selection	**Tower** | **Robotic arm** | **off**

6.11 Subwindow Global variables

6.11.1 Configuration - Common variables

Subwindow: **Configuration ▸ Common variables**

Subwindow Global variables

The subwindow **Common variables** contains the table with the configured common variables. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Using common variables

Common variables are cross-method variables that are stored per client and can be used in formulas under the designation **'CV.Name'**. They are either entered manually in the configuration or assigned in the method run under **Evaluation - Results - Common variables**.

6.11.2 Table of common variables

6.11.2.1 Table of common variables

Subwindow: **Configuration ▸ Common variables**

Contents

The table of common variables shows the following information about the common variables as standard:

Name

Name of common variable.

Type

Type of common variables (**Number**, **Text** or **Date/Time**).

Value

Value of common variables.

Unit

Unit of the common variables.

Assignment date

Date of the last value assignment for the common variable.

Assignment method

Name of the method used to assign the value.

User

Short name of the user logged in during value assignment.

Next assignment

Date on which the next value assignment is to be carried out. If monitoring the common variable is switched on and the set date is before the current date (i.e. the value assignment has not yet been carried out) then the date will be shown in red.

Additional columns can be shown from the properties of the common variables with the menu item **[Edit]** ▸ **Column display**.

Note

Lines that contain red entries will also show the line number with a red background.

Table view

The table of common variables cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width
- **Double-click on the margin between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The menu **[Edit]** beneath the table of common variables contains the following menu items:

New…	Adds new common variable manually *(see Chapter 6.11.2.2, page 606)*.
Delete	Deletes the selected common variable *(see Chapter 6.11.2.3, page 606)*.
Properties…	Edits the selected common variable *(see Chapter 6.11.3.1, page 608)*.
Column display…	Defines the columns of the table of Common variables *(see Chapter 6.11.2.4, page 606)*.
Print (PDF)…	Outputs the table of common variables as a PDF file *(see Chapter 6.11.2.5, page 607)*.

6.11.2.2 Add new common variable

Menu item: **Configuration ▸ Common variables ▸ [Edit] ▸ New…**

With **[Edit] ▸ New…** a new common variable is added manually to the table of common variables. The Properties window then opens automatically for editing the common variable. After the Properties window has been closed the common variable will be entered in the table of common variables. The parameters can be altered at any time with **[Edit] ▸ Properties…**

6.11.2.3 Delete common variable

Menu item: **Configuration ▸ Common variables ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete** the common variable selected in the table is deleted.

6.11.2.4 Common variables - Column display

Dialog window: **Configuration ▸ Common variables ▸ [Edit] ▸ Column display… ▸ Column display**

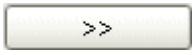
With **[Edit] ▸ Column display…** the dialog window **Column display** opens. Here you can define the columns that are to be shown in the Common variables table.

Columns available

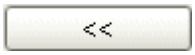
Shows all the fields that can be displayed as columns in the table of common variables.

Columns displayed

Shows all the fields that will be displayed as columns in the table of common variables. The default situation shows the columns **Name**, **Type**, **Value**, **Unit**, **Assignment date**, **Assignment method**, **User** and **Next assignment**. The three columns **Name**, **Type** and **Value** are always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.

Modifies the sequence of displayed columns by moving the selected column up.

Modifies the sequence of displayed columns by moving the selected column down.

6.11.2.5 Print list of common variables

Dialog window: **Configuration** ▸ **Common variables** ▸ **[Edit]** ▸ **Print (PDF)…** ▸ **Print list of common variables (PDF)**

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Portrait**

Portrait
Prints table of common variables in portrait format.

Landscape
Prints table of common variables in landscape format.

[OK]

The table of common variables is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed out and/or saved.

6.11.3 Common variable properties

6.11.3.1 Editing properties of common variables

Dialog window: **Configuration ▸ Common variables ▸ [Edit] ▸ Properties… ▸ Common variable 'Name'**

With menu item **[Edit] ▸ Properties…** in the subwindow **Common variables** the properties window for the common variable selected in the table opens, in which the parameters of the common variables can be edited. It consists of the following tabs:

- *Common variable*
  Information about common variables such as name, type, value, etc.

6.11.3.2 Properties - Common variable

Tab: **Configuration ▸ Common variables ▸ [Edit] ▸ Properties... ▸ Common variable - 'Name' ▸ Common variable**

Name

Name of common variables.

Entry	**50 characters**

Type

Selection of the type for a new common variable. For existing common variables, the type will only be shown; it cannot be edited.

Selection	**Number** | **Text** | **Date/Time**
Default value	**Number**

Value

Value of common variables. This value can be assigned in a method or entered manually. For methods that use the common variable it is available as the variable **'CV.Name.VAL'** or **'CV.Name'** (short form) for calculations.

For type **Date/Time** variables, the date can be selected by pressing … in the dialog window **Select date**.

Type = Number

Input range	**-1E+99 - 1E+99 (max. 15 places)**

Type = Text

Entry	**256 characters**

Type = Date/Time

Selection	**Date selection**

Value (unit)

Designation of the unit. If a value is assigned automatically then the unit will be automatically entered here. It is available for methods that use the common variable as variable **'CV.Name.UNI'** for calculations.

Entry	**20 characters**
Selection	**'empty'** | **mol/L** | **mmol/L** | **µmol/mL** | **g/L** | **mg/L** | **µg/L** | **mg/mL** | **ppm** | **%** | **mEq/L** | **mL** | **µg** | **µS/cm**
Default value	**mol/L**

Comment

Possibility to enter remarks about the common variable.

Entry	**256 characters**

Assignment date

Date and time at which the last value was assigned; this is entered automatically each time that a value is assigned automatically or manually.

Note

In contrast to automatic value assignment, when assigning the value manually the date is only entered if the value has really been changed.

Assignment method

Name of the method with which the last value assignment was carried out. If the value has been entered manually then **manual** will be shown here.

User

Short name of the user who was logged in during value assignment or who entered the value manually. If work is not carried out using login, then the user logged in under Windows will be entered automatically.

Common variable monitoring

on | off (Default value: **off**)

If this option is enabled then the validity of the common variables will be monitored.

Validity

Validity period of the common variable in days. If a value is entered here then the field **Next assignment** will be adapted automatically.

Input range	**0 - 999 Days**
Default value	**999 Days**

Next assignment

Date on which the next value assignment must take place. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After a date has been entered, the value for the **Validity** will be automatically adapted.

Selection	**Date selection**

Message

The message options can only be edited if monitoring for common variables is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring for common variables is switched on.

If, during common variable monitoring, it is found that the validity period has expired, then one of the following actions will be triggered automatically at the start of the test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued then the message that the validity period of the common variable has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.12 Subwindow Amperometric cells

6.12.1 Configuration - Amperometric cells

Subwindow: **Configuration ▸ Amperometric cells**

Subwindow Amperometric cells

The subwindow **Amperometric cells** contains the table of the amperometric cells with all of the automatically recognized and manually added cells of the amperometric detector. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ▸ Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Automatically recognized amperometric cells

Intelligent amperometric cells from Metrohm have a data chip with the stored cell data. These kinds of cells are recognized automatically when they are connected to an amperometric detector which is connected to a device such as the **850 Professional IC**. A newly recognized cell is saved in the table of the amperometric cells.

Manually added amperometric cells

Non-intelligent amperometric cells have no data chip and must be added manually to the table of the amperometric cells.

6.12.2 Table of amperometric cells

6.12.2.1 Table of amperometric cells - Desktop

Contents

The following information about automatically recognized or manually added amperometric cells is shown per default in the table of the amperometric cells:

Cell name

Name of the amperometric cell.

Cell type

Type of the amperometric cell. For automatically recognized cells, the type is shown in green.

Connection

Name of the device to which the amperometric cell is connected (only for automatically recognized cells).

Working electrode (WE)

Name of the working electrode of the amperometric cell.

Reference electrode (RE)

Name of the reference electrode of the amperometric cell.

Operating hours WE

Number of operating hours of the working electrode of the amperometric cell.

Next GLP test

Display of the date on which the next GLP test is due for the amperometric cell. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The table of the amperometric cells cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width
- **Double-click on the margin between column titles**:
  Sets the optimal column width
- **Drag the column title**:
  Moves the column to the required location

If the contents of a field is larger than the column width, then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

If an amperometric cell is reserved for a running determination or for manual operation then the line will be shown in gray and the cell cannot be edited until the determination has been finished.

Functions

The menu **[Edit]** beneath the table of the amperometric cells contains the following menu items:

New…	Add manually a new amperometric cell *(see Chapter 6.12.2.2, page 613)*.
Delete	Delete the selected amperometric cell *(see Chapter 6.12.2.3, page 613)*.
Properties…	Edit the selected amperometric cell *(see Chapter 6.12.3.2, page 615)*.
Column display…	Define the columns for the table of amperometric cells *(see Chapter 6.12.2.4, page 613)*.
Print (PDF)…	Output of the table of amperometric cells as a PDF file *(see Chapter 6.12.2.5, page 614)*.

6.12.2.2 Adding a new amperometric cell

Menu item: **Configuration ▸ Amperometric cells ▸ [Edit] ▸ New…**

To add a new, non-intelligent amperometric cell manually, select **[Edit] ▸ New…**. The *Properties window (p. 615)* opens for editing the cell. Once the fields have been filled out and the Properties window has been closed, the cell is entered in the table of the amperometric cells.

The parameters can be modified at any time with **[Edit] ▸ Properties…**.

6.12.2.3 Deleting an amperometric cell

Menu item: **Configuration ▸ Amperometric cells ▸ [Edit] ▸ Delete**

With **[Edit] ▸ Delete**, the amperometric cell selected in the table is deleted.

6.12.2.4 Amperometric cells - Column display

Dialog window: **Configuration ▸ Amperometric cells ▸ [Edit] ▸ Column display… ▸ Column display**

With **[Edit] ▸ Column display…**, the dialog window **Column display** opens. Here you can define the columns that are to be shown in the table of the amperometric cells.

Available columns

Display of all the fields that can be displayed as columns in the table of amperometric cells.

Displayed columns

Display of all the fields that will be shown as columns in the table of amperometric cells. The column **Cell name** is always present and cannot be removed.

>>

Add the selected column to the table.

<<

Remove the selected column from the table.

Modify the sequence of the displayed columns by moving the selected column up.

Modify the sequence of the displayed columns by moving the selected column down.

6.12.2.5 Printing the list of amperometric cells

Menu item: **Configuration ▸ Amperometric cells ▸ [Edit] ▸ Print (PDF)…**

With **[Edit] ▸ Print (PDF)…**, the dialog window **Print list of amp. cells (PDF)** opens.

Orientation

Selection	**Portrait** | **Landscape**
Default value	**Landscape**

Portrait
Output of the table of amperometric cells in portrait format.

Landscape
Output of the table of amperometric cells in landscape format.

[OK]

The table of amperometric cells is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed out and/or saved.

6.12.3 Properties of the amperometric cell

6.12.3.1 Editing the properties of the amperometric cell

Dialog window: **Configuration ▸ Amperometric cells ▸ [Edit] ▸ Properties… ▸ Cell - 'Name'**

The parameters for the selected amperometric cell are defined on the following tabs:

- *Cell*
  Parameters of the amperometric cell.
- *Electrodes*
  Parameters of the electrodes used in the amperometric cell.

- *Monitoring*
  Monitoring the amperometric cell.
- *GLP*
  GLP parameters.

6.12.3.2 Properties - amperometric cell

Tab: **Configuration ▶ Amperometric cells ▶ [Edit] ▶ Properties... ▶ Cell - 'Name' ▶ Cell**

Cell name

Name of the amperometric cell.

Entry	**24 characters**

Cell type

Type of the amperometric cell.

Entry	**40 characters**

Order number

Order number of the amperometric cell.

Entry	**10 characters**

Serial number

Serial number of the amperometric cell (entry only possible for manually added cells).

Entry	**16 characters**

Set to work

Date on which the amperometric cell was first used for a determination. This date can be edited for manually added cells only by pressing ....

Comment

Comment on the amperometric cell.

Entry	**24 characters**

6.12.3.3 Properties - Electrodes

Tab: **Configuration ▶ Amperometric cells ▶ [Edit] ▶ Properties... ▶ Cell - 'Name' ▶ Properties**

Working electrode (WE)

Type WE

Type of the working electrode.

Entry	**40 characters**

Order number WE

Order number of the working electrode.

Entry	**10 characters**

Serial number WE

Serial number of the working electrode.

Entry	**16 characters**

Set to work WE

Date on which the working electrode was first used for a determination. This date can be edited for manually added amperometric cells only by pressing ....

Comment WE

Comment on the working electrode.

Entry	**24 characters**

Reference electrode (RE)

Type RE

Type of the reference electrode.

Entry	**40 characters**

Order number RE

Order number of the reference electrode.

Entry	**10 characters**

Serial number RE

Serial number of the reference electrode.

Entry	**16 characters**

Set to work RE

Date on which the reference electrode was first used for a determination. This date can be edited for manually added amperometric cells only by pressing ....

Comment RE

Comment on the reference electrode.

Entry	**24 characters**

Spacer

Type Spacer

Type of the spacer.

Entry	**40 characters**

Order number Spacer

Order number of the spacer.

Entry	**10 characters**

6.12.3.4 Properties - Monitoring

Tab: **Configuration ▸ Amperometric cells ▸ [Edit] ▸ Properties... ▸ Cell - 'Name' ▸ Monitoring**

Working electrode (WE)

Operating hours

Limit value

Maximum permitted operating hours with this working electrode. If this value is exceeded, the message or action defined below will be triggered.

Input range	**1 - 999**

Current value

Display of the current number of operating hours with this working electrode. If the **Limit value** is exceeded, the **Current value** is displayed **in red**.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

Reference electrode (RE)

Operating hours

Limit value

Maximum permitted operating hours with this reference electrode. If this value is exceeded, the message or action defined below will be triggered.

Input range	**1 - 999**

Current value

Display of the current number of operating hours with this reference electrode. If the **Limit value** is exceeded, the **Current value** is displayed **in red**.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted additionally to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that a limit value has been exceeded then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that a limit value has been exceeded will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued then the message that the limit value has been exceeded will be saved automatically with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.12.3.5 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7 Instruments

7.1 850 Professional IC

7.1.1 850 Professional IC - Overview

Note

The **850 Professional IC** is available in numerous versions that differ in the combination of integrated modules. The **850 Professional IC** is described in the online help with all possible modules.

The following versions are available for different fields of application:

- **850.1010 Professional IC Cation**
  Ion chromatography system for determining anions or cations without chemical suppression.
- **850.1030 Professional IC Cation Prep 1**
  Ion chromatography system for determining anions or cations without suppression in combination with sample preparation such as ultrafiltration and dialysis.
- **850.1050 Professional IC Cation Prep 2**
  Ion chromatography system for determining anions or cations without suppression after sample preparation. The system is suitable for integrating the Metrohm inline sample preconcentration, inline matrix elimination or inline calibration.
- **850.1210 Professional IC Cation LP-Gradient**
  Ion chromatography system with low pressure gradient but without suppression. The device may be combined with any types of separation and detection for which no suppression is necessary.
- **850.1220 Professional IC Cation HPG**
  Ion chromatography system for high pressure gradient without suppression. The device may be combined with any types of separation and detection for which no suppression is necessary.
- **850.2010 Professional IC Anion**
  Ion chromatography system for determining anions with chemical suppression.
- **850.2030 Professional IC Anion MCS**
  Ion chromatography system for determining anions or cations with sequential suppression.
- **850.2050 Professional IC Anion MSM-HC**
  Ion chromatography system for determining anions or cations with *high capacity* chemical suppression.

- **850.2070 Professional IC Anion MSM-HC MCS**
  Ion chromatography system for determining anions or cations with *high capacity* sequential suppression.
- **850.2110 Professional IC Anion MCS Prep 1**
  Ion chromatography system for determining anions with sequential suppression in combination with inline sample preparation techniques such as ultrafiltration or dialysis.
- **850.2120 Professional IC Anion MSM-HC MCS Prep1**
  Ion chromatography system for determining anions with *high capacity* sequential suppression in combination with inline sample preparation techniques such as ultrafiltration or dialysis.
- **850.2120 Professional IC Anion MSM-HC MCS Prep1**
  Ion chromatography system for determining anions or cations with *high capacity* sequential suppression. It allows fully automatic sample preparation at the same time when inline sample preconcentration, inline matrix elimination or inline calibration is necessary.
- **850.2150 Professional IC Anion MCS Prep 2**
  Ion chromatography system for determining anions or cations with sequential suppression. It allows fully automatic sample preparation at the same time when inline sample preconcentration, inline matrix elimination or inline calibration is necessary.
- **850.2180 Professional IC Anion MSM-HC MCS Prep 3**
  Ion chromatography system for determining anions with *high capacity* sequential suppression with inline neutralization or inline cation removal at the same time.
- **850.2190 Professional IC Anion MCS Prep 3**
  Ion chromatography system for determining anions with sequential suppression with inline neutralization elimination or inline cation removal at the same time.
- **850.2210 Professional IC Anion MCS LPG**
  Ion chromatography system for determining anions with sequential suppression and low pressure gradient.
- **850.2220 Professional IC Anion MCS HPG**
  Ion chromatography system for determining anions with sequential suppression and binary high pressure gradient.
- **850.2230 Professional IC Anion MSM-HC MCS LPG**
  Ion chromatography system for determining anions with *high capacity* sequential suppression and low pressure gradient.
- **850.2240 Professional IC Anion MSM-HC MCS HPG**
  Ion chromatography system for determining anions with *high capacity* sequential suppression and binary high pressure gradient.
- **850.2250 Professional IC Anion MSM-HC LP-Gradient**
  Ion chromatography system for determining anions with highly capacitive chemical suppression and low pressure gradient. It can be operated with various types of detection.

- **850.2260 Professional IC Anion MSM-HC HPG**
  Ion chromatography system for determining anions with highly capacitive chemical suppression and binary high pressure gradient. It can be operated with various types of detection.
- **850.3000 Professional IC AnCat Nonsuppressed**
  Ion chromatography system for determining anions and cations without suppression.
- **850.3010 Professional IC AnCat**
  Ion chromatography system for determining cations without suppression and of anions with or without chemical suppression.
- **850.3030 Professional IC AnCat MCS**
  Ion chromatography system for the determination of cations without suppression and of anions optionally with or without sequential suppression.
- **850.3040 Professional IC AnCat MSM-HC MCS**
  Ion chromatography system for the determination of cations without suppression and of anions optionally with or without *high capacity* sequential suppression.

7.1.2 850 Professional IC - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **850 Professional IC** device is selected in the device table, the menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can all be defined on these.

7.1.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.1.2.2 Properties - High-pressure pump

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Input range	**0.90 - 1.10**
Default value	**1.00**

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.1.2.3 Properties - Conductivity detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Input range	**13 - 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.

Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Input range	**20 - 50 °C** (Increment: **5**)
Default value	**40 °C**

7.1.2.4 Properties - Amperometric detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Amp. detector**

Note

The amperometric detector can only be used with these devices: **850 Professional IC**, **881 Compact IC plus**, **882 Compact IC pro**.

Detector type

Display of the detector type, is read out automatically from the detector.

Connection

Display of the connector on the device to which the detector is connected.

Serial number

Display of the serial number of detector, is read out of the detector.

7.1.2.5 Properties - MCS

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **MCS**

The MCS (Metrohm CO_2 Suppressor) has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - MCS** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.1.2.6 Properties - Degasser

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Degasser**

The degasser has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - Degasser** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.1.2.7 Properties - Analog Out

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Analog Out**

Note

This tab is only available when an **891 Professional Analog Out** is connected.

Device type

Display of the device type.

Device serial number

Display of the serial number of the connected 891 Professional Analog Out.

7.1.2.8 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.1.2.9 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.1.2.10 Load new program version

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General ▸ [Update] ▸ Load new program version**

If it is discovered that the device to connect has an old program version not supported by **MagIC Net**, it must be updated. Select the device from the device table. **[Edit] ▸ Properties...** opens the properties window. On the **General** tab, **[Update]** is now active and can be used to open the **Load new program version** dialog window.

Old version

Shows the old device program version.

New version

Shows the new device program version to be loaded.

[Load]

Loads new program version.

Note

Make sure that the device is not manipulated or switched off during the loading process and follow the instructions shown.

7.1.2.11 Monitoring

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ 'Module' ▸ [Monitoring] ▸ Monitoring - 'Module'**

The dialog window consists of the tabs **Date** and **Working hours**, on which the parameters for monitoring the module are defined.

7.1.2.11.1 Monitoring - Date

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ 'Module' ▸ [Monitoring] ▸ Monitoring - 'Module' ▸ Date**

Date

Current value

Shows the current date.

Last service

Date of the last service. This date can be selected after clicking on in the dialog window **Select date** and is used for monitoring (**Last service + Service interval = Next service**).

Comment

Optional comment on service.

Entry	**1000 characters**

Monitor date

on | off (Default value: **off**)

If this option is enabled then the service interval for the date will be monitored.

Note

Monitoring cannot be switched on until a date has been entered in the field **Last service**.

Service interval

Interval in days after which the service for the module should be repeated. If a value is entered here then the date in the field **Next service** will be adjusted automatically.

Next service

Date on which the next service is to be carried out. The date can be selected by pressing [...] in the dialog window **Select date**. After the date has been entered the field **Service interval** will be adapted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enalbed and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered *(see Chapter 2.7.1, page 106)*.

Action

This is where you can indicate which action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Record message**

Record message
If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database ▸ Information ▸ Messages**. The run will not be stopped.

Display message
If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination
The running determination will be terminated.

7.1.2.11.2 Monitoring - Working hours

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ 'Module' ▸ [monitoring] ▸ Monitoring - 'Module' ▸ Working hours**

Time elapsed

Current value

Shows the working hours to date.

[Reset]

Note

This function is only available in the monitoring of the 887 Professional UV/VIS Detector.

Use this function after having replaced the corresponding lamp of the 887 Professional UV/VIS Detector. Thereby, the values of the parameters **Current value** and **Last service** are being reset.

Last service

Working hours at time of last service. This value is used for monitoring (**Last service + Service interval = Next service**).

Input range	**0 - 99999 Hours**

Comment

Optional comment on service.

Entry	**1000 characters**

Monitor working hours

on | off (Default value: **off**)

If this option is enabled, then the service interval for the working hours will be monitored.

Note

Monitoring cannot be switched on until a value is entered in **Last service**.

Service interval

Interval in hours after which the service for the module should be repeated. If a value is entered here then the value in the field **Next service** will be adjusted automatically.

Next service

Running time after which the next service is to be carried out. If a value is entered here then the value in the field **Service interval** will be adjusted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enalbed and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered *(see Chapter 2.7.1, page 106)*.

Action

This is where you can indicate what action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Record message**

Record message
If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database** ▸ **Information** ▸ **Messages**. The run will not be stopped.

Display message
If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination
The running determination will be terminated.

7.1.3 850 Professional IC - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **850 Professional IC**.

7.1.3.1 850 Professional IC - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **850 Professional IC** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.1.3.1.1 Start parameters - High pressure pump

Tab: **Method** ▸ **Devices** ▸ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.2 Start parameters - Low pressure gradient pump

Tab: **Method** ▸ **Devices** ▸ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent A

Selecting the eluent A that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent A

Displays the proportion of eluent A in the mixing ratio. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C)**.

Eluent B

Selecting the eluent B that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent B

Enter the proportion of eluent B in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent C) % %**

Eluent C

Selecting the eluent C that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent C

Enter the proportion of eluent C in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent B) % %**

When there is a change from one dialog/tab to another, the percentages are checked (**∑ = 100%**).

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.3 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.4 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.5 Start parameters - MSM

Tab: **Method** ▸ **Devices** ▸ **MSM**

7.1.3.1.5.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.6 Start parameters - MSM-HC

Tab: **Method** ▸ **Devices** ▸ **MSM-HC**

7.1.3.1.6.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.7 Start parameters - SPM

Tab: **Method** ▸ **Devices** ▸ **SPM**

7.1.3.1.7.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.8 Start parameters - MCS

Tab: **Method** ▸ **Devices** ▸ **MCS**

Status

Selection	**On** | **Off**
Default value	**On**

On
The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off
The MCS (Metrohm CO_2 Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.9 Start parameters - Degasser

Tab: **Method** ▸ **Devices** ▸ **Degasser**

Status

Selection	**On** | **Off**

On
The degasser is switched on when the hardware is started with **[Start HW]**.

Off
The degasser is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.10 Start parameters - Column thermostat

Tab: **Method** ▸ **Devices** ▸ **Column thermostat**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The thermostat is switched on when the hardware is started with **[Start HW]**.

Off
The thermostat is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the column thermostat when the hardware is started with **[Start HW]**.

Input range	**0.0 - 80.0 °C**
Default value	**30.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.11 Start parameters - Conductivity detector

Tab: **Method** ▸ **Devices** ▸ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conduc-

tivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Input range	**0.0 - 5.0 %/°C**
Default value	**2.3 %/°C**

Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Input range	**1 - 14999 µS/cm**
Default value	**9999 µS/cm**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.12 Start parameters - Amperometric detector

7.1.3.1.12.1 Amperometric detector

Tab: **Method** ▸ **Devices** ▸ **Amp. detector**

Mode

Selection of the measuring mode of the amperometric detector.

Selection	**DC** | **PAD** | **flexIPAD** | **CV**

DC
Measurement with constant potential.

PAD
Measurement with several potential steps.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

CV
Measurement of cyclovoltammograms.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric detector.

Temperature

Temperature that is set in the detector when the hardware is started with **[Start HW]**.

Input range	**10.0 - 80.0 °C** (Increment: **0.1**)
Default value	**35.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Cell

Selection of a cell which is defined in the configuration table of the amperometric cells *(see Chapter 6.12.2, page 611)*. If no cell has been selected yet, then **not defined** is displayed. Otherwise, the selected cell will be displayed with its user-defined name.

Selection	**not defined** | **Selection of amperometric cells**
Default value	**not defined**

not defined
You can also start the method when this option is selected. The cell connected to the detector is then used. In the Report, the amperometric cell is then called "**not defined**", but it will be the properties of the cell which is *actually* used which will be output. **Important note:** If an intelligent cell is connected to the amperometric detector for which the operating hours monitoring has been activated, then the operating hours will be counted.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.12.2 Settings DC mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **DC** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **DC**.

The properties are also available in the manual control *(see Chapter 7.1.4.11, page 696)*.

DC potential

Potential of the working electrode in comparison to the reference electrode.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

Range

Selection of the measuring range.

Selection	**auto** | **2 nA** | **20 nA** | **200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**

auto
Automatic setting of the measuring range. This selection is not allowed with damping activated.

Damping

on | off (Default value: **off**)

Switching the auxiliary damping on or off.

7.1.3.1.12.3 Settings PAD mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **PAD** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **PAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the PAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Potential [V]

Potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Duration

Duration of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Range

Selection of the measuring range.

Selection	**200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**
Default value	**2 µA**

The defined potential progression is displayed in the form of a graph.

7.1.3.1.12.4 Dialog window Define PAD step

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **Settings** ▸ **Settings PAD mode**

In this dialog, a new PAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**300 ms**

Potential

Potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.05 V**

7.1.3.1.12.5 Settings flexIPAD mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **flexIPAD** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **flexIPAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the flexIPAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Start potential [V]

Start potential of the step in volts.

End potential [V]

Terminal potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Start

Start time of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**50 ms**

End

Ending time point of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**150 ms**

Range

Selection of the measuring range.

Selection	**20 µA** | **200 µA** | **2 mA**
Default value	**200 µA**

Note

The selection of the measurement channel (**Current** or **Charge**) takes place in the hardware assignment of the analysis *(see Chapter 7.1.3.2.5, page 661)*.

The defined potential progression is displayed in the form of a graph.

7.1.3.1.12.6 Dialog window Define flexIPAD step

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **Settings** ▸ **Settings flexIPAD mode**

In this dialog, a new flexIPAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Start potential

Start potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

End potential

Terminal potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

7.1.3.1.12.7 Settings CV mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **PAD** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **CV**.

Number of cycles for cyclic voltammograms

Preparing cycles

Number of cyclic voltammograms which are to be measured in the time program in accordance with **Start data acquisition** and then discarded. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Measuring cycles

Number of cyclic voltammograms which are to be measured and saved in the time program in accordance with **Start data acquisition**. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Sweep parameters

Start potential

Start voltage of the triangular profile, also corresponds to the 2nd turn-over voltage.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**-0.5 V**

End potential

Terminal voltage of the triangular profile, also corresponds to the 1st turn-over voltage with CV mode **Full cycle**.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.5 V**

Sweep rate

Voltage regulation speed for the sweep in V/s.

Input range	**0.001 - 1.00 V/s** (Increment: **0.001**)
Default value	**0.01 V/s**

CV mode

Setting of the type of the voltage profile.

With each sweep, the voltage begins with the **Start potential** and changes at first until the **End potential** is achieved.

In the **Half cycle** mode, the sweep is thus ended. A sawtooth voltage is the result.

In the **Full cycle** mode, the current voltage changes back to the **Start potential**. A delta voltage is the result.

Selection	**Full cycle** | **Half cycle**
Default value	**Full cycle**

Range

Selection of the measuring range.

Selection	**2 µA** | **20 µA** | **200 µA** | **2 mA** | **20 mA**
Default value	**2 mA**

Cycle duration

Display of the duration of a measuring cycle in [s]. The duration arises from the values of the parameters Start potential, End potential, CV mode and Sweep rate.

Input range	**2 - 1000 s**

7.1.3.1.13 Start parameters - Analog Out

Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are present only if an **891 Professional Analog Out** is connected.

7.1.3.1.13.1 Data source, Polarity, Range/Volt

Tab: **Method** ▸ **Devices** ▸ **Analog Out**

Channels Out1, Out2, Aux1, Aux2

The 891 Professional Analog Out includes 4 output channels for analog voltage in the range of -1...+1 volt:

- 2 main channels **Out1**, **Out2** with high resolution, for the digital/analog converting of chromatograms or cyclovoltammograms.
- 2 auxiliary channels **Aux1**, **Aux2** with low resolution for the digital/analog converting of measured values such as pressure, flow, temperature, ratio eluent.

The technical specifications can be found in the device manual of the 891 Professional Analog Out.

Each channel has the following set of start parameters. These are on one tab each in the start parameters of the main instrument. The parameter values are sent to the 891 Professional Analog Out when starting the method.

Data source

If a data source and a data channel have been selected with the button **[...]** *(see Chapter 5.6.6.4, page 393)*, the **Name of the data source** is displayed here.

Channel

If a data source and a data channel have been selected with the button **[...]** *(see Chapter 5.6.6.4, page 393)*, the **Name of the data channel** is displayed here.

Polarity

Indicates the sign of the output voltage of the channel.

Selection	**+** | **–**
Default value	**+**

Range/Volt

Indicates a measured value which is – after using a possible **Measured value offset** – to be converted to 1 volt output voltage *(see Chapter 7.1.3.1.13.3, page 656)*.

Input range	**0.001 - 4000000**
Default value	**1.000** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful value for the channel **Conductivity**: **15000** µS/cm; for the channel **Current**: **2000000** nA; for the channel **Charge**: **4000000** nC.

[Offset..]

This button opens the dialog for defining the measured value offset and the voltage offset *(see Chapter 7.1.3.1.13.2, page 656)*.

Active

on | off (Default value: **off**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.13.2 Offset

Tab: **Method** ▸ **Devices** ▸ **Analog Out** ▸ **Offset**

Measured value offset

Indicates a positive or negative amount (in the units of the data channel selected) every measured value is to be corrected by *(see Chapter 7.1.3.1.13.3, page 656)*.

Selection	**Current value** | **Value**
Default value	**Current value**

Current value
Select this option if the offset value *currently* set in the Analog Out is to be used. This value can be found in the manual control *(see Chapter 7.1.4.12, page 698)*.

Value
Select this option, if you want to enter a new measured value offset in the **Value** field.

Value

Enter a new measured value offset.

Input range	**-4000000 - +4000000**
Default value	**0.0** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful input field for the channel **Conductivity**: **±15000** µS/cm; for the channel **Current**: **±2000000** nA; for the channel **Charge**: **±4000000** nC.

Voltage offset

Value

Offset in mV, to be used on the output signal after the digital/analog conversion.

Input range	**-1000 - +1000 mV** (Increment: **1**)
Default value	**0 mV**

7.1.3.1.13.3 Using range/volt and offsets

With **Range/Volt**, you can indicate the measured value amount to be converted to 1000 mV output voltage.

If you want to correct every measured value by a certain amount, then define a corresponding **Measured value offset**. If you enter a *positive* measured value offset, it will be *added* to every measured value, if you enter a *negative* measured value offset, it will be *subtracted* from every measured value. This happens **before** the digital/analog conversion.

With **Voltage offset** you can indicate a value in mV to be used on the output signal **after** the digital/analog conversion.

The **polarity** will be applied to the resulting output signal.

Example for the channel "Conductivity" of the data source "Detector"

If the required measured values are e.g. between 15 and 35 µS/cm, you could define a measured value of **–15** (µS/cm). The measured values corrected by this offset then are between 0 and 20 µS/cm. The output voltage these offset-corrected values are converted to, depends on **Range/Volt**. Examples:

With a **Range/Volt** of 20 (µS/cm-V), 20 µS/cm are output as 1.0 V (1000 mV).

With a **Range/Volt** of 40 (µS/cm-V), 20 µS/cm are output as 0.5 V (500 mV).

With a **Range/Volt** of 10 (µS/cm-V), 20 µS/cm are output as 1.0 V (1000 mV).

You can correct the output signal by a **Voltage offset**. Example: You find out that the output voltage sometimes is slightly negative, whereas you would like to have positive output signals only. If the lowest output voltage is e.g. at –12 mV, you could consistently achieve only positive voltage values with the aid of a **Voltage offset** of 15 mV.

7.1.3.2 850 Professional IC - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.1.3.2.1 High-pressure pump - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.1.3.2.2 Low-pressure gradient pump - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No
Proportion eluent A	Eluent name	%	No
Proportion eluent B	Eluent name	%	No
Proportion eluent C	Eluent name	%	No

7.1.3.2.3 Column thermostat - Data channels

Tab: **Method** ▸ **Devices** ▸ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Temperature	Temperature	°C	No

7.1.3.2.4 Conductivity detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	µS/cm	Yes
Demo anion	Demo anion	µS/cm	Yes
Demo cation	Demo cation	µS/cm	Yes

Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recorded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves

Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.

Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column A Supp 5 100

Injection volume 20 µL

Duration of recording 12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 µL

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

7.1.3.2.5 Amperometric detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Current	Current	nA	Yes
Charge	Charge	nC	Yes
Current vs. Potential	Current	nA	No

Note

The only channels available for the output of the measured values by means of the *891 Professional Analog Out (see Chap. 7.1.3.1.13.1, p. 654)* are **Current** and **Charge**. The output of the measured values of these channels is then **time-based**.

7.1.3.3 850 Professional IC - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 850 Professional IC:

7.1.3.3.1 Commands - High-pressure pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the high-pressure pump:

7.1.3.3.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.1.2 Flow

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.1.3 Gradient

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)*.
Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.1.4 Editing gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient** ▸ **[Edit]** ▸ **New / Edit** ▸ **Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Flow

Setting the flow of the high-pressure pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear
The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.1.3.3.1.5 Measuring pressure

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.1.3.3.1.6 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.2 Commands - Low-pressure gradient pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the low-pressure gradient pump:

7.1.3.3.2.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the low-pressure gradient pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.2.2 Flow

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the low-pressure gradient pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.2.3 Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a mixing gradient program for the low-pressure gradient pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.2.4, page 668)*.
Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.2.4, page 668)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The mixing ratio and the flow of the programmed gradient as a factor of time are displayed in a graph below the gradient table. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.2.4 Editing gradient

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Gradient ▸ [Edit] ▸ New / Edit ▸ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Eluent A

Displays the proportion of eluent A in the mixing ratio as %. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C)**.

Eluent B

Enter the proportion of eluent B in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent C) %**
Default value	**0 %**

Eluent C

Enter the proportion of eluent C in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent B) %**
Default value	**0 %**

When there is a change from one dialog/tab to another, the percentages are checked (**∑ = 100%**).

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Convex 1...4** | **Linear** | **Concave 1...4** | **Step**

Convex 1...4
The proportion of the eluents of the pump is altered along the selected curve from the setting of the previous command line to the value of the current command line. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Linear
The modification of the eluents of the pump from the setting of the previous command line to the value of the current command line is linear. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear over time. The change in the mixing ratio is not however linear in this situation.

Concave 1...4
The proportion of the eluents of the pump is altered along the selected curve from the setting of the previous command line to the value of the current command line. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The proportion of eluents remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line. The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

Flow

Setting flow of the low-pressure gradient pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

7.1.3.3.2.5 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.3 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.1.3.3.3.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.3.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.3.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.4 Commands - Peristaltic pump

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.1.3.3.4.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.4.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.5 Commands - MSM

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.1.3.3.5.1 Step

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.1.3.3.5.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.6 Commands - MSM-HC

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the MSM-HC module (Metrohm Suppressor Module - High Capacity):

7.1.3.3.6.1 Step

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.1.3.3.6.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.7 Commands - SPM

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the SPM module (Sample Preparation Module):

7.1.3.3.7.1 Step

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.1.3.3.7.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.3.3.8 Commands - MCS

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MCS (Metrohm CO_2 Suppressor):

7.1.3.3.8.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the MCS (Metrohm CO_2 Suppressor) on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.9 Commands - Degasser

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the degasser:

7.1.3.3.9.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the degasser on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.10 Commands - Column thermostat

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the column thermostat:

7.1.3.3.10.1 Measuring temperature

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure temperature**

The device-dependent time program command **Measure temperature** (command with feedback) measures the temperature in the thermostat.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
TEMP	Measured temperature [°C]	Number

7.1.3.3.11 Commands - Conductivity detector

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the conductivity detector:

7.1.3.3.11.1 Measuring the conductivity

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CONDUCTIVITY	Measured conductivity [µS/cm]	Number

7.1.3.3.11.2 Measure noise

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.1.3.3.11.3 Measure drift

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.1.3.3.12 Commands - Amperometric detector

Subwindow: **Method ▸ Time program**

Note

If a method uses the amperometric detector in the mode **CV** *(see Chapter 7.1.3.1.12, page 646)*, then the following commands may **not** be used. This is checked by the start test of the method.

Overview of the time program commands available for the amperometric detector:

7.1.3.3.12.1 Measure current

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure current**

The device-dependent time program command **Measure current** (command with feedback) measures the current.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CURRENT	TP.'Command number'.CURRENT Measured current [nA].	Number

7.1.3.3.12.2 Measure charge

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure charge**

The device-dependent time program command **Measure charge** (command with feedback) measures the charge.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CHARGE	TP.'Command number'.CHARGE Measured charge [nC].	Number

7.1.3.3.12.3 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.1.3.3.12.4 Measure drift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.1.3.3.12.5 Modify mode

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Modify mode**

The device-dependent time program command **Modify mode** (command without feedback) permits a change of measuring mode: It can change the parameterization of the current measuring mode or select a different measuring mode and set its parameters.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

When the command is opened, the mode parameters which are set in the start parameters are displayed by default.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Mode

Selection of the measuring mode of the amperometric detector. The CV mode mode is not available here.

Selection	**DC** | **PAD** | **flexIPAD**

DC
Measurement with constant potential.

PAD
Measurement with several potentials.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric detector. The same settings can be undertaken as in the *Start parameters, see Chap. 7.1.3.1.12, p. 646*.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.13 Commands - Analog Out

Subwindow: **Method** ▸ **Time program**

Note

The commands under **Analog Out** are only available if an **891 Professional Analog Out** is connected.

7.1.3.3.13.1 Change range

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Analog Out - Change range**

The device-dependent time program command **Change range** (command without feedback) of the 891 Professional Analog Out redefines the measured value range per volt in the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Range/Volt

Indicates the measured value amount to be output as 1 Volt (1000 mV). The value is transferred to the device.

Input range	**0.001 - 4000000**
Default value	**(empty)** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful value for the channel **Conductivity**: **15000** µS/cm; for the channel **Current**: **2000000** nA; for the channel **Charge**: **4000000** nC.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.13.2 Change polarity

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Analog Out - Change polarity**

The device-dependent time program command **Change polarity** (command without feedback) of the 891 Professional Analog Out redefines the sign of the output voltage in the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Polarity

Indicates the new sign of the output voltage.

Selection	**+** | **–**
Default value	**+**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.13.3 Reset baseline

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Analog Out - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) of the 891 Professional Analog Out redefines the baseline of the output voltage in the method run. If the default value **0 mV** is applied for the parameter **Voltage offset**, then the current value of the output voltage is defined as new baseline (0 mV). If you enter a different value for the **Voltage offset**, the baseline will be moved additionally by this value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Voltage offset

Optional offset in mV, which is *additionally* used after resetting the baseline to 0 mV.

Input range	**-1000 - +1000 mV**
Default value	**0 mV**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.1.3.3.13.4 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.1.4 850 Professional IC - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.1.4.1 Manual Control - High-pressure pump

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.1.4.2 Manual control - Low-pressure gradient pump

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

Mixing ratio

Eluent A

Current value

Current percentage of the proportion of eluent A in the mixing ratio

Input

Enter the new proportion of eluent A in the mixing ratio

Input range	**0 - 100 - (% Eluent B + % Eluent C)**
Default value	**100**

Eluent B

Current value

Current percentage of the proportion of eluent B in the mixing ratio

Input

Enter the new proportion of eluent B in the mixing ratio

Input range	**0 - 100 - (% Eluent A + % Eluent C) %**
Default value	**100**

Eluent C

Current value

Current percentage of the proportion of eluent C in the mixing ratio

Input

Enter the new proportion of eluent C in the mixing ratio

Input range	**0 - 100 - (% Eluent A + % Eluent B) %**
Default value	**100**

[]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.1.4.3 Manual Control - Injection valve

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.1.4.4 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.1.4.5 Manual Control - MSM

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'MSM'**

7.1.4.5.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.1.4.6 Manual Control - MSM-HC

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'MSM-HC'**

7.1.4.6.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then ----- will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.1.4.7 Manual Control - SPM

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'SPM'**

7.1.4.7.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.1.4.8 Manual Control - MCS

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'MCS'**

[On]

Start MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is already running.

[Off]

Stop MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is not running.

7.1.4.9 Manual Control - Degasser

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Degasser'**

[On]

Start degasser. This is inactive if the degasser is already running.

[Off]

Stop degasser. This is inactive if the degasser is not running.

7.1.4.10 Manual Control - Column thermostat

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Thermostat'**

Temperature

Current value

Current temperature of the thermostat.

Input

Entering a new value for the temperature of the thermostat.

Input range	**0.0 - 80.0 °C**
Default value	**30.0 °C**

[On]

Switching on the thermostat. This is inactive if it is running.

[Off]

Switching off the thermostat. This is inactive if it is not running.

[Apply]

Sending the parameters set to the thermostat.

7.1.4.11 Manual control - Amperometric detector

7.1.4.11.1 General settings

Tab: **Manual ▶ 'Amp. detector'**

Mode

Generally speaking, the measuring mode and its settings can be changed only in the manual control of the workplace, not in the Global manual control.

Selection of the measuring mode of the amperometric detector which is set in the device when **[Apply]** is pressed. The following rules apply for the changeability of the mode when a determination is running:

- When a determination is running in the mode DC, PAD or flexIPAD, it is **not** possible to change to the mode CV.
- When a determination is running in the mode CV it is **not** possible to change to the modes DC, PAD or flexIPAD.

Selection	**DC** | **PAD** | **flexIPAD** | **CV**

DC
Measurement with constant potential.

PAD
Measurement with several potentials.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

CV
Measurement of cyclovoltammograms.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric *(see Chapter 7.1.4.11.2, page 697)*. Not available in the manual control of the CV mode.

[Apply]

The parameterization of the selected measuring mode is sent to the device. The device and the measuring cell are switched on. Not available in the manual control of the CV mode.

Cell

[Cell On]

The measuring cell is switched on. If it had been switched off beforehand, then it will continue to run with the settings which were active prior to being switched off. Not available in the manual control of the CV mode.

[Cell Off]

The measuring cell is switched off. Not available in the manual control of the CV mode.

Temperature

Current Value

Display of the current temperature in the detector.

Input

Input of a new temperature which is to be set in the device when **[Apply]** is pressed.

Input range	**10.0 - 80.0 °C** (Increment: **0.1**)
Default value	**35.0 °C**

[Apply]

Sets the new temperature value in the device.

7.1.4.11.2 Dialog window «Settings»

In this dialog window, the selected measuring mode can be parameterized in the manual control of the workplace.

7.1.4.11.2.1 Settings DC mode

The parameterization of the DC mode in the manual control offers the same options as in the Start parameters *(see Chapter 7.1.3.1.12.2, page 648)*.

7.1.4.11.2.2 Settings PAD mode

The parameterization of the PAD mode in the manual control offers the same options as in the Start parameters *(see Chapter 7.1.3.1.12.3, page 648)*.

7.1.4.11.2.3 Settings flexIPAD mode

The parameterization of the flexIPAD mode in the manual control offers the same options as in the Start parameters *(see Chapter 7.1.3.1.12.5, page 650)*.

7.1.4.11.2.4 Settings CV mode

The parameterization of the CV mode can **not** be changed in the manual control.

7.1.4.12 Manual Control - Analog Out

Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.1.4.12.1 Channels Out1, Out2, Aux1, Aux2

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Channel'**

Note

In the Manual Control of the Workplace the tabs of those channels of a connected **891 Professional Analog Out** are displayed which have been activated in the start parameters of the method.

[Resetting baseline]

Sets the current measured value as new baseline.

[Properties...]

Via this button the dialog window *Properties* opens, in which you can modify the properties of the channels.

7.1.4.12.2 Properties

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Channel'** ▸ **Properties**

Data source

Current value

Displays the name of the data source currently assigned.

Input

Displays the name of the newly assigned data source, which has been selected with the button **[...]**.

[...]

Opens the dialog for selecting a different data source and a channel *(see Chapter 5.6.6.4, page 393)*.

Channel

Current value

Displays the name of the channel of the **data source** currently assigned.

Input

Displays the name of the channel of the new data source which has been selected with the button **[...]**. If a new channel has been selected, then its unit (e.g. µS/cm in case of conductivity) will be displayed on the right to the input fields of the parameters **Range/Volt** and **Measured value offset**.

Range/Volt

Current value

Displays the measured value amount currently defined in the device and which is converted to 1 volt output signal.

Input

Input of a new measured value amount to be converted to 1 volt output signal.

Input range	**0.001 - 4000000** (Increment: **0.001**)
Default value	**(empty)** Next to the input field the unit of the data channel is displayed.

Polarity

Current value

Displays the polarity of the output voltage currently set in the device.

Input

Selection of the new sign for the output voltage.

Selection	**+** | **–**
Default value	**+**

Measured value offset

Current value

Displays the measured value offset currently set in the device, put out in the unit of the current channel.

Input

Optional input of a new measured value offset, put out in the units of the channel selected in the parameter Channel (Input).

Input range	**-4000000 - +4000000** (Increment: **0.001**)
Default value	**(empty)** Next to the input field the unit of the data channel is displayed.

Voltage offset

Current value

Displays the voltage offset currently set in the device in [mV].

Input

Optional input of a new voltage offset in [mV].

Input range	**-1'000 - +1'000 mV** (Increment: **1**)
Default value	**0 mV**

[OK]

The values in the column **Input** are applied for the device and the dialog is closed.

[Cancel]

The values in the column **Input** are rejected and the dialog is closed.

[OK]

The values in the column **Input** are applied for the device. The dialog remains open.

7.2 881 Compact IC pro

7.2.1 881 Compact IC pro - Overview

Note

The **881 Compact IC pro** device is available in various versions which differ with respect to the combination of integrated modules. The **881 Compact IC pro** is described in the online help with all possible modules.

The following versions are available for different fields of application:

- **2.881.0010 Compact IC pro - Cation**
  Compact ion chromatography system for the determination of anions or cations with electronic suppression.

- **2.881.0020 Compact IC pro - Anion**
  Compact ion chromatography system for the determination of anions with chemical suppression.
- **2.881.0030 Compact IC pro - Anion MCS**
  Compact ion chromatography system for the determination of anions or cations with sequential suppression.

7.2.2 881 Compact IC pro - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a device of type **881 Compact IC pro** is selected in the device table, then the menu item **[Edit] ▸ Properties...** opens the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can be defined on them.

7.2.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.2.2.2 Properties - High-pressure pump

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Input range	**0.90 - 1.10**
Default value	**1.00**

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.2.2.3 Properties - Conductivity detector

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Input range	**13 - 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.

Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Input range	**20 - 50 °C** (Increment: **5**)
Default value	**40 °C**

7.2.2.4 Properties - Amperometric detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Amp. detector**

Note

The amperometric detector can only be used with these devices: **850 Professional IC**, **881 Compact IC plus**, **882 Compact IC pro**.

Detector type

Display of the detector type, is read out automatically from the detector.

Connection

Display of the connector on the device to which the detector is connected.

Serial number

Display of the serial number of detector, is read out of the detector.

7.2.2.5 Properties - MCS

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **MCS**

The MCS (Metrohm CO_2 Suppressor) has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - MCS** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.2.2.6 Properties - Degasser

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Degasser**

The degasser has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - Degasser** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.2.2.7 Properties - Analog Out

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Analog Out**

Note

This tab is only available when an **891 Professional Analog Out** is connected.

Device type

Display of the device type.

Device serial number

Display of the serial number of the connected 891 Professional Analog Out.

7.2.2.8 Properties - Connections

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB #

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.2.2.9 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.2.2.10 Load new program version

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **General** ▸ **[Update]** ▸ **Load new program version**

If it is discovered that the device to connect has an old program version not supported by **MagIC Net**, it must be updated. Select the device from the device table. **[Edit]** ▸ **Properties...** opens the properties window. On the **General** tab, **[Update]** is now active and can be used to open the **Load new program version** dialog window.

Old version

Shows the old device program version.

New version

Shows the new device program version to be loaded.

[Load]

Loads new program version.

Note

Make sure that the device is not manipulated or switched off during the loading process and follow the instructions shown.

7.2.2.11 Monitoring

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **'Module'** ▸ **[Monitoring]** ▸ **Monitoring - 'Module'**

The dialog window consists of the tabs **Date** and **Working hours**, on which the parameters for monitoring the module are defined.

7.2.2.11.1 Monitoring - Date

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **'Module'** ▸ **[Monitoring]** ▸ **Monitoring - 'Module'** ▸ **Date**

Date

Current value

Shows the current date.

Last service

Date of the last service. This date can be selected after clicking on … in the dialog window **Select date** and is used for monitoring (**Last service + Service interval = Next service**).

Comment

Optional comment on service.

Entry	**1000 characters**

Monitor date

on | off (Default value: **off**)

If this option is enabled then the service interval for the date will be monitored.

Note

Monitoring cannot be switched on until a date has been entered in the field **Last service**.

Service interval

Interval in days after which the service for the module should be repeated. If a value is entered here then the date in the field **Next service** will be adjusted automatically.

Next service

Date on which the next service is to be carried out. The date can be selected by pressing … in the dialog window **Select date**. After the date has been entered the field **Service interval** will be adapted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enalbed and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered *(see Chapter 2.7.1, page 106)*.

Action

This is where you can indicate which action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Record message**

Record message
If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database** ▸ **Information** ▸ **Messages**. The run will not be stopped.

Display message
If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination
The running determination will be terminated.

7.2.2.11.2 Monitoring - Working hours

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **'Module'** ▸ **[monitoring]** ▸ **Monitoring - 'Module'** ▸ **Working hours**

Time elapsed

Current value

Shows the working hours to date.

[Reset]

Note

This function is only available in the monitoring of the 887 Professional UV/VIS Detector.

Use this function after having replaced the corresponding lamp of the 887 Professional UV/VIS Detector. Thereby, the values of the parameters **Current value** and **Last service** are being reset.

Last service

Working hours at time of last service. This value is used for monitoring (**Last service + Service interval = Next service**).

Input range	**0 - 99999 Hours**

Comment

Optional comment on service.

Entry	**1000 characters**

Monitor working hours

on | off (Default value: **off**)

If this option is enabled, then the service interval for the working hours will be monitored.

Note

Monitoring cannot be switched on until a value is entered in **Last service**.

Service interval

Interval in hours after which the service for the module should be repeated. If a value is entered here then the value in the field **Next service** will be adjusted automatically.

Next service

Running time after which the next service is to be carried out. If a value is entered here then the value in the field **Service interval** will be adjusted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enalbed and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered *(see Chapter 2.7.1, page 106)*.

Action

This is where you can indicate what action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Record message**

Record message
If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database** ▸ **Information** ▸ **Messages**. The run will not be stopped.

Display message
If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination
The running determination will be terminated.

7.2.3 881 Compact IC pro - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **881 Compact IC pro**.

7.2.3.1 881 Compact IC pro - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **881 Compact IC pro** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.2.3.1.1 Start parameters - High pressure pump

Tab: **Method** ▸ **Devices** ▸ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.2 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.4 Start parameters - MSM

Tab: **Method** ▸ **Devices** ▸ **MSM**

7.2.3.1.4.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.5 Start parameters - MCS

Tab: **Method** ▸ **Devices** ▸ **MCS**

Status

Selection	**On** | **Off**
Default value	**On**

On
The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off
The MCS (Metrohm CO_2 Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.6 Start parameters - Degasser

Tab: **Method** ▸ **Devices** ▸ **Degasser**

Status

Selection	**On** | **Off**

On
The degasser is switched on when the hardware is started with **[Start HW]**.

Off
The degasser is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.7 Start parameters - Column heater

Tab: **Method** ▸ **Devices** ▸ **Column heater**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The column heater is switched on when the hardware is started with **[Start HW]**.

Off
The column heater is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the column heater when the hardware is started with **[Start HW]**.

Input range	**0.0 - 80.0 °C**
Default value	**30.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.8 Start parameters - Conductivity detector

Tab: **Method** ▸ **Devices** ▸ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conductivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Input range	**0.0 - 5.0 %/°C**
Default value	**2.3 %/°C**

Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Input range	**1 - 14999 µS/cm**
Default value	**9999 µS/cm**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.9 Start parameters - Amperometric detector

7.2.3.1.9.1 Amperometric detector

Tab: **Method** ▸ **Devices** ▸ **Amp. detector**

Mode

Selection of the measuring mode of the amperometric detector.

Selection	**DC** | **PAD** | **flexIPAD** | **CV**

DC
Measurement with constant potential.

PAD
Measurement with several potential steps.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

CV
Measurement of cyclovoltammograms.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric detector.

Temperature

Temperature that is set in the detector when the hardware is started with **[Start HW]**.

Input range	**10.0 - 80.0 °C** (Increment: **0.1**)
Default value	**35.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Cell

Selection of a cell which is defined in the configuration table of the amperometric cells *(see Chapter 6.12.2, page 611)*. If no cell has been selected yet, then **not defined** is displayed. Otherwise, the selected cell will be displayed with its user-defined name.

Selection	**not defined** | **Selection of amperometric cells**
Default value	**not defined**

not defined
You can also start the method when this option is selected. The cell connected to the detector is then used. In the Report, the amperometric cell is then called "**not defined**", but it will be the properties of the cell which is *actually* used which will be output. **Important note:** If an intelligent cell is connected to the amperometric detector for which the operating hours monitoring has been activated, then the operating hours will be counted.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.9.2 Settings DC mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **DC** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **DC**.

The properties are also available in the manual control *(see Chapter 7.1.4.11, page 696)*.

DC potential

Potential of the working electrode in comparison to the reference electrode.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

Range

Selection of the measuring range.

Selection	**auto** | **2 nA** | **20 nA** | **200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**

auto
Automatic setting of the measuring range. This selection is not allowed with damping activated.

Damping

on | off (Default value: **off**)

Switching the auxiliary damping on or off.

7.2.3.1.9.3 Settings PAD mode

Tab: **Method ▸ Devices ▸ Amp. detector ▸ PAD ▸ Settings**

In this dialog, you set the properties of the measuring mode **PAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the PAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Potential [V]

Potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Duration

Duration of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Range

Selection of the measuring range.

Selection	**200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**
Default value	**2 µA**

The defined potential progression is displayed in the form of a graph.

7.2.3.1.9.4 Dialog window Define PAD step

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **Settings** ▸ **Settings PAD mode**

In this dialog, a new PAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**300 ms**

Potential

Potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.05 V**

7.2.3.1.9.5 Settings flexIPAD mode

Tab: **Method ▸ Devices ▸ Amp. detector ▸ flexIPAD ▸ Settings**

In this dialog, you set the properties of the measuring mode **flexIPAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the flexIPAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Start potential [V]

Start potential of the step in volts.

End potential [V]

Terminal potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Start

Start time of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**50 ms**

End

Ending time point of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**150 ms**

Range

Selection of the measuring range.

Selection	**20 µA** | **200 µA** | **2 mA**
Default value	**200 µA**

Note

The selection of the measurement channel (**Current** or **Charge**) takes place in the hardware assignment of the analysis *(see Chapter 7.1.3.2.5, page 661)*.

The defined potential progression is displayed in the form of a graph.

7.2.3.1.9.6 Dialog window Define flexIPAD step

Tab: **Method ▸ Devices ▸ Amp. detector ▸ Settings ▸ Settings flexIPAD mode**

In this dialog, a new flexIPAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Start potential

Start potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

End potential

Terminal potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

7.2.3.1.9.7 Settings CV mode

Tab: **Method ▸ Devices ▸ Amp. detector ▸ PAD ▸ Settings**

In this dialog, you set the properties of the measuring mode **CV**.

Number of cycles for cyclic voltammograms

Preparing cycles

Number of cyclic voltammograms which are to be measured in the time program in accordance with **Start data acquisition** and then discarded. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Measuring cycles

Number of cyclic voltammograms which are to be measured and saved in the time program in accordance with **Start data acquisition**. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Sweep parameters

Start potential

Start voltage of the triangular profile, also corresponds to the 2nd turn-over voltage.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**-0.5 V**

End potential

Terminal voltage of the triangular profile, also corresponds to the 1st turn-over voltage with CV mode **Full cycle**.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.5 V**

Sweep rate

Voltage regulation speed for the sweep in V/s.

Input range	**0.001 - 1.00 V/s** (Increment: **0.001**)
Default value	**0.01 V/s**

CV mode

Setting of the type of the voltage profile.

With each sweep, the voltage begins with the **Start potential** and changes at first until the **End potential** is achieved.

In the **Half cycle** mode, the sweep is thus ended. A sawtooth voltage is the result.

In the **Full cycle** mode, the current voltage changes back to the **Start potential**. A delta voltage is the result.

Selection	**Full cycle** | **Half cycle**
Default value	**Full cycle**

Range

Selection of the measuring range.

Selection	**2 µA** | **20 µA** | **200 µA** | **2 mA** | **20 mA**
Default value	**2 mA**

Cycle duration

Display of the duration of a measuring cycle in [s]. The duration arises from the values of the parameters Start potential, End potential, CV mode and Sweep rate.

Input range	**2 - 1000 s**

7.2.3.1.10 Start parameters - Analog Out

Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are present only if an **891 Professional Analog Out** is connected.

7.2.3.1.10.1 Data source, Polarity, Range/Volt

Tab: **Method** ▸ **Devices** ▸ **Analog Out**

Channels Out1, Out2, Aux1, Aux2

The 891 Professional Analog Out includes 4 output channels for analog voltage in the range of -1...+1 volt:

- 2 main channels **Out1**, **Out2** with high resolution, for the digital/analog converting of chromatograms or cyclovoltammograms.
- 2 auxiliary channels **Aux1**, **Aux2** with low resolution for the digital/analog converting of measured values such as pressure, flow, temperature, ratio eluent.

The technical specifications can be found in the device manual of the 891 Professional Analog Out.

Each channel has the following set of start parameters. These are on one tab each in the start parameters of the main instrument. The parameter values are sent to the 891 Professional Analog Out when starting the method.

Data source

If a data source and a data channel have been selected with the button **[...]** *(see Chapter 5.6.6.4, page 393)*, the **Name of the data source** is displayed here.

Channel

If a data source and a data channel have been selected with the button **[...]** *(see Chapter 5.6.6.4, page 393)*, the **Name of the data channel** is displayed here.

Polarity

Indicates the sign of the output voltage of the channel.

Selection	**+** | **−**
Default value	**+**

Range/Volt

Indicates a measured value which is – after using a possible **Measured value offset** – to be converted to 1 volt output voltage *(see Chapter 7.1.3.1.13.3, page 656)*.

Input range	**0.001 - 4000000**
Default value	**1.000** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful value for the channel **Conductivity**: **15000** µS/cm; for the channel **Current**: **2000000** nA; for the channel **Charge**: **4000000** nC.

[Offset..]

This button opens the dialog for defining the measured value offset and the voltage offset *(see Chapter 7.1.3.1.13.2, page 656)*.

Active

on | off (Default value: **off**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.10.2 Offset

Tab: **Method** ▸ **Devices** ▸ **Analog Out** ▸ **Offset**

Measured value offset

Indicates a positive or negative amount (in the units of the data channel selected) every measured value is to be corrected by *(see Chapter 7.1.3.1.13.3, page 656)*.

Selection	**Current value** | **Value**
Default value	**Current value**

Current value
Select this option if the offset value *currently* set in the Analog Out is to be used. This value can be found in the manual control *(see Chapter 7.1.4.12, page 698)*.

Value
Select this option, if you want to enter a new measured value offset in the **Value** field.

Value

Enter a new measured value offset.

Input range	**-4000000 - +4000000**
Default value	**0.0**
	Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful input field for the channel **Conductivity**: **±15000** µS/cm; for the channel **Current**: **±2000000** nA; for the channel **Charge**: **±4000000** nC.

Voltage offset

Value

Offset in mV, to be used on the output signal after the digital/analog conversion.

Input range	**-1000 - +1000 mV** (Increment: **1**)
Default value	**0 mV**

7.2.3.1.10.3 Using range/volt and offsets

With **Range/Volt**, you can indicate the measured value amount to be converted to 1000 mV output voltage.

If you want to correct every measured value by a certain amount, then define a corresponding **Measured value offset**. If you enter a *positive* measured value offset, it will be *added* to every measured value, if you enter a *negative* measured value offset, it will be *subtracted* from every measured value. This happens **before** the digital/analog conversion.

With **Voltage offset** you can indicate a value in mV to be used on the output signal **after** the digital/analog conversion.

The **polarity** will be applied to the resulting output signal.

Example for the channel "Conductivity" of the data source "Detector"

If the required measured values are e.g. between 15 and 35 µS/cm, you could define a measured value of **–15** (µS/cm). The measured values corrected by this offset then are between 0 and 20 µS/cm. The output voltage these offset-corrected values are converted to, depends on **Range/Volt**. Examples:

With a **Range/Volt** of 20 (µS/cm-V), 20 µS/cm are output as 1.0 V (1000 mV).

With a **Range/Volt** of 40 (µS/cm-V), 20 µS/cm are output as 0.5 V (500 mV).

With a **Range/Volt** of 10 (µS/cm-V), 20 µS/cm are output as 1.0 V (1000 mV).

You can correct the output signal by a **Voltage offset**. Example: You find out that the output voltage sometimes is slightly negative, whereas you would like to have positive output signals only. If the lowest output voltage is e.g. at –12 mV, you could consistently achieve only positive voltage values with the aid of a **Voltage offset** of 15 mV.

7.2.3.2 881 Compact IC pro - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.2.3.2.1 High-pressure pump - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.2.3.2.2 Column heater - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Temperature	Temperature	°C	No

7.2.3.2.3 Conductivity detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	µS/cm	Yes
Demo anion	Demo anion	µS/cm	Yes
Demo cation	Demo cation	µS/cm	Yes

Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recorded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves

Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.

Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column A Supp 5 100

Injection volume 20 µL

Duration of recording 12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 µL

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

7.2.3.2.4 Amperometric detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Current	Current	nA	Yes
Charge	Charge	nC	Yes
Current vs. Potential	Current	nA	No

Note

The only channels available for the output of the measured values by means of the *891 Professional Analog Out (see Chap. 7.1.3.1.13.1, p. 654)* are **Current** and **Charge**. The output of the measured values of these channels is then **time-based**.

7.2.3.3 881 Compact IC pro - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 881 Compact IC pro:

7.2.3.3.1 Commands - High-pressure pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the high-pressure pump:

7.2.3.3.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.1.2 Flow

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.1.3 Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)*.
Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy selected line to the clipboard.

Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.1.4 Editing gradient

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Gradient ▸ [Edit] ▸ New / Edit ▸ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Flow

Setting the flow of the high-pressure pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear
The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.2.3.3.1.5 Measuring pressure

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.2.3.3.1.6 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.2.3.3.2 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.2.3.3.2.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.2.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.2.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.2.3.3.3 Commands - Peristaltic pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peristaltic pump:

7.2.3.3.3.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.3.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.2.3.3.4 Commands - MSM

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.2.3.3.4.1 Step

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.2.3.3.4.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.2.3.3.5 Commands - MCS

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the MCS (Metrohm CO_2 Suppressor):

7.2.3.3.5.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the MCS (Metrohm CO_2 Suppressor) on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.6 Commands - Degasser

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the degasser:

7.2.3.3.6.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the degasser on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.7 Commands - Column heater

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the column heater:

7.2.3.3.7.1 Measuring temperature

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure temperature**

The device-dependent time program command **Measure temperature** (command with feedback) measures the temperature in the column heater.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
TEMP	Measured temperature [°C]	Number

7.2.3.3.8 Commands - Conductivity detector

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the conductivity detector:

7.2.3.3.8.1 Measuring the conductivity

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CONDUCTIVITY	Measured conductivity [µS/cm]	Number

7.2.3.3.8.2 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.2.3.3.8.3 Measure drift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.2.3.3.9 Commands - Analog Out

Subwindow: **Method** ▸ **Time program**

Note

The commands under **Analog Out** are only available if an **891 Professional Analog Out** is connected.

7.2.3.3.9.1 Change range

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Analog Out - Change range**

The device-dependent time program command **Change range** (command without feedback) of the 891 Professional Analog Out redefines the measured value range per volt in the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Range/Volt

Indicates the measured value amount to be output as 1 Volt (1000 mV). The value is transferred to the device.

Input range	**0.001 - 4000000**
Default value	**(empty)** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful value for the channel **Conductivity**: **15000** µS/cm; for the channel **Current**: **2000000** nA; for the channel **Charge**: **4000000** nC.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.9.2 Change polarity

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Analog Out - Change polarity**

The device-dependent time program command **Change polarity** (command without feedback) of the 891 Professional Analog Out redefines the sign of the output voltage in the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Polarity

Indicates the new sign of the output voltage.

Selection	**+ | –**
Default value	**+**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.9.3 Reset baseline

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Analog Out - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) of the 891 Professional Analog Out redefines the baseline of the output voltage in the method run. If the default value **0 mV** is applied for the parameter **Voltage offset**, then the current value of the output voltage is defined as new baseline (0 mV). If you enter a different value for the **Voltage offset**, the baseline will be moved additionally by this value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Voltage offset

Optional offset in mV, which is *additionally* used after resetting the baseline to 0 mV.

Input range	**-1000 - +1000 mV**
Default value	**0 mV**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.2.3.3.9.4 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.2.4 881 Compact IC pro - Manual control

Program part: Manual control

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.2.4.1 Manual Control - High-pressure pump

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.2.4.2 Manual Control - Injection valve

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.2.4.3 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.2.4.4 Manual Control - MSM

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'MSM'**

7.2.4.4.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.2.4.5 Manual Control - MCS

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'MCS'**

[On]

Start MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is already running.

[Off]

Stop MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is not running.

7.2.4.6 Manual Control - Degasser

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Degasser'**

[On]

Start degasser. This is inactive if the degasser is already running.

[Off]

Stop degasser. This is inactive if the degasser is not running.

7.2.4.7 Manual Control - Column heater

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **Column heater'**

Temperature

Current value

Current column heater temperature

Input

Input of a new value for the column heater temperature.

Input range	**0.0 - 80.0 °C**
Default value	**30.0 °C**

[On]

Switch on column heater. This is inactive if it is running.

[Off]

Switch off column heater. This is inactive if it is not running.

[Apply]

Send the parameters to the column heater.

7.2.4.8 Manual Control - Analog Out

Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.2.4.8.1 Channels Out1, Out2, Aux1, Aux2

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Channel'**

Note

In the Manual Control of the Workplace the tabs of those channels of a connected **891 Professional Analog Out** are displayed which have been activated in the start parameters of the method.

[Resetting baseline]

Sets the current measured value as new baseline.

[Properties...]

Via this button the dialog window *Properties* opens, in which you can modify the properties of the channels.

7.2.4.8.2 Properties

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Channel' ▶ Properties**

Data source

Current value

Displays the name of the data source currently assigned.

Input

Displays the name of the newly assigned data source, which has been selected with the button **[...]**.

[...]

Opens the dialog for selecting a different data source and a channel *(see Chapter 5.6.6.4, page 393)*.

Channel

Current value

Displays the name of the channel of the **data source** currently assigned.

Input

Displays the name of the channel of the new data source which has been selected with the button **[...]**. If a new channel has been selected, then its unit (e.g. µS/cm in case of conductivity) will be displayed on the right to the input fields of the parameters **Range/Volt** and **Measured value offset**.

Range/Volt

Current value

Displays the measured value amount currently defined in the device and which is converted to 1 volt output signal.

Input

Input of a new measured value amount to be converted to 1 volt output signal.

Input range	**0.001 - 4000000** (Increment: **0.001**)
Default value	**(empty)** Next to the input field the unit of the data channel is displayed.

Polarity

Current value

Displays the polarity of the output voltage currently set in the device.

Input

Selection of the new sign for the output voltage.

Selection	**+** | **–**
Default value	**+**

Measured value offset

Current value

Displays the measured value offset currently set in the device, put out in the unit of the current channel.

Input

Optional input of a new measured value offset, put out in the units of the channel selected in the parameter Channel (Input).

Input range	**-4000000 - +4000000** (Increment: **0.001**)
Default value	**(empty)** Next to the input field the unit of the data channel is displayed.

Voltage offset

Current value

Displays the voltage offset currently set in the device in [mV].

Input

Optional input of a new voltage offset in [mV].

Input range	**-1'000 - +1'000 mV** (Increment: **1**)
Default value	**0 mV**

[OK]

The values in the column **Input** are applied for the device and the dialog is closed.

[Cancel]

The values in the column **Input** are rejected and the dialog is closed.

[OK]

The values in the column **Input** are applied for the device. The dialog remains open.

7.3 882 Compact IC plus

7.3.1 882 Compact IC plus - Overview

Note

The **882 Compact IC plus** is available in various versions which differ with respect to the combination of integrated modules. The **882 Compact IC plus** is described in the online help with all possible modules.

- **2.882.0010 Compact IC plus - Cation**
  Compact ion chromatography system for the determination of anions or cations with electronic suppression.
- **2.882.0020 Compact IC plus - Anion**
  Compact ion chromatography system for the determination of anions with chemical suppression.
- **2.882.0030 Compact IC plus - Anion MCS**
  Compact ion chromatography system for the determination of anions or cations with sequential suppression.

7.3.2 882 Compact IC plus - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **882 Compact IC plus** device is selected in the device table, then the menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can be defined on them.

7.3.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.3.2.2 Properties - High-pressure pump

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Input range	**0.90 - 1.10**
Default value	**1.00**

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.3.2.3 Properties - Conductivity detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Input range	**13 - 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.

Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Input range	**20 - 50 °C** (Increment: **5**)
Default value	**40 °C**

7.3.2.4 Properties - Amperometric detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Amp. detector**

Note

The amperometric detector can only be used with these devices: **850 Professional IC**, **881 Compact IC plus**, **882 Compact IC pro**.

Detector type

Display of the detector type, is read out automatically from the detector.

Connection

Display of the connector on the device to which the detector is connected.

Serial number

Display of the serial number of detector, is read out of the detector.

7.3.2.5 Properties - MCS

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **MCS**

The MCS (Metrohm CO_2 Suppressor) has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - MCS** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.3.2.6 Properties - Analog Out

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Analog Out**

Note

This tab is only available when an **891 Professional Analog Out** is connected.

Device type

Display of the device type.

Device serial number

Display of the serial number of the connected 891 Professional Analog Out.

7.3.2.7 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Pro-**

cessor, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB #

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.3.2.8 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.3.2.9 Load new program version

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **General** ▸ **[Update]** ▸ **Load new program version**

If it is discovered that the device to connect has an old program version not supported by **MagIC Net**, it must be updated. Select the device from the device table. **[Edit]** ▸ **Properties...** opens the properties window. On the **General** tab, **[Update]** is now active and can be used to open the **Load new program version** dialog window.

Old version

Shows the old device program version.

New version

Shows the new device program version to be loaded.

[Load]

Loads new program version.

Note

Make sure that the device is not manipulated or switched off during the loading process and follow the instructions shown.

7.3.2.10 Monitoring

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ 'Module' ▸ [Monitoring] ▸ Monitoring - 'Module'**

The dialog window consists of the tabs **Date** and **Working hours**, on which the parameters for monitoring the module are defined.

7.3.2.10.1 Monitoring - Date

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ 'Module' ▸ [Monitoring] ▸ Monitoring - 'Module' ▸ Date**

Date

Current value

Shows the current date.

Last service

Date of the last service. This date can be selected after clicking on … in the dialog window **Select date** and is used for monitoring (**Last service + Service interval = Next service**).

Comment

Optional comment on service.

Entry	**1000 characters**

Monitor date

on | off (Default value: **off**)

If this option is enabled then the service interval for the date will be monitored.

Note

Monitoring cannot be switched on until a date has been entered in the field **Last service**.

Service interval

Interval in days after which the service for the module should be repeated. If a value is entered here then the date in the field **Next service** will be adjusted automatically.

Next service

Date on which the next service is to be carried out. The date can be selected by pressing in the dialog window **Select date**. After the date has been entered the field **Service interval** will be adapted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enalbed and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered *(see Chapter 2.7.1, page 106)*.

Action

This is where you can indicate which action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Record message**

Record message
If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database** ▸ **Information** ▸ **Messages**. The run will not be stopped.

Display message
If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination
The running determination will be terminated.

7.3.2.10.2 Monitoring - Working hours

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **'Module'** ▸ **[monitoring]** ▸ **Monitoring - 'Module'** ▸ **Working hours**

Time elapsed

Current value

Shows the working hours to date.

[Reset]

Note

This function is only available in the monitoring of the 887 Professional UV/VIS Detector.

Use this function after having replaced the corresponding lamp of the 887 Professional UV/VIS Detector. Thereby, the values of the parameters **Current value** and **Last service** are being reset.

Last service

Working hours at time of last service. This value is used for monitoring (**Last service + Service interval = Next service**).

Input range	**0 - 99999 Hours**

Comment

Optional comment on service.

Entry	**1000 characters**

Monitor working hours

on | off (Default value: **off**)

If this option is enabled, then the service interval for the working hours will be monitored.

Note

Monitoring cannot be switched on until a value is entered in **Last service**.

Service interval

Interval in hours after which the service for the module should be repeated. If a value is entered here then the value in the field **Next service** will be adjusted automatically.

Next service

Running time after which the next service is to be carried out. If a value is entered here then the value in the field **Service interval** will be adjusted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enalbed and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered *(see Chapter 2.7.1, page 106)*.

Action

This is where you can indicate what action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	**Record message** | **Display message** | **Stop determination**
Default value	**Record message**

Record message
If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database** ▸ **Information** ▸ **Messages**. The run will not be stopped.

Display message
If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination
The running determination will be terminated.

7.3.3 882 Compact IC plus - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **882 Compact IC plus**.

7.3.3.1 882 Compact IC plus - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **882 Compact IC plus** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.3.3.1.1 Start parameters - High pressure pump

Tab: **Method** ▸ **Devices** ▸ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.2 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.4 Start parameters - MSM

Tab: **Method** ▸ **Devices** ▸ **MSM**

7.3.3.1.4.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.5 Start parameters - MCS

Tab: **Method** ▶ **Devices** ▶ **MCS**

Status

Selection	**On** | **Off**
Default value	**On**

On
The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off
The MCS (Metrohm CO_2 Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.6 Start parameters - Conductivity detector

Tab: **Method** ▸ **Devices** ▸ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conductivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Input range	**0.0 - 5.0 %/°C**
Default value	**2.3 %/°C**

Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Input range	**1 - 14999 µS/cm**
Default value	**9999 µS/cm**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.7 Start parameters - Amperometric detector

7.3.3.1.7.1 Amperometric detector

Tab: **Method** ▸ **Devices** ▸ **Amp. detector**

Mode

Selection of the measuring mode of the amperometric detector.

Selection	**DC** | **PAD** | **flexIPAD** | **CV**

DC
Measurement with constant potential.

PAD
Measurement with several potential steps.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

CV
Measurement of cyclovoltammograms.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric detector.

Temperature

Temperature that is set in the detector when the hardware is started with **[Start HW]**.

Input range	**10.0 - 80.0 °C** (Increment: **0.1**)
Default value	**35.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Cell

Selection of a cell which is defined in the configuration table of the amperometric cells *(see Chapter 6.12.2, page 611)*. If no cell has been selected yet, then **not defined** is displayed. Otherwise, the selected cell will be displayed with its user-defined name.

Selection	**not defined** | **Selection of amperometric cells**
Default value	**not defined**

not defined
You can also start the method when this option is selected. The cell connected to the detector is then used. In the Report, the amperometric cell is then called "**not defined**", but it will be the properties of the cell which is *actually* used which will be output. **Important note:** If an intelligent cell is connected to the amperometric detector for which the operating hours monitoring has been activated, then the operating hours will be counted.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.7.2 Settings DC mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **DC** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **DC**.

The properties are also available in the manual control *(see Chapter 7.1.4.11, page 696)*.

DC potential

Potential of the working electrode in comparison to the reference electrode.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

Range

Selection of the measuring range.

Selection	**auto** | **2 nA** | **20 nA** | **200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**

auto
Automatic setting of the measuring range. This selection is not allowed with damping activated.

Damping

on | off (Default value: **off**)

Switching the auxiliary damping on or off.

7.3.3.1.7.3 Settings PAD mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **PAD** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **PAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the PAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Potential [V]

Potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Duration

Duration of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Range

Selection of the measuring range.

Selection	**200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**
Default value	**2 µA**

The defined potential progression is displayed in the form of a graph.

7.3.3.1.7.4 Dialog window Define PAD step

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **Settings** ▸ **Settings PAD mode**

In this dialog, a new PAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**300 ms**

Potential

Potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.05 V**

7.3.3.1.7.5 Settings flexIPAD mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **flexIPAD** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **flexIPAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the flexIPAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Start potential [V]

Start potential of the step in volts.

End potential [V]

Terminal potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Start

Start time of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**50 ms**

End

Ending time point of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**150 ms**

Range

Selection of the measuring range.

Selection	**20 µA** | **200 µA** | **2 mA**
Default value	**200 µA**

Note

The selection of the measurement channel (**Current** or **Charge**) takes place in the hardware assignment of the analysis *(see Chapter 7.1.3.2.5, page 661)*.

The defined potential progression is displayed in the form of a graph.

7.3.3.1.7.6 Dialog window Define flexIPAD step

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **Settings** ▸ **Settings flexIPAD mode**

In this dialog, a new flexIPAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Start potential

Start potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

End potential

Terminal potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

7.3.3.1.7.7 Settings CV mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **PAD** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **CV**.

Number of cycles for cyclic voltammograms

Preparing cycles

Number of cyclic voltammograms which are to be measured in the time program in accordance with **Start data acquisition** and then discarded. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Measuring cycles

Number of cyclic voltammograms which are to be measured and saved in the time program in accordance with **Start data acquisition**. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Sweep parameters

Start potential

Start voltage of the triangular profile, also corresponds to the 2nd turn-over voltage.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**-0.5 V**

End potential

Terminal voltage of the triangular profile, also corresponds to the 1st turn-over voltage with CV mode **Full cycle**.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.5 V**

Sweep rate

Voltage regulation speed for the sweep in V/s.

Input range	**0.001 - 1.00 V/s** (Increment: **0.001**)
Default value	**0.01 V/s**

CV mode

Setting of the type of the voltage profile.

With each sweep, the voltage begins with the **Start potential** and changes at first until the **End potential** is achieved.

In the **Half cycle** mode, the sweep is thus ended. A sawtooth voltage is the result.

In the **Full cycle** mode, the current voltage changes back to the **Start potential**. A delta voltage is the result.

Selection	**Full cycle** | **Half cycle**
Default value	**Full cycle**

Range

Selection of the measuring range.

Selection	**2 µA** | **20 µA** | **200 µA** | **2 mA** | **20 mA**
Default value	**2 mA**

Cycle duration

Display of the duration of a measuring cycle in [s]. The duration arises from the values of the parameters Start potential, End potential, CV mode and Sweep rate.

Input range	**2 - 1000 s**

7.3.3.1.8 Start parameters - Analog Out

Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are present only if an **891 Professional Analog Out** is connected.

7.3.3.1.8.1 Data source, Polarity, Range/Volt

Tab: **Method** ▸ **Devices** ▸ **Analog Out**

Channels Out1, Out2, Aux1, Aux2

The 891 Professional Analog Out includes 4 output channels for analog voltage in the range of -1...+1 volt:

- 2 main channels **Out1**, **Out2** with high resolution, for the digital/analog converting of chromatograms or cyclovoltammograms.
- 2 auxiliary channels **Aux1**, **Aux2** with low resolution for the digital/analog converting of measured values such as pressure, flow, temperature, ratio eluent.

The technical specifications can be found in the device manual of the 891 Professional Analog Out.

Each channel has the following set of start parameters. These are on one tab each in the start parameters of the main instrument. The parameter values are sent to the 891 Professional Analog Out when starting the method.

Data source

If a data source and a data channel have been selected with the button **[...]** *(see Chapter 5.6.6.4, page 393)*, the **Name of the data source** is displayed here.

Channel

If a data source and a data channel have been selected with the button **[...]** *(see Chapter 5.6.6.4, page 393)*, the **Name of the data channel** is displayed here.

Polarity

Indicates the sign of the output voltage of the channel.

Selection	**+** | **–**
Default value	**+**

Range/Volt

Indicates a measured value which is – after using a possible **Measured value offset** – to be converted to 1 volt output voltage *(see Chapter 7.1.3.1.13.3, page 656)*.

Input range	**0.001 - 4000000**
Default value	**1.000** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful value for the channel **Conductivity**: **15000** µS/cm; for the channel **Current**: **2000000** nA; for the channel **Charge**: **4000000** nC.

[Offset..]

This button opens the dialog for defining the measured value offset and the voltage offset *(see Chapter 7.1.3.1.13.2, page 656)*.

Active

on | off (Default value: **off**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.8.2 Offset

Tab: **Method** ▸ **Devices** ▸ **Analog Out** ▸ **Offset**

Measured value offset

Indicates a positive or negative amount (in the units of the data channel selected) every measured value is to be corrected by *(see Chapter 7.1.3.1.13.3, page 656)*.

Selection	**Current value** | **Value**
Default value	**Current value**

Current value
Select this option if the offset value *currently* set in the Analog Out is to be used. This value can be found in the manual control *(see Chapter 7.1.4.12, page 698)*.

Value
Select this option, if you want to enter a new measured value offset in the **Value** field.

Value

Enter a new measured value offset.

Input range	**-4000000 - +4000000**
Default value	**0.0** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful input field for the channel **Conductivity**: **±15000** µS/cm; for the channel **Current**: **±2000000** nA; for the channel **Charge**: **±4000000** nC.

Voltage offset

Value

Offset in mV, to be used on the output signal after the digital/analog conversion.

Input range	**-1000 - +1000 mV** (Increment: **1**)
Default value	**0 mV**

7.3.3.1.8.3 Using range/volt and offsets

With **Range/Volt**, you can indicate the measured value amount to be converted to 1000 mV output voltage.

If you want to correct every measured value by a certain amount, then define a corresponding **Measured value offset**. If you enter a *positive* measured value offset, it will be *added* to every measured value, if you enter a *negative* measured value offset, it will be *subtracted* from every measured value. This happens **before** the digital/analog conversion.

With **Voltage offset** you can indicate a value in mV to be used on the output signal **after** the digital/analog conversion.

The **polarity** will be applied to the resulting output signal.

Example for the channel "Conductivity" of the data source "Detector"

If the required measured values are e.g. between 15 and 35 µS/cm, you could define a measured value of **–15** (µS/cm). The measured values corrected by this offset then are between 0 and 20 µS/cm. The output voltage these offset-corrected values are converted to, depends on **Range/Volt**. Examples:

With a **Range/Volt** of 20 (µS/cm-V), 20 µS/cm are output as 1.0 V (1000 mV).

With a **Range/Volt** of 40 (µS/cm-V), 20 µS/cm are output as 0.5 V (500 mV).

With a **Range/Volt** of 10 (µS/cm-V), 20 µS/cm are output as 1.0 V (1000 mV).

You can correct the output signal by a **Voltage offset**. Example: You find out that the output voltage sometimes is slightly negative, whereas you would like to have positive output signals only. If the lowest output voltage is e.g. at –12 mV, you could consistently achieve only positive voltage values with the aid of a **Voltage offset** of 15 mV.

7.3.3.2 882 Compact IC plus - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.3.3.2.1 High-pressure pump - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.3.3.2.2 Conductivity detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	µS/cm	Yes

Property	Label of Y axis	Unit	Evaluation
Demo anion	Demo anion	µS/cm	Yes
Demo cation	Demo cation	µS/cm	Yes

Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recorded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves

Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.

Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column	A Supp 5 100
Injection volume	20 µL
Duration of recording	12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 µL

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

7.3.3.2.3 Amperometric detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Current	Current	nA	Yes
Charge	Charge	nC	Yes
Current vs. Potential	Current	nA	No

Note

The only channels available for the output of the measured values by means of the *891 Professional Analog Out (see Chap. 7.1.3.1.13.1, p. 654)* are **Current** and **Charge**. The output of the measured values of these channels is then **time-based**.

7.3.3.3 882 Compact IC plus - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 882 Compact IC plus:

7.3.3.3.1 Commands - High-pressure pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the high-pressure pump:

7.3.3.3.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.1.2 Flow

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.1.3 Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)*.

Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Flow

Setting the flow of the high-pressure pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear

The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.3.3.3.1.5 Measuring pressure

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.3.3.3.1.6 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.3.3.3.2 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.3.3.3.2.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.2.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.2.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.3.3.3.3 Commands - Peristaltic pump

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.3.3.3.3.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.3.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.3.3.3.4 Commands - MSM

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.3.3.3.4.1 Step

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.3.3.3.4.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.3.3.3.5 Commands - MCS

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the MCS (Metrohm CO_2 Suppressor):

7.3.3.3.5.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the MCS (Metrohm CO_2 Suppressor) on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.6 Commands - Conductivity detector

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the conductivity detector:

7.3.3.3.6.1 Measuring the conductivity

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CONDUCTIVITY	Measured conductivity [µS/cm]	Number

7.3.3.3.6.2 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.3.3.3.6.3 Measure drift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.3.3.3.7 Commands - Analog Out

Subwindow: **Method ▸ Time program**

> **Note**
>
> The commands under **Analog Out** are only available if an **891 Professional Analog Out** is connected.

7.3.3.3.7.1 Change range

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Analog Out - Change range**

The device-dependent time program command **Change range** (command without feedback) of the 891 Professional Analog Out redefines the measured value range per volt in the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Range/Volt

Indicates the measured value amount to be output as 1 Volt (1000 mV). The value is transferred to the device.

Input range	**0.001 - 4000000**
Default value	**(empty)** Next to the input field, the unit of the corresponding data channel is displayed. Maximum useful value for the channel **Conductivity**: **15000** µS/cm; for the channel **Current**: **2000000** nA; for the channel **Charge**: **4000000** nC.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.7.2 Change polarity

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Analog Out - Change polarity**

The device-dependent time program command **Change polarity** (command without feedback) of the 891 Professional Analog Out redefines the sign of the output voltage in the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Polarity

Indicates the new sign of the output voltage.

Selection	**+ | –**
Default value	**+**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.7.3 Reset baseline

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Analog Out - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) of the 891 Professional Analog Out redefines the baseline of the output voltage in the method run. If the default value **0 mV** is applied for the parameter **Voltage offset**, then the current value of the output voltage is defined as new baseline (0 mV). If you enter a different value for the **Voltage offset**, the baseline will be moved additionally by this value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Voltage offset

Optional offset in mV, which is *additionally* used after resetting the baseline to 0 mV.

Input range	**-1000 - +1000 mV**
Default value	**0 mV**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.3.3.3.7.4 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.3.4 882 Compact IC plus - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.3.4.1 Manual Control - High-pressure pump

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.3.4.2 Manual Control - Injection valve

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.3.4.3 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.3.4.4 Manual Control - MSM

Tab: **Manual** ▶ **Manual Control - 'Device name'** ▶ **'MSM'**

7.3.4.4.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.3.4.5 Manual Control - MCS

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'MCS'**

[On]

Start MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is already running.

[Off]

Stop MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is not running.

7.3.4.6 Manual Control - Analog Out

Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.3.4.6.1 Channels Out1, Out2, Aux1, Aux2

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Channel'**

Note

In the Manual Control of the Workplace the tabs of those channels of a connected **891 Professional Analog Out** are displayed which have been activated in the start parameters of the method.

[Resetting baseline]

Sets the current measured value as new baseline.

[Properties...]

Via this button the dialog window *Properties* opens, in which you can modify the properties of the channels.

7.3.4.6.2 Properties

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Channel'** ▸ **Properties**

Data source

Current value

Displays the name of the data source currently assigned.

Input

Displays the name of the newly assigned data source, which has been selected with the button **[...]**.

[...]

Opens the dialog for selecting a different data source and a channel *(see Chapter 5.6.6.4, page 393)*.

Channel

Current value

Displays the name of the channel of the **data source** currently assigned.

Input

Displays the name of the channel of the new data source which has been selected with the button **[...]**. If a new channel has been selected, then its unit (e.g. µS/cm in case of conductivity) will be displayed on the right to the input fields of the parameters **Range/Volt** and **Measured value offset**.

Range/Volt

Current value

Displays the measured value amount currently defined in the device and which is converted to 1 volt output signal.

Input

Input of a new measured value amount to be converted to 1 volt output signal.

Input range	**0.001 - 4000000** (Increment: **0.001**)
Default value	**(empty)** Next to the input field the unit of the data channel is displayed.

Polarity

Current value

Displays the polarity of the output voltage currently set in the device.

Input

Selection of the new sign for the output voltage.

Selection	**+** | **–**
Default value	**+**

Measured value offset

Current value

Displays the measured value offset currently set in the device, put out in the unit of the current channel.

Input

Optional input of a new measured value offset, put out in the units of the channel selected in the parameter Channel (Input).

Input range	**-4000000 - +4000000** (Increment: **0.001**)
Default value	**(empty)** Next to the input field the unit of the data channel is displayed.

Voltage offset

Current value

Displays the voltage offset currently set in the device in [mV].

Input

Optional input of a new voltage offset in [mV].

Input range	**-1'000 - +1'000 mV** (Increment: **1**)
Default value	**0 mV**

[OK]

The values in the column **Input** are applied for the device and the dialog is closed.

[Cancel]

The values in the column **Input** are rejected and the dialog is closed.

[OK]

The values in the column **Input** are applied for the device. The dialog remains open.

7.4 883 Basic IC plus

7.4.1 883 Basic IC plus - Overview

The device **883 Basic IC plus** is available in 1 model version:

- **2.883.0020 883 Basic IC plus**
  Intelligent, very compact ion chromatograph for education and routine analysis. For determining anions and cations with and without chemical suppression.

7.4.2 883 Basic IC plus - Configuration

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'**

If a type **883 Compact IC plus** device is selected in the device table, then the menu item **[Edit]** ▸ **Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can be defined on them.

7.4.2.1 Properties - General

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.4.2.2 Properties - High-pressure pump

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Input range	**0.90 - 1.10**
Default value	**1.00**

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.4.2.3 Properties - Conductivity detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Input range	**13 - 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.

Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Input range	**20 - 50 °C** (Increment: **5**)
Default value	**40 °C**

7.4.2.4 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.4.2.5 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.4.3 883 Basic IC plus - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **883 Basic IC plus**.

7.4.3.1 883 Basic IC plus - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **883 Compact IC plus** device in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.4.3.1.1 Start parameters - High pressure pump

Tab: **Method ▸ Devices ▸ Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.2 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.4 Start parameters - MSM

Tab: **Method** ▸ **Devices** ▸ **MSM**

7.4.3.1.4.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.5 Start parameters - Conductivity detector

Tab: **Method** ▸ **Devices** ▸ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conductivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Input range	**0.0 - 5.0 %/°C**
Default value	**2.3 %/°C**

Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Input range	**1 - 14999 µS/cm**
Default value	**9999 µS/cm**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.2 883 Basic IC plus - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.4.3.2.1 High-pressure pump - Data channels

Tab: **Method** ▸ **Devices** ▸ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.4.3.2.2 Conductivity detector - Data channels

Tab:Method ▸ **Devices** ▸ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	µS/cm	Yes
Demo anion	Demo anion	µS/cm	Yes
Demo cation	Demo cation	µS/cm	Yes

Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recorded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves

Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.

Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column A Supp 5 100

Injection volume 20 µL

Duration of recording 12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 µL

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

7.4.3.3 883 Basic IC plus - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 883 Basic IC plus:

7.4.3.3.1 Commands - High-pressure pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the high-pressure pump:

7.4.3.3.1.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.4.3.3.1.2 Flow

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.4.3.3.1.3 Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)*.

Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.4.3.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Flow

Setting the flow of the high-pressure pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear

The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.4.3.3.1.5 Measuring pressure

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.4.3.3.1.6 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.4.3.3.2 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.4.3.3.2.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.4.3.3.2.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.4.3.3.2.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.4.3.3.3 Commands - Peristaltic pump

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.4.3.3.3.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.4.3.3.3.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.4.3.3.4 Commands - MSM

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.4.3.3.4.1 Step

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.4.3.3.4.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.4.3.3.5 Commands - Conductivity detector

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the conductivity detector:

7.4.3.3.5.1 Measuring the conductivity

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CONDUCTIVITY	Measured conductivity [µS/cm]	Number

7.4.3.3.5.2 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.4.3.3.5.3 Measure drift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.4.4 883 Basic IC plus - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.4.4.1 Manual Control - High-pressure pump

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.4.4.2 Manual Control - Injection valve

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.4.4.3 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.4.4.4 Manual Control - MSM

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'MSM'**

7.4.4.4.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL

Note

The devices **814 USB Sample Processor** and **815 Robotic USB Sample Processor XL** are available in various versions which differ from one another in their total number of towers and in the combinations of modules installed. These sample changers, together with all of the possible towers and/or modules are described in the online help.

7.5.1 814 USB Sample Processor - Overview

The 814 USB Sample Processor is suitable for sample racks with diameters of up to 42 cm. Different versions are available for different fields of application:

- **2.814.0010814 USB Sample Processor**
  Sample changer with 1 tower, 1 integrated membrane pump and 1 connector for an external pump.
- **2.814.0020814 USB Sample Processor**
  Sample changer with 1 tower and 2 integrated membrane pumps.
- **2.814.0030814 USB Sample Processor**
  Sample changer with 1 tower and 2 connectors for external pumps.
- **2.814.0110814 USB Sample Processor**
  Sample changer with 2 towers, 2 integrated membrane pumps and 2 connectors for external pumps.
- **2.814.0120814 USB Sample Processor**
  Sample changer with 2 towers and 4 integrated membrane pumps.
- **2.814.0130814 USB Sample Processor**
  Sample changer with 2 towers, and 4 connectors for external pumps.

For all variants, 1 Swing Head and 1 tower stirrer can be connected for each tower.

7.5.2 815 Robotic USB Sample Processor XL - Overview

The 815 Robotic USB Sample Processor XL is suitable for sample racks with diameters of up to 48 cm. Different versions are available for different fields of application:

- **2.815.0010815 Robotic USB Sample Processor XL**
  Sample changer with 1 tower, 1 integrated membrane pump and 1 connector for an external pump.
- **2.815.0020815 Robotic USB Sample Processor XL**
  Sample changer with 1 tower and 2 integrated membrane pumps.
- **2.815.0030815 Robotic USB Sample Processor XL**
  Sample changer with 1 tower and 2 connectors for external pumps.
- **2.815.0110815 Robotic USB Sample Processor XL**
  Sample changer with 2 towers, 2 integrated membrane pumps and 2 connectors for external pumps.
- **2.815.0120815 Robotic USB Sample Processor XL**
  Sample changer with 2 towers and 4 integrated membrane pumps.
- **2.815.0130815 Robotic USB Sample Processor XL**
  Sample changer with 2 towers, and 4 connectors for external pumps.

For all variants, 1 Swing Head and 1 tower stirrer can be connected for each tower.

7.5.3 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a device of type **814 USB Sample Processor** or **815 Robotic USB Sample Processor XL** is selected in the device table, then the menu item **[Edit] ▸ Properties...** opens the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

The devices can be initialized if necessary by means of the **[Initialize]** menu item in the device table *(see Chapter 6.5.2.1, page 550)*.

7.5.3.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.5.3.2 Properties - Tower

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Tower**

Note

With the 858 Professional Sample Processor and the 919 IC Autosampler plus, the properties of the tower, including the Swing Head attached to it, are displayed on the tab **Tower**. In the case of the 814 USB Sample Processor and the 815 Robotic USB Sample Processor XL, the device versions with 1 tower have 1 tab **Tower 1**; device versions with 2 towers have 2 tabs **Tower 1** and **Tower 2**.

Tower parameters

Max. stroke path

Input of the lowest permitted lift position. A lift height of **0 mm** corresponds to the "Home position", i.e. the lift is moved right to the top.

Input range	**0 - 235 mm**
Default value	**235 mm**

Min. beaker radius

Definition of the minimum radius which the beakers used on the rack must have. If the lift is moved to the work position, the beaker radii defined in **Rack table***(see Chapter 6.10.2.1, page 597)* for general **Sample positions***(see Chapter 6.10.3.2, page 600)* and **Special beakers***(see Chapter 6.10.3.4, page 602)* will be compared with the **Min. beaker radius**. If this minimum beaker radius is is not reached, then the run will be stopped and an error message will appear. No check will be made if **off** is enabled.

Selection	**1.0 … 100.0 mm** | **off**
Default value	**off**

Lift rate

Lift rate for manual operation of the tower.

Input range	**3 - 25 mm/s**
Default value	**25 mm/s**

Axial distance

Distance between the axis of rotation of the sample rack and swing axis of the robotic arm.

Input range	**100.0 - 300.0 mm**

814 USB Sample Processor

Selection	**166.0 mm**
Default value	**166.0 mm**

815 Robotic USB Sample Processor XL

Selection	**196.0 mm**
Default value	**196.0 mm**

858 Professional Sample Processor

Selection	**166.0 mm**
Default value	**166.0 mm**

919 IC Autosampler plus

Selection	**196.0 mm**
Default value	**196.0 mm**

Swing Head

This parameter is only shown when a swing head is mounted on the tower.

Serial number

Shows the serial number of the swing head.

Swing position

Lift position valid for all 4 external positions, at which the swing head turns to the external positions.

Input range	**0 - 235 mm**
Default value	**0 mm**

Rinse position

Rinse position valid for all 4 external positions.

Input range	**0 - 235 mm**
Default value	**0 mm**

[Configuration]

Open the dialog window **Robotic arm configuration** *(see Chapter 7.5.3.7, page 845)*, in which the properties of the robotic arm can be edited.

Table for external positions

The properties for the 4 possible external positions for the swing head mounted on the tower are shown in the table. The table cannot be edited directly.

External position

Number of the external position.

Angle [°]

Swing angle for external position.

Work position [mm]

Work position for external position.

[Edit]

Opens the dialog window **External position #** *(see Chapter 7.5.3.8, page 846)* in which the parameters for the external position selected from the table can be edited.

7.5.3.3 Properties - Rack

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Rack**

On the tab **Rack** the specific data of the attached rack are shown.

Rack name

Shows the name of the rack attached. If no rack is in position then "**-----**" is shown.

Rack code

Shows the rack code of the rack attached. The rack code corresponds to the arrangement of magnets on the base of the rack and is read in by the sample changer in order to recognize the rack. If no rack is in position, then the display will be empty.

Number of positions

Shows the number of positions on the rack. If no rack is in position then the display will be empty.

Shift rate

Sample rack shift rate for manual operation.

Input range	**3 - 20 °/s**
Default value	**20 °/s**

[Rack data]

Opens the dialog window **Rack data** *(see Chapter 6.10.3.1, page 599)*, in which the data of the mounted rack is displayed and is available for editing.

[Initialize rack]

Initializes the attached rack. This resets the rack, the lift and the robotic arm, reads out the rack code and transfers the corresponding rack data to the sample changer.

7.5.3.4 Properties - Initial position

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Initial position**

On tab **Initial position**, a position can be defined which is automatically moved to when initializing the sample changer.

Moving to the initial position

on | off (Default value: **off**)

If this option is activated, the position defined here is moved to when initializing the device.

Tower

Selection of the tower on the sample changer for moving to the required position.

Only editable for **Move to initial position** = **on** and if the corresponding sample changer has 2 towers, otherwise inactive.

Selection	**1** | **2**
Default value	**1**

Destination

Selection of the target position which is to be moved to:

Only editable for **Move to initial position** = **on**, otherwise inactive.

Selection	**Rack position** | **Special beaker** | **Ext. position**
Default value	**Rack position**

Rack position
Predefined position on the rack. The lift is thereby lowered to the work position defined for that position.

Special beaker
Special position on the rack defined in the rack properties. The lift is thereby lowered to the work position defined for that position.

Ext. position
External position which is defined for the Swing Head mounted to the tower. The lift is thereby lowered to the work position defined for that position. This option is only available if a Swing Head is mounted to the tower.

Number

Specification of the number of the rack position, of the special beaker or of the external position.

Only editable for **Move to initial position** = **on**, otherwise inactive.

for Move = Rack position	
Input range	**1 - 999**
Default value	**1**

for Move = Special beaker	
Input range	**1 - 16**
Default value	**1**

for Move = External position	
Input range	**1 - 4**
Default value	**1**

7.5.3.5 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.5.3.6 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.5.3.7 Configuration Robotic arm

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Tower ▸ [Configuration] ▸ Robotic arm configuration**

In the dialog window **Robotic arm configuration**, the specific settings can be made for each robotic arm mounted on a swing head.

Swing offset

Swing angle offset for specific robotic arm model. This value must be set according to the leaflet supplied with the swing head.

Input range	**-270.0 - 270.0 °**
Default value	**0.0 °**

Max. swing range

Maximum usable swing range for specific robotic arm model. Each robotic arm model displays a different value on the basis of its construction. This value must be set according to the leaflet supplied with the swing head and can also be reduced as required.

Input range	**0.0 - 330.0 °**
Default value	**60.0 °**

Swing radius

The swing radius depends on the length of the robotic arm and, together with the axial distance, is the most important parameter for exact movement to a rack position. This value must be set according to the leaflet supplied with the swing head.

Input range	**30.0 - 300.0 mm**
Default value	**110.0 mm**

Rotation offset

Offset from the middle of the tower to the middle of the robotic arm. If a robotic arm must be mounted on the tower so that it is offset to one side, then this value can be determined by the service technician during rack adjustment.

Input range	**-270.0 - 270.0 °**
Default value	**0.0 °**

Swing direction

The swing direction of the robotic arm depends on the type of robotic arm.

Selection	**+ | –**
Default value	**+**

+

Clockwise rotation.

–

Counterclockwise rotation.

7.5.3.8 External position

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Tower ▶ [Edit] ▶ External position #**

In the dialog window **External position #** a **Swing angle** and a specific **Work position** can be defined for each external position. **Shift position** and **Rinse position** can only be defined for all 4 external positions together. No **Special position** can be defined for external positions.

Angle

Definition of the swing angle for the selected external position. The offset is made up of a design-dependent angle (approximately 8-9°) together with the robotic arm offset from the Robotic arm properties *(see Chapter 7.5.3.7, page 845)*. The maximum swing range is also defined under Robotic arm properties.

Input range	**(Offset) - (Offset + max. swing range) °**
Default value	**60.0 °**

Work position

Definition of the work position for the selected external position.

Input range	**0 - 235 mm**
Default value	**0 mm**

7.5.4 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **814 USB Sample Processor** or for the **815 Robotic USB Sample Processor XL**.

7.5.4.1 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **814 USB sample processor** or the **815 Robotic USB Sample Processor XL** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.5.4.1.1 Start parameters - Rack

Tab: **Method** ▸ **Devices** ▸ **Rack**

Rack name

Name of the rack which must be initialized on the sample changer when the hardware is started **[Start HW]**. If no rack is initialized, the method is not carried out.

Selection	**not defined** | **Rack names from the rack table**
Default value	**not defined**

not defined
The method is always carried out.

Rack names from the rack table
If a rack is selected, the method is only carried out if it is initialized in the sample changer. There is no automatic check to ensure that the rack is in position and that it is the correct rack. In order to check this during the run, the command **Initialize** must be inserted in the time program for the module **Rack**.

7.5.4.1.2 Start parameters - Peripherals Tower

Tab: **Method** ▸ **Devices** ▸ **Peripherals Tower**

Pump 1

Status

Selection	**on** | **off**
Default value	**off**

on
Pump 1 is switched on when the hardware is started with **[Start HW]**.

off
Pump 1 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 1 when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Pump 2

Status

Selection	**on** | **off**
Default value	**off**

on
Pump 2 is switched on when the hardware is started with **[Start HW]**.

off
Pump 2 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 2 when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Tower stirrer

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Status

Selection	**on** | **off**
Default value	**off**

on
The tower stirrer is switched on when the hardware is started with **[Start HW]**.

off
The tower stirrer is switched off when the hardware is started with **[Start HW]**.

Rate

Enter the stirring rate

Input range	**-15 - 15**
Default value	**8**

7.5.4.2 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the **814 USB Sample Processor** or the **815 Robotic USB Sample Processor XL**:

7.5.4.2.1 Commands - Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands assigned to the tower of the sample changer:

7.5.4.2.1.1 Move (Rack)

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Move (Rack)**

The device-dependent time program command **Move (Rack)** (command with feedback) turns the rack until the desired position is reached with reference to the tower.

Target

Move

Selecting the target position on the rack:

Selection	**Sample position** | **Rack position** | **Special beaker** | **Relative angle**

Sample position
Position defined for the current determination in the Run window as parameter **Position**.

Rack position
Predefined position on the rack.

Special beaker
Special position on the rack defined in the rack properties.

Relative angle
Rotate the rack relative to the current position by the angle indicated. This can be used, for example, to remove vial caps automatically.

Number

Specification of the number of the rack position. This parameter is displayed only for **Move** = **Rack position** or **Move** = **Special beaker**. The number can also be defined with the aid of the formula editor ( ).

Input range	**1 - 999**
Default value	**1**

Move angle

Indication of relative rotation angle. This parameter is displayed only for **Move** = **Rack position**.

Input range	**-359.90 - 359.90 °**
Default value	**5.00 °**

Beaker test

on | off (Default value: **off**)

If this option is switched on, a beaker test is carried out. In this case, the action to be carried out can be selected if the beaker sensor defined for the rack does not detect a beaker at the target position. If the robotic arm is selected as beaker sensor, then a Swing Head must be installed and a work position also defined in the rack data must be defined in such a way that contact exists between the beaker sensor and the beaker. This work position will be automatically moved to for beaker recognition after the command **Move**.

Selection	**Display message** | **Stop determination** | **Stop determination and series**

Display message
A message is displayed and the determination is stopped.

Stop determination
The determination is stopped and the next determination of the series is started.

Stop determination and series
Both the determination and the series are stopped.

Parameters

Shift rate

Selection of the rate at which the sample rack rotates.

Input range	**3 - 20 °/s**
Default value	**20 °/s**

Shift direction

Selection of the shift direction

Selection	**auto** | **+** | **-**
Default value	**auto**

auto
The shift direction with the smallest rotation angle is selected automatically.

+
Movement is in the direction of **ascending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

-
Movement is in the direction of **descending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

Swing rate

Selects the rate of the robotic arm when moving to a rack position or a special beaker (only with multiple row sample racks).

Input range	**10 - 55 °/s**
Default value	**55 °/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.5.4.2.1.2 Lift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Lift**

With the device-dependent time program command **Lift** (command with feedback), the lift on the tower of the sample changer moves to the desired position.

Target

Lift position

Entering the desired lift position in mm or select a lift position predefined for the rack. A lift height of **0 mm** corresponds to the Home position. Here the lift is moved to the uppermost stop.

Input range	**0.0 - 235.0 mm**
Selection	**Work position** | **Shift position** | **Rinse position** | **Special position** | **Home position**
Default value	**Work position**

Note

Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Parameters

Lift rate

Selection of the rate for moving the lift.

Input range	**3 - 25 mm/s**
Default value	**25 mm/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.5.4.2.1.3 Swing

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Swing**

The device-dependent time program command **Swing** (command with feedback) swings the robotic arm until the desired position is reached.

Target

Swing

Selecting the target position for the robotic arm.

Selection	**External position** | **Maximum angle** | **Relative angle**

External position
Swinging to one of the 4 external positions available for each tower. They are defined in the Tower properties of the Sample Processor.

Maximum angle
Swinging the robotic arm outwards to the maximum angle permitted in the robotic arm properties.

Relative angle
Swinging by the specified swing angle relative to the current position. This can be used, for example, to remove vial caps automatically.

Number

Indicates the number of the external position which is to be swung to. This parameter is displayed only for **Swing** = **External position**. The number can also be defined with the aid of the formula editor ( ).

Input range	**1 - 4 (dependent on target position)**
Default value	**1**

Swing angle

Angle by which the robotic arm is to be swung relative to the current position. This parameter is visible only for **Swing** = **Relative angle**.

Input range	**-180 - 180 °**
Default value	**10 °**

Parameters

Swing rate

Rate of the robotic arm when swinging to an external position or a particular angle.

Input range	**10 - 55 °/s**
Default value	**55 °/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.5.4.2.2 Commands - Rack

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the rack:

7.5.4.2.2.1 Initialize

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Initialize**

The device-independent time program command **Initialize** (command with feedback) initializes the rack positioned on the sample changer.

Rack test

on | off (Default value: **on**)

If this option is enabled, the rack attached will be checked.

Test rack

Select the rack to be positioned on the sample changer. The rack attached will be checked to ensure it is the one specified.

Selection	**Racks from the rack table**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.5.4.2.3 Commands - Peripherals Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peripheral devices assigned to the tower:

7.5.4.2.3.1 Pump # On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Pump # On/Off**

The device-dependent time program command **Pump # On/Off** (command without feedback) switches the respective pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.5.4.2.3.2 Tower stirrer On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Tower stirrer On/Off**

The device-dependent time program command **Tower stirrer On/Off** (command without feedback) switches the tower stirrer on/off and sets the value for the stirring rate.

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The command is ignored in the run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Stirrer

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the stirrer.

Input range	**-15 - 15 (without 0)**
Default value	**3**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.5.4.2.4 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.5.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.5.5.1 Manual Control - Tower

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **Tower**

Rack position

Current value

Shows the current rack position.

Input

Enter or select the rack position to be moved to.

Input range	**1 - n (depending on rack)**
Default value	**1**
Selection	**Special beaker 1 ... 16**

[Start]

Start moving to the specified position. After the start, the button changes to **[Stop]** and the two arrow keys become inactive (gray).

[Stop]

Stop moving to current rack immediately.

Move to current rack position -1.

Move to current rack position +1.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Input range	**0 - Max. stroke path mm**
Default value	**0 mm**

Selection	**Work position** | **Shift position** | **Rinse position** | **Special position** | **Home position**

[Start]

Move lift to the desired position.

[Stop]

Stop moving to lift position immediately.

The lift continues moving up as long as this button is pressed.

The lift continues moving down as long as this button is pressed.

Robotic arm position

Current value

Current position (angle) of the robotic arm on the tower.

Input

Enter or select the robotic arm position to be moved to.

Input range	**0.0 - 330.0 °**
Default value	**0.0 °**
Selection	**External 1** | **External 2** | **External 3** | **External 4**

[Start]

Move robotic arm to the desired position.

[Stop]

Immediately stop the action which was triggered with **[Start]**.

The robotic arm continues moving to the left as long as this button is pressed.

The robotic arm continues moving to the right long as this button is pressed.

[Configure rack]

Open dialog window **Rack configure 'Rack name'** *(see Chapter 7.5.5.4, page 859)*.

7.5.5.2 Manual Control - Rack

Tab: **Manual ▸ Manual Control - 'Device name' ▸ Rack**

[Initialize rack]

Initialize rack that is in position.

7.5.5.3 Manual Control - Peripheral devices

Tab: **Manual Control ▸ Manual Control - All Devices - 'Device name' ▸ Peripherals Tower**

Tower stirrer - Rate

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Current value

Current rate of the tower stirrer.

Input

Enter the rate of the tower stirrer.

Input range	**-15 - 15 (without 0)**
Default value	**Current value**

[Apply]

Send the set parameters to the stirrer.

[On]

Start the stirrer with the set parameters. This is inactive if the stirrer is running.

[Off]

Stop the stirrer. This is inactive if the stirrer is not running.

Pump 1

[On]

Start pump 1 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 1. This is inactive if the pump is not running.

Pump 2

[On]

Start pump 2 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 2. This is inactive if the pump is not running.

7.5.5.4 Configuring rack

Dialog window: **Manual ▶ Manual Control - All devices - 'Device name' ▶ Rack ▶ [Configure rack] ▶ Rack 'Rack name' configure**

Rack position

Current position

Shows the current rack position.

Special beaker

Select the special beaker to be assigned to the current rack position.

Input range	**1 - 16**

[Assign]

Assign current rack position to the selected special beaker.

Lift position

Current position

Shows the current lift position in mm.

Work position for

If this option is selected, the current lift position is assigned to the work position for the tower, for a special beaker or for an external position of the robotic arm.

Selection	**Tower** | **Special beaker 1...16** | **External 1...4**
Default value	**Tower**

Rinse position for

If this option is selected, the current lift position is assigned to the rinse position for the tower, or for the external positions of the robotic arm.

Selection	**Tower** | **External position**
Default value	**Tower**

Shift position for

If this option is selected, the current lift position is assigned to the shift position for the tower.

Selection	**Tower**

Special position for

If this option is selected, the current lift position is assigned to the special position for the tower.

Selection	**Tower**

Robotic arm position

If this option is selected, the current lift position is assigned to the swing position of the robotic arm.

Selection	**External position**

[Assign]

Assign the current lift position to the selected position.

Robotic arm position

Current position

Displays the current position of the robotic arm in °.

External position

Select the external position to which the current robotic arm position is to be assigned.

Selection	**External 1** | **External 2** | **External 3** | **External 4**

[Assign]

Assign the current robotic arm position to the selected external position.

7.6 858 Professional Sample Processor

7.6.1 858 Professional Sample Processor - Overview

Note

The **858 Professional Sample Processor** is available in various versions that differ in the combination of integrated modules. The **858 Professional Sample Processor** is described with all possible modules in the online Help.

Different versions are available for different fields of application:

- **2.858.0010 Professional Sample Processor**
  Sample changer for ion chromatography without peristaltic pump.
- **2.858.0020 Professional Sample Processor**
  Sample changer for ion chromatography with integrated two-channel peristaltic pump.
- **2.858.0030 Professional Sample Processor**
  Sample changer for ion chromatography with integrated two-channel peristaltic pump and injection valve.

7.6.2 858 Professional Sample Processor - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a device of type **858 Professional Sample Processor** is selected in the device table, the the menu item **[Edit] ▸ Properties...** opens the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

The device can be initialized if necessary by means of the **[Initialize]** menu item in the device table *Device table - Desktop*.

7.6.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.6.2.2 Properties - Tower

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Tower**

Note

With the 858 Professional Sample Processor and the 919 IC Autosampler plus, the properties of the tower, including the Swing Head attached to it, are displayed on the tab **Tower**. In the case of the 814 USB Sample Processor and the 815 Robotic USB Sample Processor XL, the device versions with 1 tower have 1 tab **Tower 1**; device versions with 2 towers have 2 tabs **Tower 1** and **Tower 2**.

Tower parameters

Max. stroke path

Input of the lowest permitted lift position. A lift height of **0 mm** corresponds to the "Home position", i.e. the lift is moved right to the top.

Input range	**0 - 235 mm**
Default value	**235 mm**

Min. beaker radius

Definition of the minimum radius which the beakers used on the rack must have. If the lift is moved to the work position, the beaker radii defined in **Rack table***(see Chapter 6.10.2.1, page 597)* for general **Sample positions***(see Chapter 6.10.3.2, page 600)* and **Special beakers***(see Chapter 6.10.3.4, page 602)* will be compared with the **Min. beaker radius**. If this minimum beaker radius is is not reached, then the run will be stopped and an error message will appear. No check will be made if **off** is enabled.

Selection	**1.0 … 100.0 mm** | **off**
Default value	**off**

Lift rate

Lift rate for manual operation of the tower.

Input range	**3 - 25 mm/s**
Default value	**25 mm/s**

Axial distance

Distance between the axis of rotation of the sample rack and swing axis of the robotic arm.

Input range	**100.0 - 300.0 mm**

814 USB Sample Processor

Selection	**166.0 mm**
Default value	**166.0 mm**

815 Robotic USB Sample Processor XL

Selection	**196.0 mm**
Default value	**196.0 mm**

858 Professional Sample Processor

Selection	**166.0 mm**
Default value	**166.0 mm**

919 IC Autosampler plus

Selection	**196.0 mm**
Default value	**196.0 mm**

Swing Head

This parameter is only shown when a swing head is mounted on the tower.

Serial number

Shows the serial number of the swing head.

Swing position

Lift position valid for all 4 external positions, at which the swing head turns to the external positions.

Input range	**0 - 235 mm**
Default value	**0 mm**

Rinse position

Rinse position valid for all 4 external positions.

Input range	**0 - 235 mm**
Default value	**0 mm**

[Configuration]

Open the dialog window **Robotic arm configuration** *(see Chapter 7.5.3.7, page 845)*, in which the properties of the robotic arm can be edited.

Table for external positions

The properties for the 4 possible external positions for the swing head mounted on the tower are shown in the table. The table cannot be edited directly.

External position

Number of the external position.

Angle [°]

Swing angle for external position.

Work position [mm]

Work position for external position.

[Edit]

Opens the dialog window **External position #** *(see Chapter 7.5.3.8, page 846)* in which the parameters for the external position selected from the table can be edited.

7.6.2.3 Properties - Rack

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Rack**

On the tab **Rack** the specific data of the attached rack are shown.

Rack name

Shows the name of the rack attached. If no rack is in position then "**-----**" is shown.

Rack code

Shows the rack code of the rack attached. The rack code corresponds to the arrangement of magnets on the base of the rack and is read in by the sample changer in order to recognize the rack. If no rack is in position, then the display will be empty.

Number of positions

Shows the number of positions on the rack. If no rack is in position then the display will be empty.

Shift rate

Sample rack shift rate for manual operation.

Input range	**3 - 20 °/s**
Default value	**20 °/s**

[Rack data]

Opens the dialog window **Rack data** *(see Chapter 6.10.3.1, page 599)*, in which the data of the mounted rack is displayed and is available for editing.

[Initialize rack]

Initializes the attached rack. This resets the rack, the lift and the robotic arm, reads out the rack code and transfers the corresponding rack data to the sample changer.

7.6.2.4 Properties - Initial position

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Initial position**

On tab **Initial position**, a position can be defined which is automatically moved to when initializing the sample changer.

Moving to the initial position

on | off (Default value: **off**)

If this option is activated, the position defined here is moved to when initializing the device.

Tower

Selection of the tower on the sample changer for moving to the required position.

Only editable for **Move to initial position** = **on** and if the corresponding sample changer has 2 towers, otherwise inactive.

Selection	**1** | **2**
Default value	**1**

Destination

Selection of the target position which is to be moved to:

Only editable for **Move to initial position** = **on**, otherwise inactive.

Selection	**Rack position** | **Special beaker** | **Ext. position**
Default value	**Rack position**

Rack position
Predefined position on the rack. The lift is thereby lowered to the work position defined for that position.

Special beaker
Special position on the rack defined in the rack properties. The lift is thereby lowered to the work position defined for that position.

Ext. position
External position which is defined for the Swing Head mounted to the tower. The lift is thereby lowered to the work position defined for that position. This option is only available if a Swing Head is mounted to the tower.

Number

Specification of the number of the rack position, of the special beaker or of the external position.

Only editable for **Move to initial position** = **on**, otherwise inactive.

for Move = Rack position	
Input range	**1 - 999**
Default value	**1**

for Move = Special beaker	
Input range	**1 - 16**
Default value	**1**

for Move = External position	
Input range	**1 - 4**
Default value	**1**

7.6.2.5 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.6.2.6 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.6.2.7 Configuration Robotic arm

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Tower ▸ [Configuration] ▸ Robotic arm configuration**

In the dialog window **Robotic arm configuration**, the specific settings can be made for each robotic arm mounted on a swing head.

Swing offset

Swing angle offset for specific robotic arm model. This value must be set according to the leaflet supplied with the swing head.

Input range	**-270.0 - 270.0 °**
Default value	**0.0 °**

Max. swing range

Maximum usable swing range for specific robotic arm model. Each robotic arm model displays a different value on the basis of its construction. This value must be set according to the leaflet supplied with the swing head and can also be reduced as required.

Input range	**0.0 - 330.0 °**
Default value	**60.0 °**

Swing radius

The swing radius depends on the length of the robotic arm and, together with the axial distance, is the most important parameter for exact movement to a rack position. This value must be set according to the leaflet supplied with the swing head.

Input range	**30.0 - 300.0 mm**
Default value	**110.0 mm**

Rotation offset

Offset from the middle of the tower to the middle of the robotic arm. If a robotic arm must be mounted on the tower so that it is offset to one side, then this value can be determined by the service technician during rack adjustment.

Input range	**-270.0 - 270.0 °**
Default value	**0.0 °**

Swing direction

The swing direction of the robotic arm depends on the type of robotic arm.

Selection	**+ | –**
Default value	**+**

+

Clockwise rotation.

–

Counterclockwise rotation.

7.6.2.8 External position

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Tower ▸ [Edit] ▸ External position #**

In the dialog window **External position #** a **Swing angle** and a specific **Work position** can be defined for each external position. **Shift position** and **Rinse position** can only be defined for all 4 external positions together. No **Special position** can be defined for external positions.

Angle

Definition of the swing angle for the selected external position. The offset is made up of a design-dependent angle (approximately 8-9°) together with the robotic arm offset from the Robotic arm properties *(see Chapter 7.5.3.7, page 845)*. The maximum swing range is also defined under Robotic arm properties.

Input range	**(Offset) - (Offset + max. swing range) °**
Default value	**60.0 °**

Work position

Definition of the work position for the selected external position.

Input range	**0 - 235 mm**
Default value	**0 mm**

7.6.3 858 Professional Sample Processor - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **858 Professional Sample Processor**.

7.6.3.1 858 Professional Sample Processor - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **858 Professional Sample Processor** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.6.3.1.1 Start parameters - Rack

Tab: **Method ▸ Devices ▸ Rack**

Rack name

Name of the rack which must be initialized on the sample changer when the hardware is started **[Start HW]**. If no rack is initialized, the method is not carried out.

Selection	**not defined** | **Rack names from the rack table**
Default value	**not defined**

not defined
The method is always carried out.

Rack names from the rack table
If a rack is selected, the method is only carried out if it is initialized in the sample changer. There is no automatic check to ensure that the rack is in position and that it is the correct rack. In order to check this during the run, the command **Initialize** must be inserted in the time program for the module **Rack**.

7.6.3.1.2 Start parameter - Injection valve

Tab: **Method ▸ Devices ▸ Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.6.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.6.3.1.4 Start parameters - Peripherals Tower

Tab: **Method** ▸ **Devices** ▸ **Peripherals Tower**

Pump 1

Status

Selection	**on** | **off**
Default value	**off**

on
Pump 1 is switched on when the hardware is started with **[Start HW]**.

off
Pump 1 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 1 when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Pump 2

Status

Selection	**on** | **off**
Default value	**off**

on
Pump 2 is switched on when the hardware is started with **[Start HW]**.

off
Pump 2 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 2 when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Tower stirrer

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Status

Selection	**on** | **off**
Default value	**off**

on
The tower stirrer is switched on when the hardware is started with **[Start HW]**.

off
The tower stirrer is switched off when the hardware is started with **[Start HW]**.

Rate

Enter the stirring rate

Input range	**-15 - 15**
Default value	**8**

7.6.3.2 858 Professional Sample Processor - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 858 Professional Sample Processor:

7.6.3.2.1 Commands - Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands assigned to the tower of the sample changer:

7.6.3.2.1.1 Move (Rack)

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Move (Rack)**

The device-dependent time program command **Move (Rack)** (command with feedback) turns the rack until the desired position is reached with reference to the tower.

Target

Move

Selecting the target position on the rack:

Selection	**Sample position** | **Rack position** | **Special beaker** | **Relative angle**

Sample position
Position defined for the current determination in the Run window as parameter **Position**.

Rack position
Predefined position on the rack.

Special beaker
Special position on the rack defined in the rack properties.

Relative angle
Rotate the rack relative to the current position by the angle indicated. This can be used, for example, to remove vial caps automatically.

Number

Specification of the number of the rack position. This parameter is displayed only for **Move** = **Rack position** or **Move** = **Special beaker**. The number can also be defined with the aid of the formula editor ( ).

Input range	**1 - 999**
Default value	**1**

Move angle

Indication of relative rotation angle. This parameter is displayed only for **Move** = **Relative angle**.

Input range	**-359.90 - 359.90 °**
Default value	**5.00 °**

Beaker test

on | off (Default value: **off**)

If this option is switched on, a beaker test is carried out. In this case, the action to be carried out can be selected if the beaker sensor defined for the rack does not detect a beaker at the target position. If the robotic arm is selected as beaker sensor, then a Swing Head must be installed and a work position also defined in the rack data must be defined in such a way that contact exists between the beaker sensor and the beaker. This work position will be automatically moved to for beaker recognition after the command **Move**.

Selection	**Display message** | **Stop determination** | **Stop determination and series**

Display message
A message is displayed and the determination is stopped.

Stop determination
The determination is stopped and the next determination of the series is started.

Stop determination and series
Both the determination and the series are stopped.

Parameters

Shift rate

Selection of the rate at which the sample rack rotates.

Input range	**3 - 20 °/s**
Default value	**20 °/s**

Shift direction

Selection of the shift direction

Selection	**auto** | **+** | **-**
Default value	**auto**

auto
The shift direction with the smallest rotation angle is selected automatically.

+
Movement is in the direction of **ascending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

-
Movement is in the direction of **descending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

Swing rate

Selects the rate of the robotic arm when moving to a rack position or a special beaker (only with multiple row sample racks).

Input range	**10 - 55 °/s**
Default value	**55 °/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.1.2 Lift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Lift**

With the device-dependent time program command **Lift** (command with feedback), the lift on the tower of the sample changer moves to the desired position.

Target

Lift position

Entering the desired lift position in mm or select a lift position predefined for the rack. A lift height of **0 mm** corresponds to the Home position. Here the lift is moved to the uppermost stop.

Input range	**0.0 - 235.0 mm**

Selection	**Work position** | **Shift position** | **Rinse position** | **Special position** | **Home position**
Default value	**Work position**

Note

Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Parameters

Lift rate

Selection of the rate for moving the lift.

Input range	**3 - 25 mm/s**
Default value	**25 mm/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.1.3 Swing

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Swing**

The device-dependent time program command **Swing** (command with feedback) swings the robotic arm until the desired position is reached.

Target

Swing

Selecting the target position for the robotic arm.

Selection	**External position** | **Maximum angle** | **Relative angle**

External position
Swinging to one of the 4 external positions available for each tower. They are defined in the Tower properties of the Sample Processor.

Maximum angle
Swinging the robotic arm outwards to the maximum angle permitted in the robotic arm properties.

Relative angle
Swinging by the specified swing angle relative to the current position. This can be used, for example, to remove vial caps automatically.

Number

Indicates the number of the external position which is to be swung to. This parameter is displayed only for **Swing** = **External position**. The number can also be defined with the aid of the formula editor ( ).

Input range	**1 - 4 (dependent on target position)**
Default value	**1**

Swing angle

Angle by which the robotic arm is to be swung relative to the current position. This parameter is visible only for **Swing** = **Relative angle**.

Input range	**-180 - 180 °**
Default value	**10 °**

Parameters

Swing rate

Rate of the robotic arm when swinging to an external position or a particular angle.

Input range	**10 - 55 °/s**
Default value	**55 °/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.2 Commands - Rack

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the rack:

7.6.3.2.2.1 Initialize

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Initialize**

The device-independent time program command **Initialize** (command with feedback) initializes the rack positioned on the sample changer.

Rack test

on | off (Default value: **on**)

If this option is enabled, the rack attached will be checked.

Test rack

Select the rack to be positioned on the sample changer. The rack attached will be checked to ensure it is the one specified.

Selection	**Racks from the rack table**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.3 Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.6.3.2.3.1 Fill

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.3.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.3.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.6.3.2.4 Commands - Peristaltic pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peristaltic pump:

7.6.3.2.4.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.4.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.6.3.2.5 Commands - Peripherals Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peripheral devices assigned to the tower:

7.6.3.2.5.1 Pump # On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Pump # On/Off**

The device-dependent time program command **Pump # On/Off** (command without feedback) switches the respective pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.5.2 Tower stirrer On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Tower stirrer On/Off**

The device-dependent time program command **Tower stirrer On/Off** (command without feedback) switches the tower stirrer on/off and sets the value for the stirring rate.

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The command is ignored in the run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Stirrer

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the stirrer.

Input range	**-15 - 15 (without 0)**
Default value	**3**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.6.3.2.6 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.6.4 858 Professional Sample Processor - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.6.4.1 Manual Control - Tower

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **Tower**

Rack position

Current value

Shows the current rack position.

Input

Enter or select the rack position to be moved to.

Input range	**1 - n (depending on rack)**
Default value	**1**
Selection	**Special beaker 1 ... 16**

[Start]

Start moving to the specified position. After the start, the button changes to **[Stop]** and the two arrow keys become inactive (gray).

[Stop]

Stop moving to current rack immediately.

Move to current rack position -1.

Move to current rack position +1.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Input range	**0 - Max. stroke path mm**
Default value	**0 mm**
Selection	**Work position** | **Shift position** | **Rinse position** | **Special position** | **Home position**

[Start]

Move lift to the desired position.

[Stop]

Stop moving to lift position immediately.

The lift continues moving up as long as this button is pressed.

The lift continues moving down as long as this button is pressed.

Robotic arm position

Current value

Current position (angle) of the robotic arm on the tower.

Input

Enter or select the robotic arm position to be moved to.

Input range	**0.0 - 330.0 °**
Default value	**0.0 °**
Selection	**External 1** | **External 2** | **External 3** | **External 4**

[Start]

Move robotic arm to the desired position.

[Stop]

Immediately stop the action which was triggered with **[Start]**.

The robotic arm continues moving to the left as long as this button is pressed.

The robotic arm continues moving to the right long as this button is pressed.

[Configure rack]

Open dialog window **Rack configure 'Rack name'** *(see Chapter 7.5.5.4, page 859)*.

7.6.4.2 Manual Control - Rack

Tab: **Manual ▸ Manual Control - 'Device name' ▸ Rack**

[Initialize rack]

Initialize rack that is in position.

7.6.4.3 Manual Control - Injection valve

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.6.4.4 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.6.4.5 Manual Control - Peripheral devices

Tab: **Manual Control** ▸ **Manual Control - All Devices - 'Device name'** ▸ **Peripherals Tower**

Tower stirrer - Rate

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Current value

Current rate of the tower stirrer.

Input

Enter the rate of the tower stirrer.

Input range	**-15 - 15 (without 0)**
Default value	**Current value**

[Apply]

Send the set parameters to the stirrer.

[On]

Start the stirrer with the set parameters. This is inactive if the stirrer is running.

[Off]

Stop the stirrer. This is inactive if the stirrer is not running.

Pump 1

[On]

Start pump 1 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 1. This is inactive if the pump is not running.

Pump 2

[On]

Start pump 2 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 2. This is inactive if the pump is not running.

7.6.4.6 Configuring rack

Dialog window: **Manual ▸ Manual Control - All devices - 'Device name' ▸ Rack ▸ [Configure rack] ▸ Rack 'Rack name' configure**

Rack position

Current position

Shows the current rack position.

Special beaker

Select the special beaker to be assigned to the current rack position.

Input range	**1 - 16**

[Assign]

Assign current rack position to the selected special beaker.

Lift position

Current position

Shows the current lift position in mm.

Work position for

If this option is selected, the current lift position is assigned to the work position for the tower, for a special beaker or for an external position of the robotic arm.

Selection	**Tower** | **Special beaker 1...16** | **External 1...4**
Default value	**Tower**

Rinse position for

If this option is selected, the current lift position is assigned to the rinse position for the tower, or for the external positions of the robotic arm.

Selection	**Tower** | **External position**
Default value	**Tower**

Shift position for

If this option is selected, the current lift position is assigned to the shift position for the tower.

Selection	**Tower**

Special position for

If this option is selected, the current lift position is assigned to the special position for the tower.

Selection	**Tower**

Robotic arm position

If this option is selected, the current lift position is assigned to the swing position of the robotic arm.

Selection	**External position**

[Assign]

Assign the current lift position to the selected position.

Robotic arm position

Current position

Displays the current position of the robotic arm in °.

External position

Select the external position to which the current robotic arm position is to be assigned.

Selection	**External 1** | **External 2** | **External 3** | **External 4**

[Assign]

Assign the current robotic arm position to the selected external position.

7.7 863 Compact Autosampler

Compact sample changer with fixed sample rack for simple automation tasks.

7.7.1 863 Compact Autosampler - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a type **863 Compact Autosampler** device is selected in the device table, the menu item **[Edit] ▶ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.7.1.1 Properties - General

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.7.1.2 Properties - Tower

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Tower**

Here the tower properties are displayed.

Tower parameters

Max. stroke path

Input of the lowest permitted lift position. A lift height of **0 mm** corresponds to the home position, i.e. the lift is moved right to the top.

Input range	**0 - 120 mm**
Default value	**120 mm**

Work position

Work position for the tower.

Input range	**0 - Maximum stroke path mm**
Default value	**0 mm**

7.7.1.3 Properties - Rack

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Rack**

Here the sample rack-specific data is displayed.

Number of positions

Shows the number of positions on the rack.

7.7.1.4 Properties - Initial position

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Initial position**

On tab **Initial position**, a position can be defined which is automatically moved to when initializing the sample changer.

Moving to the initial position

on | off (Default value: **off**)

If this option is activated, the position defined here is moved to when initializing the device.

Tower

Selection of the tower on the sample changer for moving to the required position.

Only editable for **Move to initial position** = **on** and if the corresponding sample changer has 2 towers, otherwise inactive.

Selection	**1** | **2**
Default value	**1**

Destination

Selection of the target position which is to be moved to:

Only editable for **Move to initial position** = **on**, otherwise inactive.

Selection	**Rack position** | **Special beaker** | **Ext. position**
Default value	**Rack position**

Rack position
Predefined position on the rack. The lift is thereby lowered to the work position defined for that position.

Special beaker
Special position on the rack defined in the rack properties. The lift is thereby lowered to the work position defined for that position.

Ext. position
External position which is defined for the Swing Head mounted to the tower. The lift is thereby lowered to the work position defined for that position. This option is only available if a Swing Head is mounted to the tower.

Number

Specification of the number of the rack position, of the special beaker or of the external position.

Only editable for **Move to initial position** = **on**, otherwise inactive.

for Move = Rack position

Input range	**1 - 999**
Default value	**1**

for Move = Special beaker

Input range	**1 - 16**
Default value	**1**

for Move = External position

Input range	**1 - 4**
Default value	**1**

7.7.1.5 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.7.2 863 Compact Autosampler - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the 863 Compact Autosampler.

7.7.2.1 863 Compact Autosampler - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **863 Compact Autosampler** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.7.2.1.1 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.7.2.2 863 Compact Autosampler - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 863 Compact Autosampler:

7.7.2.2.1 Commands - Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the tower of the sample changer:

7.7.2.2.1.1 Move (Rack)

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Move**

The device-dependent time program command **Move** (command with feedback) turns the rack until the desired position is reached on the sample changer.

Purpose

Rotate

Selecting the target position on the rack:

Selection	**Sample position** | **Rack position**
Default value	**Sample position**

Sample position
Position defined for the current determination in the Run window as the parameter **Position**.

Rack position
Predefined position on the rack.

Number

Specification of the number of the rack position. This parameter is only visible for **Move** = **Rack position** or **Move** = **Special beaker**.

Input range	**1 - 36**
Default value	**1**

Parameters

Shift direction

Selection of the shift direction.

Selection	**auto** | **+** | **-**
Default value	**auto**

auto
The shift direction with the smaller rotation angle is selected automatically.

+
It turns counterclockwise.

-
It turns clockwise.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.7.2.2.1.2 Lift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Lift**

With the device-dependent time program command **Lift** (command with feedback), the lift on the tower of the sample changer moves to the desired position.

Purpose

Lift position

Entering the desired lift position in mm or selecting a lift position predefined for the rack. A lift height of **0 mm** corresponds to the Home position. Here the lift is moved to the uppermost stop.

Input range	**0.0 - 126.0 mm**
Selection	**Work position** | **Shift position**
Default value	**Work position**

Note

Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.7.2.2.2 Commands - Peristaltic pump

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.7.2.2.2.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.7.2.2.2.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.7.2.2.3 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.7.3 863 Compact Autosampler - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.7.3.1 Manual control - Tower

Tab: **Manual** ▸ **Manual control - 'Device name'** ▸ **Tower**

Rack position

Current value

Shows the current rack position.

Input

Enter or select the rack position to be moved to.

Input range	**1 - 36**
Default value	**1**

[Start]

Start moving to the specified position. After the start, the button changes to **[Stop]** and the two arrow keys become inactive (gray).

[Stop]

Stop moving to current rack immediately.

Move to current rack position -1.

Move to current rack position +1.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Input range	**0 - Max. stroke path mm**
Default value	**0 mm**
Selection	**Work position** | **Shift position**

[Start]

Move lift to the desired position.

The lift continues moving up as long as this button is pressed.

The lift continues moving down as long as this button is pressed.

7.7.3.2 Manual control - Peristaltic pump

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.8 889 IC Sample Center

7.8.1 889 IC Sample Center - Overview

Note

The **889 IC Sample Center** device is available in two versions which differ in the combination of integrated modules. This sample changer is described with all modules in the online help.

The following versions are available for different fields of application:

- **2.889.0010 IC Sample Center**
  IC Autosampler for small sample volumes.
- **2.889.0020 889 IC Sample Center - cool**
  IC Autosampler for small sample volumes, with sample cooling.

7.8.2 889 IC Sample Center - Configuration

If a device of type **889 IC Sample Center** is selected in the device table, then the menu item **[Edit] ▸ Properties...** opens the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.8.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.8.2.2 Properties - Syringe

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Syringe**

Syringe volume

Display of the volume of the syringe in µL.

Buffer loop volume

Volume of the buffer loop in µL.

Input range	**1 - 50000 µL**
Default value	**1000 µL**

7.8.2.3 Properties - Needle

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Needle**

Volume Needle to Valve

Whole volume, from the needle tip to the injection valve, in µL.

Note

The needle is supplied together with the necessary capillary. The capillary is labeled with the volume in µL; put this value in here.

Input range	**1 - 999 µL**
Default value	**15 µL**

7.8.2.4 Properties - Injector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Injector**

Sample loop volume

Volume of the sample loop of the injection valve, in µL.

Input range	**1 - 5000 µL** (Increment: **1**)
Default value	**100 µL**

7.8.2.5 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.8.3 889 IC Sample Center - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the **889 IC Sample Center**.

If you assign the 889 IC Sample Center to a list of devices of a method *Adding a device from the device table, see p. 381*, it will be recognized *automatically* whether it is the model version with or without cooling.

If you assign the 889 IC Sample Center to a list of devices of a method with *Adding a new device, see p. 382*, you will have to *explicitly indicate* whether the model version with or without cooling is to be added.

7.8.3.1 889 IC Sample Center - Start parameters

Subwindow: **Method** ▸ **Devices**

If you click on the symbol for the **889 IC Sample Center** in the top part of the window, then the tabs of the modules in the device appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.8.3.1.1 Start parameters - Rack

Tab: **Method** ▸ **Devices** ▸ **Rack**

Type

Selection of an **ANSI/SBS 1-4 / 2004 Microplates**-compatible rack type. On both rack holders the same rack types have to be used. Default value is the 6.2041.200 Metrohm vial holder for 48 vials.

Selection	**12 vials** | **48 vials** | **96 low** | **96 high** | **384 low**
Default value	**48 vials**

12 vials
Holder for 12 Vials

48 vials
Holder for 48 Vials

96 low
Micro titer plate low, with 96 cavities

96 high
Micro titer plate high, with 96 cavities

384 low
Micro titer plate low, with 384 cavities

Needle height

Vertical distance of the needle tip from the bottom of the vial (with a vial holder) or the cavity (with a micro titer plate).

Input range	**2.0 - 6.0 mm** (Increment: **0.5**)
Default value	**6.0 mm**

7.8.3.1.2 Start parameters - Injector

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

7.8.3.1.3 Start parameters - Cooling

Tab: **Method** ▸ **Devices** ▸ **Cooling**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The cooling is switched on when the hardware is started with **[Start HW]**.

Off
The cooling is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the cooling when the hardware is started with **[Start HW]**.

Input range	**4 - 22 °C**
Default value	**20 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

7.8.3.1.4 Start parameters - Compressor

Tab: **Method** ▸ **Devices** ▸ **Compressor**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The compressor is switched on when the hardware is started with **[Start HW]**.

Off
The compressor is switched off when the hardware is started with **[Start HW]**.

Note

The compressor can also be switched on or off with an option in the 3 time program commands *Full Loop Injection, p. 918*, *Partial Loop Injection, p. 919* and *Pickup Injection, p. 921*.

7.8.3.2 889 IC Sample Center - Data channels

Tab: **Method** ▸ **Devices** ▸ **Hardware assignment**

Note

This data channel is only available with the model version **2.889.0020 IC Sample Center - cool**.

Property	Label of Y axis	Unit	Evaluation
Temperature	Temperature	°C	No

7.8.3.3 889 IC Sample Center - Commands

Subwindow: **Method** ▸ **Devices**

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the 889 Sample Center:

7.8.3.3.1 Commands - Rack

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the rack:

7.8.3.3.1.1 Moving to a position

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Move to position**

The device-dependent time program command **Move to position** (command with feedback) of the 889 IC Sample Center, the rack can be positioned in the way that the needle is located above a sample position. Additionally the rack can be moved forward in order to remove it.

Purpose

Position

Selecting the kind of target position.

Selection	**Sample position** | **Rack position** | **Exchange position**
Default value	**Sample position**

Sample position
Position, defined as value of the parameter **Position** in the sample data of the single determination (or of the determination series).

Rack position
Predefined position on the corresponding rack. The position is defined in the parameter **Number**.

Exchange position
Position which permits the rack to be exchanged.

Number

If in the parameter **Position** the value **Rack position** is selected, an actual rack position can be indicated here. Note the label of the rack with letters and numbers. To distinguish between the left and the right rack, there is a preceding L or R, respectively.

Note

The following examples show how to define rack positions. Hold the 6.2041.200 standard rack (48 vials) the way the A1 coordinate is at the bottom left. In this orientation the rack has 6 columns (A...F) and 8 rows (1...8). In order to indicate the position A1 on the *left* rack, enter the value **LA1** in **Number**. In order to indicate the position in the 3rd column and 7th row on the *right* rack, enter the value **RC7** in **Number**.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command **Move to position** generates the command variable **TP.'Command number'.PRO**.

Designation	Description	Data type
RPO	Rack position after command execution. **0** = not defined.	Text

7.8.3.3.2 Commands - Needle

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the needle:

7.8.3.3.2.1 Move

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Move**

With the device-dependent time program command **Move** (command with feedback) of the 889 IC Sample Center, vertical and horizontal movements of the needle can be carried out.

Note

Use the time program command **Move to position** of the rack in order to position the rack in the way that the needle is located above the rack position required.

Purpose

Position

Selection of the horizontal or vertical position the needle is to be moved to.

Selection	**top** | **bottom** | **Wash position** | **Waste position**

top
Vertical movement of the needle to the top.

bottom
Vertical movement of the needle to the bottom. If the needle is located above a rack position, it will be moved to the bottom so far that the distance between the needle tip and the bottom of the vial specified in the parameter **Needle height** is reached.

Wash position
Movement of the needle to the wash position and to the bottom.

Waste position
Movement of the needle to the waste position and to the bottom.

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. Only available if the parameter **Position** has the value **bottom**. The default value is the needle height defined in the start parameters of the rack *(see Chapter 7.8.3.1.1, page 907)*.

Input range	**2.0 - 6.0 mm** (Increment: **0.5**)

Vial test

Vial test

on | off (Default value: **off**)

Only available if the value **bottom** is selected for **Position**. Selection whether the needle is to be checked for the availability of a vial and what happens, if there is no vial.

Selection	**Display message** | **Cancel determination** | **Cancel determination and series**

Display message
The determination is stopped and an error message is displayed.

Cancel determination
The determination is canceled and the next determination of the series is started.

Cancel determination and series
Both the determination and the series will be canceled.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.3 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.8.3.3.3.1 Filling

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command with feedback) switches the injection valve to **Fill** position.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.3.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command with feedback) switches the injection valve to **Inject** position.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.4 Commands - Syringe

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the syringe:

7.8.3.3.4.1 Fill

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Fill**

With the device-dependent time program command **Fill** (command with feedback) of the 889 IC Sample Center the syringe is completely filled.

Port

Selection of the syringe valve port the syringe is filled at.

Selection	**Needle** | **Wash** | **Waste**
Default value	**Wash**

Needle
Port to the needle.

Wash
Port to the wash container.

Waste
Port to the waste container.

Rate

Selection of the speed level at which the syringe plunger is to be moved. Has an effect only if the value **Needle** is selected for **Port**.

Selection	**fast** | **normal** | **slow**
Default value	**normal**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.4.2 Eject

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Eject**

With the device-dependent time program command **Eject** (command with feedback) of the 889 IC Sample Center the syringe is emptied.

Port

Selection of the syringe valve port the current syringe volume is to be ejected at.

Selection	**Needle** | **Wash** | **Waste**
Default value	**Waste**

Needle
Port to the needle.

Wash
Port to the wash container.

Waste
Port to the waste container.

Rate

Selection of the speed level at which the syringe plunger is to be moved. Has an effect only if the value **Needle** is selected for **Port**.

Selection	**fast** | **normal** | **slow**
Default value	**normal**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.4.3 Aspirate

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Aspirate**

With the device-dependent time program command **Aspirate** (command with feedback) of the 889 IC Sample Center the syringe aspirates a certain volume. The maximum volume that can be aspirated depends on the current position of the syringe plunger.

Port

Selection of the syringe valve port through which the **Volume** is to be aspirated.

Selection	**Needle** | **Wash** | **Waste**
Default value	**Needle**

Needle
Port to the needle.

Wash
Port to the wash container.

Waste
Port to the waste container.

Volume

Volume to be aspirated in µL. Can also be described as formula. If a volume is indicated that cannot be aspirated because of the current position of the syringe plunger, an error message is displayed.

Input range	**1 - 500 µL** (Increment: **1**)

Rate

Selection of the speed level at which the syringe plunger is to be moved. Has an effect only if the value **Needle** is selected for **Port**.

Selection	**fast** | **normal** | **slow**
Default value	**normal**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command **Aspirate** generates the command variable **TP.'Command number'.AVOL** with the volume actually aspirated.

Designation	Description	Data type
AVOL	Aspirated volume [µL].	Number

7.8.3.3.4.4 Dispense

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Dispense**

With the device-dependent time program command **Dispense** (command with feedback) of the 889 IC Sample Center the syringe dispenses a certain volume. The maximum volume that can be dispensed depends on the current position of the syringe plunger.

Port

Selection of the syringe valve port the **Volume** is to be ejected at.

Selection	**Needle** | **Wash** | **Waste**
Default value	**Needle**

Needle
Port to the needle.

Wash
Port to the wash container.

Waste
Port to the waste container.

Volume

Volume to be ejected in µL. Can also be described as formula. If a volume is indicated that cannot be dispensed because of the current position of the syringe plunger, an error message is displayed.

Input range	**1 - 500 µL** (Increment: **1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command **Aspirate** generates the command variable **TP.'Command number'.DVOL** with the volume actually dispensed.

Designation	Description	Data type
DVOL	Dispensed volume [µL].	Number

7.8.3.3.4.5 Changing the port

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Change port**

With the device-dependent time program command **Change port** (command with feedback) of the 889 IC Sample Center, the syringe valve can be switched to a different port.

Port

Selection of the syringe valve port to be switched to.

Selection	**Needle** | **Wash** | **Waste**
Default value	**Needle**

Needle
Port to the needle.

Wash
Port to the wash container.

Waste
Port to the waste container.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.5 Commands - Cooling

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the cooling:

7.8.3.3.5.1 Measure temperature

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure temperature**

With the device-dependent time program command **Measure temperature** (command with feedback) of the 889 IC Sample Center, the actual temperature in the sample compartment is measured.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command **Measure temperature** generates the command variable **TP.'Command number'.TEMP**.

Designation	Description	Data type
TEMP	Measured temperature [°C]	Number

7.8.3.3.6 Commands - Compressor

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the compressor:

7.8.3.3.6.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

With the device-dependent time program command **On/Off** (command with feedback) of the 889 IC Sample Center, the compressor can be switched on or off.

Compressor

Selection	**On** | **Off**
Default value	**On**

On
Switches the compressor on.

Off
Switches the compressor off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.7 Commands - General

Subwindow: **Method ▸ Time program**

Overview of further time program commands made available by the 889 Sample Center:

7.8.3.3.7.1 Full Loop Injection

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - General - Full Loop Injection**

With the device-dependent time program command **Full loop injection** (command with feedback), an automatic injection sequence is carried out by the 889 IC Sample Center. The sample loop is **completely** filled thereby.

Rinsing volume

Enter the volume to be used for rinsing.

Input range	**0 - 9999 µL** (Increment: **1**)
Default value	**30 µL**

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. The default value is the needle height defined in the start parameters of the rack *(see Chapter 7.8.3.1.1, page 907)*.

Input range	**2.0 - 6.0 mm** (Increment: **0.5**)

Syringe rate

Selection of the rate level the plunger of the syringe is to be moved at.

Selection	**fast** | **normal** | **slow**
Default value	**normal**

Air segment

on | off (Default value: **off**)

Selection whether the sample is separated by an air segment.

Headspace pressure

on | off (Default value: **off**)

Selection whether pressure is to be applied to the liquid level in the vial while aspirating sample. This option is only useful when vials with septa are used.

Wash after injection

on | off (Default value: **off**)

Selection whether the washing procedure of the injection sequence is to be carried out after the injection.

Vial test

Selection of what is to happen if no vial is present when moving the needle downwards.

Selection	**Display message** | **Stop determination** | **Stop determination and series**

Display message
The determination is stopped and an error message is displayed.

Stop determination
The determination is stopped and the next determination of the series is started.

Stop determination and series
Both the determination and the series are stopped.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.7.2 Partial Loop Injection

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - General - Partial Loop Injection**

With the device-dependent time program command **Partial loop injection** (command with feedback), an automatic injection sequence is carried out by the 889 IC Sample Center. The sample loop is thereby filled **to 50% maximum**.

Injection volume

Definition of the volume to be injected. The volume can be applied from the sample data. You can alternatively define it manually our by a formula.

Selection	**From sample data** | **(empty)**
Default value	**From sample data**

If the empty entry has been selected, the injection volume must be defined manually or by a formula.

Input range	**1 - 500 µL** (Increment: **1**)
Default value	**10 µL**

Rinsing volume

Enter the volume to be used for rinsing.

Input range	**0 - 9999 µL** (Increment: **1**)
Default value	**30 µL**

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. The default value is the needle height defined in the start parameters of the rack *(see Chapter 7.8.3.1.1, page 907)*.

Input range	**2.0 - 6.0 mm** (Increment: **0.5**)

Syringe rate

Selection of the rate level the plunger of the syringe is to be moved at.

Selection	**fast** | **normal** | **slow**
Default value	**normal**

Air segment

on | off (Default value: **off**)

Selection whether the sample is separated by an air segment.

Headspace pressure

on | off (Default value: **off**)

Selection whether pressure is to be applied to the liquid level in the vial while aspirating sample. This option is only useful when vials with septa are used.

Wash after injection

on | off (Default value: **off**)

Selection whether the washing procedure of the injection sequence is to be carried out after the injection.

Vial test

Selection of what is to happen if no vial is present when moving the needle downwards.

Selection	**Display message** | **Stop determination** | **Stop determination and series**

Display message
The determination is stopped and an error message is displayed.

Stop determination
The determination is stopped and the next determination of the series is started.

Stop determination and series
Both the determination and the series are stopped.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.7.3 Pickup Injection

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - General - Pickup Injection**

With the device-dependent time program command **Pickup injection** (command with feedback), an automatic injection sequence is carried out by the 889 IC Sample Center. The sample volume is thereby filled **partially** (to a maximum of **0.5 * (volume of the sample loop - 3 * volume of the needle)**).

Injection volume

Definition of the volume to be injected. The volume can be applied from the sample data. You can alternatively define it manually our by a formula.

Selection	**From sample data** | **(empty)**
Default value	**From sample data**

If the empty entry has been selected, the injection volume must be defined manually or by a formula.

Input range	**1 - 500 µL** (Increment: **1**)
Default value	**10 µL**

Transport volume

Definition of the transport volume in units of the syringe volume.

Input range	**1 - 9** (Increment: **1**)
Default value	**1**

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. The default value is the needle height defined in the start parameters of the rack *(see Chapter 7.8.3.1.1, page 907)*.

Input range	**2.0 - 6.0 mm** (Increment: **0.5**)

Syringe rate

Selection of the rate level the plunger of the syringe is to be moved at.

Selection	**fast** | **normal** | **slow**
Default value	**normal**

Air segment

on | off (Default value: **off**)

Selection whether the sample is separated by an air segment.

Headspace pressure

on | off (Default value: **off**)

Selection whether pressure is to be applied to the liquid level in the vial while aspirating sample. This option is only useful when vials with septa are used.

Wash after injection

on | off (Default value: **off**)

Selection whether the washing procedure of the injection sequence is to be carried out after the injection.

Vial test

Selection of what is to happen if no vial is present when moving the needle downwards.

Selection	**Display message** | **Stop determination** | **Stop determination and series**

Display message
The determination is stopped and an error message is displayed.

Stop determination
The determination is stopped and the next determination of the series is started.

Stop determination and series
Both the determination and the series are stopped.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.7.4 Wait for injection

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - General - Wait for injection**

With the device-dependent time program command **Wait for injection** (command with feedback) of the 889 IC Sample Center, MagIC Net it waits until the injection valve of the 889 IC Sample Center switches to **INJECT**.

Max. waiting time

on | off (Default value: **off**)

If this option is activated, the time program is continued as soon as either the requested status has been read or the waiting time has expired.

Time

Enter the maximum waiting time.

Input range	**0 - 9999** (Increment: **1**)
Default value	**10**

Unit

Selection of the unit for the max. waiting time.

Selection	**s** | **min**
Default value	**min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.7.5 Wash

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - General - Wash**

With the device-dependent time program command **Wash** (command with feedback) of the 889 IC Sample Center, the standard washing procedure is carried out.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.8.3.3.7.6 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.8.4 889 IC Sample Center - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.8.4.1 Manual control - Rack

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **Rack**

Type

Current value

Display of the rack type currently set.

Input

Selection of a (different) rack type. Analogous to the parameter **Type** in the start parameters of the rack *(see Chapter 7.8.3.1.1, page 907)*.

Selection	**12 vials** | **48 vials** | **96 low** | **96 high** | **384 low**
Default value	**48 vials**

12 vials
Holder for 12 Vials

48 vials
Holder for 48 Vials

96 low
Micro titer plate low, with 96 cavities

96 high
Micro titer plate high, with 96 cavities

384 low
Micro titer plate low, with 384 cavities

[Apply]

By this function, the rack type selected in the parameter **Input** is set.

Position

Current value

Display of the current position of the rack. If the position is undefined, **-----** is displayed.

Input

Select or enter a (different) rack position.

Selection	**(empty)** | **Exchange position**

(empty)
If the empty entry is selected, manually entering a rack position is expected *(see page 910)*. The moving to the position is triggered with **[Start]**.

Exchange position
When selecting this value the rack is moved with **[Start]** to the exchange position (front position) in which the rack can be removed.

[Start]

By this function, the position selected in the parameter **Position (Input)** is moved to. The moving cannot be stopped.

7.8.4.2 Manual control - Needle

Tab: **Manual control** ▶ **Manual control - All devices - 'Device name'** ▶ **Needle**

Position

Current value

Display of the current needle position.

Input

Selection of a (different) needle position.

Selection	**top** | **bottom** | **Wash position** | **Waste position** | **Exchange position**

top
Vertical movement of the needle to the top.

bottom
Vertical movement of the needle to the bottom. If the needle is located above a rack position, it will be moved to the bottom so far that the distance between the needle tip and the bottom of the vial specified in the parameter **Needle height** is reached.

Wash position
Horizontal movement of the needle to the wash position.

Waste position
Horizontal movement of the needle to the waste position.

Exchange position
Movement of the needle to the exchange position.

Needle height

Current value

Display of the current value of the needle height.

Input

Input of a (different) needle height.

Input range	**2.0 - 6.0 mm** (Increment: **0.5**)
Default value	**6.0 mm**

[Start]

By this function, the selected position in the parameter **Input** is moved to.

7.8.4.3 Manual control - Injector

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **Injector**

[Inject]

By this function, the valve is switched to the position **Inject**.

[Fill]

By this function, the valve is switched to the position **Fill**.

7.8.4.4 Manual control - Syringe

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **Syringe**

Command

Selection of the required action of the syringe.

Selection	**Fill** | **Eject** | **Aspirate** | **Dispense**
Default value	**Fill**

Volume

Input

If the **Command Aspirate** or **Dispense** has been selected, the volume in µL has to be entered here.

Port

Current value

Display of the current position of the syringe valve.

Input

Selection of a (different) position of the syringe valve.

Selection	**Needle** | **Wash** | **Waste**
Default value	**Needle**

Needle
Port to the needle.

Wash
Port to the wash container.

Waste
Port to the waste container.

Rate

Input

Selection of the syringe speed when carrying out the selected **Command**.

Note

The effect of the selected speed depends on the **Command** and on the **Port**, as is described with the corresponding Time program commands.

[Start]

Starts the required action.

7.8.4.5 Manual control - Cooling

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **Cooling**

Temperature

Current value

Display of the current temperature in the sample compartment.

Input

Input of a (different) cooling temperature.

Input range	**4 - 22 °C** (Increment: **1**)
Default value	**20 °C**

[On]

Switch on cooling.

[Off]

Switch off cooling.

[Apply]

By this function, the value in **Input** is written to the device as new cooling temperature.

7.8.4.6 Manual control - Compressor

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ Compressor**

[On]

Switch on compressor.

[Off]

Switch off compressor.

7.8.4.7 Manual control - General

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ General**

Wash

With the corresponding button **[Start]** the standard washing procedure is started. During the washing the label of the button changes to **[Stop]**.

[Start]

Starts the washing procedure.

[Stop]

Stops the washing procedure.

Reset device

With the corresponding button **[Start]** the device is reset. With this function the device can be reset from an error status to the ready status.

7.8.5 889 IC Sample Center - Troubleshooting

If MagIC Net reports a problem during working with the 889 IC Sample Center, information on causes and possibilities for troubleshooting can be found in the following error list.

7.8.5.1 Error list

7.8.5.1.1 Rack unit

Problem	Cause	Remedy
Error 294	*The Home sensor of the rack holder has not been activated.*	1. Switch off sample changer. 2. Slide the rack holder carefully back and forth and remove possible obstacles. 3. If possible, slide the rack holder backwards right to the stop. 4. Switch on sample changer. If the error occurs again, please call the Metrohm Service.

Problem	Cause	Remedy
Error 295	*The current position of the rack holder deviates more than 2 mm from the Home position.*	1. Switch off sample changer. 2. Slide the rack holder carefully back and forth and remove possible obstacles. 3. If possible, slide the rack holder backwards right to the stop. 4. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 296	*The Home sensor has not been deactivated.*	▪ If in one of the following steps the rack holder has to be moved: first switch off the sample changer. ▪ Ensure that the transport safeguard (foam material) has been removed from the sample chamber. ▪ Remove other possible obstacles in the area of the rack holder. If the error occurs again, please call the Metrohm Service.
Error 297	*The Home sensor of the rack holder has unexpectedly been activated.*	Call the Metrohm Service.
Error 298	*The rack is located in an undefined position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.

7.8.5.1.2 Needle unit

Problem	Cause	Remedy
Error 303	*The needle is located in an undefined horizontal position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 304	*The Home sensor for the horizontal movement of the needle has not been activated.*	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.

Problem	Cause	Remedy
Error 306	*The Home sensor for the horizontal movement of the needle has not been deactivated.*	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 307	*The Home sensor for the horizontal movement of the needle has unexpectedly been activated.*	Call the Metrohm Service.
Error 308	*In order to reach the horizontal Home position of the needle, the expected number of steps has not been carried out.*	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 312	*The needle is located in an undefined vertical position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 313	*The Home sensor for the vertical movement of the needle has not been activated.*	1. Check whether the vertical movement of the needle unit is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 315	*The Home sensor for the vertical movement of the needle has not been deactivated.*	1. Check whether the vertical movement of the needle unit is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 316	*The Home sensor for the vertical movement of the needle has been unexpectedly activated.*	Call the Metrohm Service.
Error 317	*When moving the needle unit vertically the needle deflector has not recognized a rack, nor a wash or waste position.*	If the error has occurred during moving to a rack position: ensure that there is a rack with vials or a micro titer plate on the rack holder.

Problem	Cause	Remedy
		If the error occurs again, please call the Metrohm Service.
Error 318	*When moving the needle unit vertically the needle deflector is blocked.*	1. Check whether the movement of the needle deflector is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 319	*The sample needle arm is located in an undefined vertical position.*	Call the Metrohm Service.

7.8.5.1.3 Syringe unit

Problem	Cause	Remedy
Error 324	*The syringe valve has not reached the required port.*	Call the Metrohm Service.
Error 330	*The Home sensor of the syringe has not been activated.*	1. Check whether the flow path is kinked or blocked in on one or more places. 2. If possible, free the flow path of blockages. If the error occurs again, please call the Metrohm Service.
Error 331	*The Home sensor of the syringe has unexpectedly been activated.*	Call the Metrohm Service.
Error 332	*The required load volume of the syringe is too high.*	The permitted load volume is limited by the maximum syringe volume. The load volume currently possible depends additionally on the current position of the syringe plunger. ▪ Ensure that the required load volume of the syringe is lower or the same as the maximum syringe volume. ▪ Check whether the required load volume can be reached from the current position of the syringe piston. ▪ Before loading the syringe eject enough volume first or enter a lower load volume.
Error 333	*The required unload volume of the syringe is too high.*	The permitted unload volume is limited by the maximum syringe volume. The unload volume

Problem	Cause	Remedy
		currently possible depends additionally on the current position of the syringe plunger. ▪ Ensure that the required unload volume of the syringe is lower or the same as the maximum syringe volume. ▪ Check whether the required unload volume is possible assuming the current position of the syringe piston. ▪ Before unloading the syringe aspirate enough volume first or enter a lower unload volume.
Error 334	*The syringe plunger is located in an undefined position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 335	*The spindle of the syringe cannot be rotated correctly.*	1. Check whether the flow path is kinked or blocked in on one or more places. 2. If possible, free the flow path of blockages. If the error occurs again, please call the Metrohm Service.

7.8.5.1.4 Injection valve unit

Problem	Cause	Remedy
Error 340	*The injection valve has not reached the required port.*	Call the Metrohm Service.
Error 341	*The consumption warning limit of the injection valve has been reached.*	Call the Metrohm Service.
Error 342	*The sensor of the injection valve has provided an unexpected value.*	Call the Metrohm Service.

7.8.5.1.5 Cooling unit

Problem	Cause	Remedy
Error 347	*When switching on the cooling a temperature of over 48 °C has been measured.*	Have a look at the technical specifications in the device manual of the sample changer and ensure that the range of the operating temperature has not been exceeded.

7.8.5.1.6 Electronics

Problem	Cause	Remedy
Error 280, 282, 283, 284	*An electronic error has occurred in the EEPROM.*	1. Switch off sample changer. 2. Wait a few seconds. 3. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 290	*When initializing the sample changer at least one critical malfunction has been found. No injections can be carried out.*	1. Exit MagIC Net. 2. Switch off sample changer. 3. Ensure that the cable between the sample changer and the PC is connected correctly. 4. Switch on sample changer. 5. Start MagIC Net. If the error occurs again, please call the Metrohm Service.

7.9 919 IC Autosampler plus

7.9.1 919 IC Autosampler plus - Overview

Note

The device **919 IC Autosampler plus** is available in 1 model version:

- **2.919.0020 919 IC Autosampler plus**
  Sample changer for ion chromatography, one removable rack for more than 50 samples with a vessel volume of up to 11 mL.

7.9.2 919 IC Autosampler plus - Configuration

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'**

If a type **919 IC Autosampler plus** device is selected in the device table, the menu item **[Edit]** ▸ **Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

The device can be initialized if necessary by means of the **[Initialize]** menu item in the device table *Device table - Desktop*.

7.9.2.1 Properties - General

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.9.2.2 Properties - Tower

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Tower**

Note

With the 858 Professional Sample Processor and the 919 IC Autosampler plus, the properties of the tower, including the Swing Head attached to it, are displayed on the tab **Tower**. In the case of the 814 USB Sample Processor and the 815 Robotic USB Sample Processor XL, the device versions with 1 tower have 1 tab **Tower 1**; device versions with 2 towers have 2 tabs **Tower 1** and **Tower 2**.

Tower parameters

Max. stroke path

Input of the lowest permitted lift position. A lift height of **0 mm** corresponds to the "Home position", i.e. the lift is moved right to the top.

Input range	**0 - 235 mm**
Default value	**235 mm**

Min. beaker radius

Definition of the minimum radius which the beakers used on the rack must have. If the lift is moved to the work position, the beaker radii defined in **Rack table***(see Chapter 6.10.2.1, page 597)* for general **Sample positions***(see Chapter 6.10.3.2, page 600)* and **Special beakers***(see Chapter 6.10.3.4, page 602)* will be compared with the **Min. beaker radius**. If this minimum beaker radius is is not reached, then the run will

be stopped and an error message will appear. No check will be made if **off** is enabled.

Selection	**1.0 … 100.0 mm** | **off**
Default value	**off**

Lift rate

Lift rate for manual operation of the tower.

Input range	**3 - 25 mm/s**
Default value	**25 mm/s**

Axial distance

Distance between the axis of rotation of the sample rack and swing axis of the robotic arm.

Input range	**100.0 - 300.0 mm**

814 USB Sample Processor

Selection	**166.0 mm**
Default value	**166.0 mm**

815 Robotic USB Sample Processor XL

Selection	**196.0 mm**
Default value	**196.0 mm**

858 Professional Sample Processor

Selection	**166.0 mm**
Default value	**166.0 mm**

919 IC Autosampler plus

Selection	**196.0 mm**
Default value	**196.0 mm**

Swing Head

This parameter is only shown when a swing head is mounted on the tower.

Serial number

Shows the serial number of the swing head.

Swing position

Lift position valid for all 4 external positions, at which the swing head turns to the external positions.

Input range	**0 - 235 mm**
Default value	**0 mm**

Rinse position

Rinse position valid for all 4 external positions.

Input range	**0 - 235 mm**
Default value	**0 mm**

[Configuration]

Open the dialog window **Robotic arm configuration** *(see Chapter 7.5.3.7, page 845)*, in which the properties of the robotic arm can be edited.

Table for external positions

The properties for the 4 possible external positions for the swing head mounted on the tower are shown in the table. The table cannot be edited directly.

External position

Number of the external position.

Angle [°]

Swing angle for external position.

Work position [mm]

Work position for external position.

[Edit]

Opens the dialog window **External position #** *(see Chapter 7.5.3.8, page 846)* in which the parameters for the external position selected from the table can be edited.

7.9.2.3 Properties - Rack

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Rack**

On the tab **Rack** the specific data of the attached rack are shown.

Rack name

Shows the name of the rack attached. If no rack is in position then "**-----**" is shown.

Rack code

Shows the rack code of the rack attached. The rack code corresponds to the arrangement of magnets on the base of the rack and is read in by the sample changer in order to recognize the rack. If no rack is in position, then the display will be empty.

Number of positions

Shows the number of positions on the rack. If no rack is in position then the display will be empty.

Shift rate

Sample rack shift rate for manual operation.

Input range	**3 - 20 °/s**
Default value	**20 °/s**

[Rack data]

Opens the dialog window **Rack data** *(see Chapter 6.10.3.1, page 599)*, in which the data of the mounted rack is displayed and is available for editing.

[Initialize rack]

Initializes the attached rack. This resets the rack, the lift and the robotic arm, reads out the rack code and transfers the corresponding rack data to the sample changer.

7.9.2.4 Properties - Initial position

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Initial position**

On tab **Initial position**, a position can be defined which is automatically moved to when initializing the sample changer.

Moving to the initial position

on | off (Default value: **off**)

If this option is activated, the position defined here is moved to when initializing the device.

Tower

Selection of the tower on the sample changer for moving to the required position.

Only editable for **Move to initial position** = **on** and if the corresponding sample changer has 2 towers, otherwise inactive.

Selection	**1** | **2**
Default value	**1**

Destination

Selection of the target position which is to be moved to:

Only editable for **Move to initial position** = **on**, otherwise inactive.

Selection	**Rack position** | **Special beaker** | **Ext. position**
Default value	**Rack position**

Rack position
Predefined position on the rack. The lift is thereby lowered to the work position defined for that position.

Special beaker
Special position on the rack defined in the rack properties. The lift is thereby lowered to the work position defined for that position.

Ext. position
External position which is defined for the Swing Head mounted to the tower. The lift is thereby lowered to the work position defined for that position. This option is only available if a Swing Head is mounted to the tower.

Number

Specification of the number of the rack position, of the special beaker or of the external position.

Only editable for **Move to initial position** = **on**, otherwise inactive.

for Move = Rack position

Input range	**1 - 999**
Default value	**1**

for Move = Special beaker

Input range	**1 - 16**
Default value	**1**

for Move = External position

Input range	**1 - 4**
Default value	**1**

7.9.2.5 Properties - Connections

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.9.2.6 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.9.3 919 IC Autosampler plus - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **919 IC Autosampler plus**.

7.9.3.1 919 IC Autosampler plus - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **919 IC Autosampler plus** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.9.3.1.1 Start parameters - Rack

Tab: **Method** ▸ **Devices** ▸ **Rack**

Rack name

Name of the rack which must be initialized on the sample changer when the hardware is started **[Start HW]**. If no rack is initialized, the method is not carried out.

Selection	**not defined** | **Rack names from the rack table**
Default value	**not defined**

not defined
The method is always carried out.

Rack names from the rack table
If a rack is selected, the method is only carried out if it is initialized in the sample changer. There is no automatic check to ensure that the rack is in position and that it is the correct rack. In order to check this during the run, the command **Initialize** must be inserted in the time program for the module **Rack**.

7.9.3.1.2 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.9.3.1.3 Start parameters - Peripherals Tower

Tab: **Method** ▸ **Devices** ▸ **Peripherals Tower**

Pump 1

Status

Selection	**on** | **off**
Default value	**off**

on
Pump 1 is switched on when the hardware is started with **[Start HW]**.

off
Pump 1 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 1 when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Pump 2

Status

Selection	**on** | **off**
Default value	**off**

on
Pump 2 is switched on when the hardware is started with **[Start HW]**.

off
Pump 2 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 2 when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Tower stirrer

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Status

Selection	**on** | **off**
Default value	**off**

on
The tower stirrer is switched on when the hardware is started with **[Start HW]**.

off
The tower stirrer is switched off when the hardware is started with **[Start HW]**.

Rate

Enter the stirring rate

Input range	**-15 - 15**
Default value	**8**

7.9.3.2 919 IC Autosampler plus - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 919 IC Autosampler plus:

7.9.3.2.1 Commands - Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands assigned to the tower of the sample changer:

7.9.3.2.1.1 Move (Rack)

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Move (Rack)**

The device-dependent time program command **Move (Rack)** (command with feedback) turns the rack until the desired position is reached with reference to the tower.

Target

Move

Selecting the target position on the rack:

Selection	**Sample position** | **Rack position** | **Special beaker** | **Relative angle**

Sample position
Position defined for the current determination in the Run window as parameter **Position**.

Rack position
Predefined position on the rack.

Special beaker
Special position on the rack defined in the rack properties.

Relative angle
Rotate the rack relative to the current position by the angle indicated. This can be used, for example, to remove vial caps automatically.

Number

Specification of the number of the rack position. This parameter is displayed only for **Move** = **Rack position** or **Move** = **Special beaker**. The number can also be defined with the aid of the formula editor ( ).

Input range	**1 - 999**
Default value	**1**

Move angle

Indication of relative rotation angle. This parameter is displayed only for **Move** = **Relative angle**.

Input range	**-359.90 - 359.90 °**
Default value	**5.00 °**

Beaker test

on | off (Default value: **off**)

If this option is switched on, a beaker test is carried out. In this case, the action to be carried out can be selected if the beaker sensor defined for the rack does not detect a beaker at the target position. If the robotic arm is selected as beaker sensor, then a Swing Head must be installed and a work position also defined in the rack data must be defined in such a way that contact exists between the beaker sensor and the beaker. This work position will be automatically moved to for beaker recognition after the command **Move**.

Selection	**Display message** | **Stop determination** | **Stop determination and series**

Display message
A message is displayed and the determination is stopped.

Stop determination
The determination is stopped and the next determination of the series is started.

Stop determination and series
Both the determination and the series are stopped.

Parameters

Shift rate

Selection of the rate at which the sample rack rotates.

Input range	**3 - 20 °/s**
Default value	**20 °/s**

Shift direction

Selection of the shift direction

Selection	**auto** | **+** | **-**
Default value	**auto**

auto
The shift direction with the smallest rotation angle is selected automatically.

+
Movement is in the direction of **ascending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

-
Movement is in the direction of **descending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

Swing rate

Selects the rate of the robotic arm when moving to a rack position or a special beaker (only with multiple row sample racks).

Input range	**10 - 55 °/s**
Default value	**55 °/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.1.2 Lift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Lift**

With the device-dependent time program command **Lift** (command with feedback), the lift on the tower of the sample changer moves to the desired position.

Target

Lift position

Entering the desired lift position in mm or select a lift position predefined for the rack. A lift height of **0 mm** corresponds to the Home position. Here the lift is moved to the uppermost stop.

Input range	**0.0 - 235.0 mm**
Selection	**Work position** | **Shift position** | **Rinse position** | **Special position** | **Home position**
Default value	**Work position**

Note

Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Parameters

Lift rate

Selection of the rate for moving the lift.

Input range	**3 - 25 mm/s**
Default value	**25 mm/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.1.3 Swing

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Swing**

The device-dependent time program command **Swing** (command with feedback) swings the robotic arm until the desired position is reached.

Target

Swing

Selecting the target position for the robotic arm.

Selection	**External position** | **Maximum angle** | **Relative angle**

External position
Swinging to one of the 4 external positions available for each tower. They are defined in the Tower properties of the Sample Processor.

Maximum angle
Swinging the robotic arm outwards to the maximum angle permitted in the robotic arm properties.

Relative angle
Swinging by the specified swing angle relative to the current position. This can be used, for example, to remove vial caps automatically.

Number

Indicates the number of the external position which is to be swung to. This parameter is displayed only for **Swing** = **External position**. The number can also be defined with the aid of the formula editor ( ).

Input range	**1 - 4 (dependent on target position)**
Default value	**1**

Swing angle

Angle by which the robotic arm is to be swung relative to the current position. This parameter is visible only for **Swing** = **Relative angle**.

Input range	**-180 - 180 °**
Default value	**10 °**

Parameters

Swing rate

Rate of the robotic arm when swinging to an external position or a particular angle.

Input range	**10 - 55 °/s**
Default value	**55 °/s**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.2 Commands - Rack

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the rack:

7.9.3.2.2.1 Initialize

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Initialize**

The device-independent time program command **Initialize** (command with feedback) initializes the rack positioned on the sample changer.

Rack test

on | off (Default value: **on**)

If this option is enabled, the rack attached will be checked.

Test rack

Select the rack to be positioned on the sample changer. The rack attached will be checked to ensure it is the one specified.

Selection	**Racks from the rack table**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.3 Commands - Peristaltic pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peristaltic pump:

7.9.3.2.3.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.3.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.9.3.2.4 Commands - Peripherals Tower

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peripheral devices assigned to the tower:

7.9.3.2.4.1 Pump # On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Pump # On/Off**

The device-dependent time program command **Pump # On/Off** (command without feedback) switches the respective pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.4.2 Tower stirrer On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Tower stirrer On/Off**

The device-dependent time program command **Tower stirrer On/Off** (command without feedback) switches the tower stirrer on/off and sets the value for the stirring rate.

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The command is ignored in the run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Stirrer

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the stirrer.

Input range	**-15 - 15 (without 0)**
Default value	**3**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.9.3.2.5 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.9.4 919 IC Autosampler plus - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.9.4.1 Manual Control - Tower

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **Tower**

Rack position

Current value

Shows the current rack position.

Input

Enter or select the rack position to be moved to.

Input range	**1 - n (depending on rack)**
Default value	**1**
Selection	**Special beaker 1 ... 16**

[Start]

Start moving to the specified position. After the start, the button changes to **[Stop]** and the two arrow keys become inactive (gray).

[Stop]

Stop moving to current rack immediately.

Move to current rack position -1.

Move to current rack position +1.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Input range	**0 - Max. stroke path mm**
Default value	**0 mm**
Selection	**Work position** | **Shift position** | **Rinse position** | **Special position** | **Home position**

[Start]

Move lift to the desired position.

[Stop]

Stop moving to lift position immediately.

The lift continues moving up as long as this button is pressed.

The lift continues moving down as long as this button is pressed.

Robotic arm position

Current value

Current position (angle) of the robotic arm on the tower.

Input

Enter or select the robotic arm position to be moved to.

Input range	**0.0 - 330.0 °**
Default value	**0.0 °**
Selection	**External 1** | **External 2** | **External 3** | **External 4**

[Start]

Move robotic arm to the desired position.

[Stop]

Immediately stop the action which was triggered with **[Start]**.

The robotic arm continues moving to the left as long as this button is pressed.

The robotic arm continues moving to the right long as this button is pressed.

[Configure rack]

Open dialog window **Rack configure 'Rack name'** *(see Chapter 7.5.5.4, page 859)*.

7.9.4.2 Manual Control - Rack

Tab: **Manual ▶ Manual Control - 'Device name' ▶ Rack**

[Initialize rack]

Initialize rack that is in position.

7.9.4.3 Manual control - Peristaltic pump

Tab: **Manual control ▶ Manual control - All devices - 'Device name' ▶ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.9.4.4 Manual Control - Peripheral devices

Tab: **Manual Control ▶ Manual Control - All Devices - 'Device name' ▶ Peripherals Tower**

Tower stirrer - Rate

Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Current value

Current rate of the tower stirrer.

Input

Enter the rate of the tower stirrer.

Input range	**-15 - 15 (without 0)**
Default value	**Current value**

[Apply]

Send the set parameters to the stirrer.

[On]

Start the stirrer with the set parameters. This is inactive if the stirrer is running.

[Off]

Stop the stirrer. This is inactive if the stirrer is not running.

Pump 1

[On]

Start pump 1 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 1. This is inactive if the pump is not running.

Pump 2

[On]

Start pump 2 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 2. This is inactive if the pump is not running.

7.9.4.5 Configuring rack

Dialog window: **Manual ▸ Manual Control - All devices - 'Device name' ▸ Rack ▸ [Configure rack] ▸ Rack 'Rack name' configure**

Rack position

Current position

Shows the current rack position.

Special beaker

Select the special beaker to be assigned to the current rack position.

Input range	**1 - 16**

[Assign]

Assign current rack position to the selected special beaker.

Lift position

Current position

Shows the current lift position in mm.

Work position for

If this option is selected, the current lift position is assigned to the work position for the tower, for a special beaker or for an external position of the robotic arm.

Selection	**Tower** | **Special beaker 1...16** | **External 1...4**
Default value	**Tower**

Rinse position for

If this option is selected, the current lift position is assigned to the rinse position for the tower, or for the external positions of the robotic arm.

Selection	**Tower** | **External position**
Default value	**Tower**

Shift position for

If this option is selected, the current lift position is assigned to the shift position for the tower.

Selection	**Tower**

Special position for

If this option is selected, the current lift position is assigned to the special position for the tower.

Selection	**Tower**

Robotic arm position

If this option is selected, the current lift position is assigned to the swing position of the robotic arm.

Selection	**External position**

[Assign]

Assign the current lift position to the selected position.

Robotic arm position

Current position

Displays the current position of the robotic arm in °.

External position

Select the external position to which the current robotic arm position is to be assigned.

Selection	**External 1** | **External 2** | **External 3** | **External 4**

[Assign]

Assign the current robotic arm position to the selected external position.

7.10 886 Professional Thermostat / Reactor

7.10.1 886 Professional Thermostat / Reactor - Overview

Note

The device **886 Professional Thermostat / Reactor** is available in 2 model versions. The device is described in the online help with all possible modules.

The following versions are available for different fields of application:

- **2.886.0110 Professional Reactor**
  The 886 Professional Reactor is a heatable reactor, especially developed for pre- and post-column derivatization. It captivates by its robustness, the fast heating rate and the possibility to carry out reactions at up to 120 °C.
- **2.886.0210 Professional Thermostat**
  The 886 Professional Thermostat is a stand-alone column oven for up to two columns with a maximum length of 150 mm. It captivates by its fast heating rate and the possibility to operate two separation columns at up to 80 °C.

7.10.2 886 Professional Thermostat / Reactor - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **886 Professional Thermostat / Reactor** device is selected in the device table, menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.10.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.10.2.2 Properties - Reactor unit

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Reactor unit**

Note

This tab is only available when there is a reactor unit in the device.

The properties of the reactor unit and the monitoring of the reactor plate can be defined here. In addition, up to 4 reactors can be defined.

Properties of the reactor unit

Name

Name of the reactor unit (must not be empty).

Entry	**1…24 characters**

Set to work

Display of the set to work date of the reactor unit.

Comment

Field for optional and additional information.

Entry	**0…50 characters**

[Monitoring]

Opens the dialog window **Monitoring – 'Reactor unit name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

Reactors

Table of reactors of the reactor unit. Up to 4 reactors can be defined. The most important properties are displayed in the table. The table cannot be edited directly. Use the menu **[Edit]** below the table. This contains the following menu items:

New	Add new line to the table and edit in separate dialog *(see Chapter 7.10.2.5, page 964)* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *(see Chapter 7.10.2.5, page 964)* (is also triggered by a double-click on a non-empty line).
Copy [CTRL-C]	Copy the selected line to the clipboard.
Paste [CTRL-V]	Paste line from the clipboard below in the table.
Cut [CTRL-X]	Cut the selected line and copy it to the clipboard.
Delete [Delete]	Delete the selected line.

The properties of the reactors are described in *7.10.2.5 Edit reactor, p. 964*.

7.10.2.3 Properties - Connections

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.10.2.4 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.10.2.5 Edit reactor

Tab: **Configuration** ▸ **Device** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Reactor unit** ▸ **Reactors**

In this dialog, a new reactor can be registered or a previously defined reactor can be edited.

Order number

Optional entry of the order number of the reactor.

Entry	**0...10**

Material

Optional entry of the material of the reactor capillary.

Entry	**0...16**

Length

Optional entry of the length of the reactor capillary.

Input range	**0.01 - 10.0 m** (Increment: **0.01**)
Default value	**2.00 m**

Inner diameter

Optional entry of the inner diameter [mm] of the reactor capillary.

Input range	**0.01 - 10.0 mm** (Increment: **0.01**)
Default value	**0.5 mm**

Volume

In this field the total volume of the reactor capillary in [µL], calculated from **Inner diameter** and **Length**, is displayed.

calculated volume in [µL], without decimal places

Comment

Optional comment on the reactor.

Entry	**0…24**

7.10.3 886 Professional Thermostat / Reactor - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **886 Professional Thermostat / Reactor**.

7.10.3.1 886 Professional Thermostat / Reactor - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **886 Professional Thermostat / Reactor** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.10.3.1.1 Start parameters - Thermostat

Tab: **Method** ▸ **Devices** ▸ **Thermostat**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The thermostat is switched on when the hardware is started with **[Start HW]**.

Off
The thermostat is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the thermostat when the hardware is started with **[Start HW]**.

Caution

Maximum temperatures allowed

The checking does not take place until the start test of the method.

- Intelligent column (iColumn): 80°C.
- Intelligent Reactor unit: 120°C.
- Otherwise: 150°C.

Input range	**0.0 - 150.0 °C** (Increment: **0.1**)
Default value	**25.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.10.3.2 886 Professional Thermostat / Reactor - Data channels

Tab: **Method** ▸ **Devices** ▸ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Temperature	Temperature	°C	No

7.10.3.3 886 Professional Thermostat / Reactor - Commands

Subwindow: **Method** ▸ **Devices**

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the 886 Professional Thermostat / Reactor:

7.10.3.3.1 Commands - Thermostat

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the thermostat:

7.10.3.3.1.1 Measuring temperature

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure temperature**

The device-dependent time program command **Measure temperature** (command with feedback) measures the temperature in the thermostat.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
TEMP	Measured temperature [°C]	Number

7.10.4 886 Professional Thermostat / Reactor - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.10.4.1 Manual Control - Column thermostat

Tab: **Manual ▸ Manual Control - 'Device name' ▸ 'Thermostat'**

Temperature

Current value

Current temperature of the thermostat.

Input

Entering a new value for the temperature of the thermostat.

Input range	**0.0 - 80.0 °C**
Default value	**30.0 °C**

[On]

Switching on the thermostat. This is inactive if it is running.

[Off]

Switching off the thermostat. This is inactive if it is not running.

[Apply]

Sending the parameters set to the thermostat.

7.11 887 Professional UV/VIS Detector

7.11.1 887 Professional UV/VIS Detector - Overview

The device **887 Professional UV/VIS Detector** is available in 1 model version:

- **2.887.0010 Professional UV/VIS Detector**
  The 887 Professional UV/VIS Detector is an alternative to the proven conductivity detector and extends the family of the intelligent detectors by Metrohm. It permits a secure and reliable quantification of substances active in the ultraviolet or visible range.

7.11.2 887 Professional UV/VIS Detector - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **887 Professional UV/VIS Detector** device is selected in the device table, menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.11.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.11.2.2 Properties - UV lamp

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **UV lamp**

[Monitoring]

Opens the dialog window **Monitoring - 'UV lamp'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.11.2.3 Properties - VIS lamp

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **VIS lamp**

Intensity level

Shows the current intensity level of the lamp.

[Monitoring]

Opens the dialog window **Monitoring - 'VIS lamp'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.11.2.4 Properties - Detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Detector**

Integration duration

Shows the integration duration of the diode array (time until the next reading of each diode). The value is set in the dialog **Settings** *(see Chapter 7.11.2.7, page 973)*.

Input range	**10 - 247 ms**

[Settings..]

If the device is connected, the dialog **Settings** *(see Chapter 7.11.2.7, page 973)* is opened.

Caution

The lamp settings may not be changed except under very particular conditions. Before you change the settings, read and follow without fail the corresponding instructions in Chapter **Adjusting the lamp settings** of the device manual.

7.11.2.5 Properties - Analog Out

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Analog Out**

The 887 Professional UV/VIS Detector supports the output of data via a maximum of 4 analog channels.

Range/Volt

Input of the absorbance value in [mAU], which is to be put out as 1 Volt. This value applies for all 4 analog channels.

Input range	**10.0 - 2000.0 mAU** (Increment: **10.0**)

7.11.2.6 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.11.2.7 Settings

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Detector** ▸ **Settings**

Here the detector settings can be adjusted. Please observe the following information beforehand:

Caution

The lamp settings **must not** be adjusted except in the following cases:

- After first start up, if the the check of the intensity spectrum shows a cut-off.
- After the replacement of the UV lamp or of the VIS lamp, if the check of the intensity spectrum shows a cut-off.

Before each adjustment of the lamp values, it is **mandatory** to check the intensity spectrum. The lamp settings may only be adjusted if the intensity spectrum is cut off at the top.

Adjusting the lamp settings

Before you can adjust the lamp settings, all the following preconditions must be met:

- The UV lamp is burning for at least 30 minutes.
- The flow-through cell is clean.
- The flow-through cell is rinsed with ultrapure water.
- The flow-through cell is free of air bubbles.
- The intensity spectrum has been checked and shows a cut-off.

In the upper part of the dialog window the current intensity spectrum is shown. Note that the UV or VIS part of the spectrum is only displayed when the corresponding lamps are switched on. The spectrum indicates whether your settings are optimal. The settings can be adjusted manually *(see "Manually adjusting the settings", page 973)* or automatically *(see "Automatically adjusting the settings", page 974)*.

Manually adjusting the settings

Integration duration

Input of the integration duration.

Input range	**10 - 247 ms** (Increment: **1**)

VIS intensity level

Input of the intensity level of the lamp.

Input range	**1 - 8** (Increment: **1**)

[Apply]

The values of **Integration duration** and **VIS intensity level** are written to the device. Afterwards, a new intensity spectrum is displayed.

Automatically adjusting the settings

As an alternative to the manual adjustment the settings may also be adjusted automatically.

[Adjust automatically]

With this function, the adjustment is carried out by a built-in algorithm of the device. This calculates and sets optimized values for the parameters **Integration duration** and **VIS intensity level**. After the adjustment, a new intensity spectrum is displayed.

[OK]

The parameter values are written to the device and the dialog is closed.

[Cancel]

The dialog is closed and those values apply which were set *before* opening this dialog.

7.11.3 887 Professional UV/VIS Detector - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **887 Professional UV/VIS Detector**.

The recording of spectra is defined in the evaluation of the method *(see Chapter 5.8.8, page 482)*.

7.11.3.1 887 Professional UV/VIS Detector - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **887 Professional UV/VIS Detector** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.11.3.1.1 Start parameters - UV lamp

Tab: **Method** ▸ **Devices** ▸ **UV lamp**

On / Off

Selection	**On** | **Off**
Default value	**Off**

On
The UV lamp is switched on when the hardware is started with **[Start HW]**.

Off
The UV lamp is switched off when the hardware is started with **[Start HW]**.

7.11.3.1.2 Start parameters - VIS lamp

Tab: **Method** ▸ **Devices** ▸ **VIS lamp**

On / Off

Selection	**On** | **Off**
Default value	**Off**

On
The VIS lamp is switched on when the hardware is started with **[Start HW]**.

Off
The VIS lamp is switched off when the hardware is started with **[Start HW]**.

7.11.3.1.3 Start parameters - Detector

Tab: **Method** ▸ **Devices** ▸ **Detector**

Up to 8 measuring channels can be defined:

A measuring channel is a wavelength range in which a chromatogram may be recorded via the change of absorbance. For this, the channel must assigned as a data source to an analysis *(see Chapter 5.6.6.1, page 391)*.

Channels

Table of the measuring channels defined for the 887 Professional UV/VIS Detector. The table cannot be edited directly. Use the menu **[Edit]** below the table. This contains the following menu items:

New	Add new line to the table and edit in separate dialog *(see Chapter 7.11.3.1.5, page 977)* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *(see Chapter 7.11.3.1.5, page 977)* (is also triggered by a double-click on a non-empty line).

Cut [CTRL-X]	Cut the selected line and copy it to the clipboard.
Delete [Delete]	Delete the selected line.

Reference channel

The reference channel is optional. It can be used to compensate lamp effects (drift, flicker) out of the intensities.

Use reference channel

on | off (Default value: **off**)

If this option is enabled, the properties of the reference channel can be edited with the button **[...]** and the reference channel will be used in the determination. If this option is disabled, no reference channel will be used in the determination. However, the properties previously defined for a reference channel will remain.

[...]

Opens the dialog for entering / editing the properties of the reference channel *(see Chapter 7.11.3.1.6, page 978)*.

Duration of measurement

Input of the measuring duration per data point.

Note

This value is used as an approximate value only. The *actual* measuring duration is that integral multiple of the configuration parameter **Integration duration** *(see page 970)* which is closest to this approximate value.

Input range	**50 - 2000 ms**

7.11.3.1.4 Start parameters - Analog Out

Tab: **Method** ▸ **Devices** ▸ **Detector**

The 887 Professional UV/VIS Detector supports the output of data in 4 analog outputs **Out #** (#=1..4). In the start parameters of the detector *(see Chapter 7.11.3.1, page 974)*, up to 8 measuring channels **Channel #** (#=1..8) can be defined. Here the measuring channels can be assigned to analog output channels.

Out #

Assignment of a measuring channel to the corresponding analog output.

Selection	**'not defined'** | **Channel #**
Default value	**'not defined'**

'not defined'
If this entry is selected, no measuring channel is assigned to the corresponding analog channel.

Channel #
For each measuring channel defined in the start parameters of the detector there will be an entry in the selection list. If a measuring channel is selected, then it will be assigned to the corresponding output channel.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.3.1.5 Edit channel

Tab: **Method** ▸ **Device** ▸ **Detector** ▸ **Channel**

Channel

Number of the channel. Only available for measuring channels, not for the reference channel.

Selection	**1** | **2** | **3** | **4** | **5** | **6** | **7** | **8**

Wavelength

Entry of the wavelength of the channel.

Input range	**191 - 899 nm** (Increment: **1**)
Default value	**254 nm**

Bandwidth ±

Input of the wavelength which is subtracted from or added to, respectively, the wavelength of the measuring channel.

Example: if the wavelength of the channel is 390 nm and for **Bandwidth ±** the value 5 nm has been entered, then the channel comprises the interval 385…395 nm.

Input range	**1 - 50 nm** (Increment: **1**)
Default value	**5 nm**

7.11.3.1.6 Edit reference channel

Tab: **Method ▸ Device ▸ Detector ▸ Reference channel**

In this dialog the properties for the reference channel can be edited.

7.11.3.1.7 Calculation of the absorbance

Here the formulas for calculating the absorbance A can be found. In the formulas the following abbreviations are used:

A	Absorbance	
I	Intensity	The sum of the intensities of wavelengths in the channel.
Mc	Measuring channel	Normally a wavelength range in which the sample of interest absorbs light.
M	(Index: m)	Number of bundled points in the measuring channel.
Rc	Reference channel	Normally another wavelength range in which the sample of interest *does not* absorb light. Optional!
R	(Index: r)	Number of bundled points in the reference channel.
Bls	Baseline spectrum	Spectrum without sample substance. This spectrum is always there. The detector itself creates one when switching on. The user can have it newly recorded in the manual control or in the time program. It is stored in the detector.
Msp	Measured spectrum	Spectrum, recorded during run-time.

Calculation of the absorbance (without reference channel)

$$A = \frac{1}{M} \cdot \sum_{m=1}^{M} \log \frac{I_m^{Mc,Bls}}{I_m^{Mc,Msp}}$$

Calculation of the absorbance (with reference channel)

The first term corresponds to the formula above for the absorbance without reference channel. The second term subtracts the absorbance of the reference channel.

$$A = \frac{1}{M} \cdot \sum_{m=1}^{M} \log \frac{I_m^{Mc,Bls}}{I_m^{Mc,Msp}} - \frac{1}{R} \cdot \sum_{r=1}^{R} \log \frac{I_r^{Rc,Bls}}{I_r^{Rc,Msp}}$$

7.11.3.2 887 Professional UV/VIS Detector - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Each of the (up to 8) measuring channels of the detector *(see Chapter 7.11.3.1.3, page 975)* can be selected as **Channel** for the analysis *(see Chapter 5.6.6.1, page 391)*.

Property	Label of Y axis	Unit	Evaluation
Absorbance	none	mAU	Yes

7.11.3.3 887 Professional UV/VIS Detector - Commands

Subwindow: **Method ▸ Devices**

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 887 Professional UV/VIS Detector:

7.11.3.3.1 Commands - Detector

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the detector:

7.11.3.3.1.1 Reset baseline

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) measures a complete spectrum (190-900 nm). This is immediately calculated as background spectrum.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.11.3.3.1.2 Modify channel

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Modify channel**

The device-dependent time program command **Modify channel** (command without feedback) redefines the parameters of the corresponding

measuring channel. The modifications apply until the end of the method run.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Channel

Selection of the measuring channel whose parameters are to be modified.

Selection	**Channel #**

Channel #
For each measuring channel defined in the start parameters of the detector there will be an entry in the selection list.

Wavelength

Entry of the wavelength of the channel.

Input range	**191 - 899 nm** (Increment: **1**)
Default value	**254 nm**

Bandwidth ±

Input of the wavelength which is subtracted from or added to, respectively, the wavelength of the measuring channel.

Example: if the wavelength of the channel is 390 nm and for **Bandwidth ±** the value 5 nm has been entered, then the channel comprises the interval 385…395 nm.

Input range	**1 - 50 nm** (Increment: **1**)
Default value	**5 nm**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.11.3.3.1.3 Measure absorbance

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure absorbance**

The device-dependent time program command **Measure absorbance** (command with out feedback) measures the absorbance in the corresponding measuring channel.

Channel

Selection of the measuring channel in which the absorbance is to be measured.

Selection	**Channel #**

Channel #
For each measuring channel defined in the start parameters of the detector there will be an entry in the selection list.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
ABSORBANCE	Measured absorbance [mAu] in the selected measuring channel.	Number

7.11.3.3.1.4 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.11.3.3.1.5 Measure drift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.11.4 887 Professional UV/VIS Detector - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.11.4.1 Manual control - UV lamp

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ UV lamp**

In the manual control the UV lamp can be switched on and off.

[On]

Switching on UV lamp.

[Off]

Switching off UV lamp.

7.11.4.2 Manual control - VIS lamp

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ VIS lamp**

In the manual control the VIS lamp can be switched on and off.

[On]

Switching on VIS lamp.

[Off]

Switching off VIS lamp.

7.11.4.3 Manual control - Detector

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ Detector**

In the manual control, the measuring channel of detector can be edited. In addition, the current absorbance, intensity or baseline spectrum can be displayed. It is also possible to record a new baseline spectrum here.

Channel

Selection of the channel which is to be edited when pressing the button **[Edit]**.

Selection	**Channel #**

Channel #
It has an entry in the selection list for each measuring channel defined in the start parameters.

[Edit]

Opens the dialog for editing the selected channel *(see Chapter 7.11.3.1.5, page 977)*.

Spectrum

Selection of the type of spectrum which is to be displayed when pressing the button **[Display]**.

Selection	**Absorbance spectrum** | **Intensity spectrum** | **Baseline spectrum**

Absorbance spectrum
Current absorbance spectrum (complete wavelength range).

Intensity spectrum
Current intensity spectrum (complete wavelength range).

Baseline spectrum
The last baseline spectrum which has been recorded in the time program or by the function **[Reset baseline]**.

[Edit]

Opens the dialog for editing the selected channel *(see Chapter 7.11.3.1.5, page 977)*.

[Display]

Displays the selected spectrum in the parameter **Spectrum** *(see Chapter 7.11.4.4, page 985)*.

[Reset baseline]

If there is no determination running with the same method, a new baseline spectrum is being recorded.

7.11.4.4 Displaying spectra

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ Detector ▸ Show**

The spectrum selected in the manual control of the detector *(see Chapter 7.11.4.3, page 984)* is displayed here. By right-clicking on the graphics window, a context menu is opened *(see "Curve window", page 91)*.

[Close]

Closes the dialog.

7.12 896 Professional Detector

7.12.1 896 Professional Detector - Overview

The device **896 Professional Detector** is available in 3 model versions.

- **2.896.0010 Professional Detector - Conductometry**
- **2.896.0020 Professional Detector - Amperometry**
- **2.896.0030 Professional Detector - Conductometry & Amperometry**

7.12.2 896 Professional Detector - Configuration

If a type **896 Professional Detector** device is selected in the device table, the menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

Which detector or which detectors are contained in the 896 Professional Detector depends on the detector variant.

7.12.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.12.2.2 Properties - Conductivity detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Input range	**13 - 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.

Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Input range	**20 - 50 °C** (Increment: **5**)
Default value	**40 °C**

7.12.2.3 Properties - Amperometric detector

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Amp. detector**

Note

The amperometric detector can only be used with these devices: **850 Professional IC**, **881 Compact IC plus**, **882 Compact IC pro**.

Detector type

Display of the detector type, is read out automatically from the detector.

Connection

Display of the connector on the device to which the detector is connected.

Serial number

Display of the serial number of detector, is read out of the detector.

7.12.2.4 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.12.2.5 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.12.3 896 Professional Detector - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **896 Professional Detector**.

Which detector or which detectors are contained in the 896 Professional Detector depends on the detector variant.

7.12.3.1 896 Professional Detector - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **896 Professional Detector** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.12.3.1.1 Start parameters - Conductivity detector

Tab: **Method** ▸ **Devices** ▸ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conductivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Input range	**0.0 - 5.0 %/°C**
Default value	**2.3 %/°C**

Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Input range	**1 - 14999 µS/cm**
Default value	**9999 µS/cm**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.12.3.1.2 Start parameters - Amperometric detector

7.12.3.1.2.1 Amperometric detector

Tab: **Method** ▸ **Devices** ▸ **Amp. detector**

Mode

Selection of the measuring mode of the amperometric detector.

Selection	**DC** | **PAD** | **flexIPAD** | **CV**

DC
Measurement with constant potential.

PAD
Measurement with several potential steps.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

CV
Measurement of cyclovoltammograms.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric detector.

Temperature

Temperature that is set in the detector when the hardware is started with **[Start HW]**.

Input range	**10.0 - 80.0 °C** (Increment: **0.1**)
Default value	**35.0 °C**

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Cell

Selection of a cell which is defined in the configuration table of the amperometric cells *(see Chapter 6.12.2, page 611)*. If no cell has been selected yet, then **not defined** is displayed. Otherwise, the selected cell will be displayed with its user-defined name.

Selection	**not defined** | **Selection of amperometric cells**
Default value	**not defined**

not defined
You can also start the method when this option is selected. The cell connected to the detector is then used. In the Report, the amperometric cell is then called "**not defined**", but it will be the properties of the cell which is *actually* used which will be output. **Important note:** If an intelligent cell is connected to the amperometric detector for which the operating hours monitoring has been activated, then the operating hours will be counted.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.12.3.1.2.2 Settings DC mode

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **DC** ▸ **Settings**

In this dialog, you set the properties of the measuring mode **DC**.

The properties are also available in the manual control *(see Chapter 7.1.4.11, page 696)*.

DC potential

Potential of the working electrode in comparison to the reference electrode.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

Range

Selection of the measuring range.

Selection	**auto** | **2 nA** | **20 nA** | **200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**

auto
Automatic setting of the measuring range. This selection is not allowed with damping activated.

Damping

on | off (Default value: **off**)

Switching the auxiliary damping on or off.

7.12.3.1.2.3 Settings PAD mode

Tab: **Method ▸ Devices ▸ Amp. detector ▸ PAD ▸ Settings**

In this dialog, you set the properties of the measuring mode **PAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the PAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Potential [V]

Potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define PAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Duration

Duration of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Range

Selection of the measuring range.

Selection	**200 nA** | **2 µA** | **20 µA** | **200 µA** | **2 mA**
Default value	**2 µA**

The defined potential progression is displayed in the form of a graph.

7.12.3.1.2.4 Dialog window Define PAD step

Tab: **Method** ▸ **Devices** ▸ **Amp. detector** ▸ **Settings** ▸ **Settings PAD mode**

In this dialog, a new PAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**300 ms**

Potential

Potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.05 V**

7.12.3.1.2.5 Settings flexIPAD mode

Tab: **Method ▸ Devices ▸ Amp. detector ▸ flexIPAD ▸ Settings**

In this dialog, you set the properties of the measuring mode **flexIPAD**. The same properties are also available in the manual control.

Potential profile

The table lists the potential steps of the flexIPAD profile. Up to 40 steps are possible. The table contains the following columns:

Duration [ms]

Duration of the potential step in milliseconds.

Sum Duration [ms]

Cumulative duration of potential steps 1 - n in milliseconds (n = number of the observed potential step).

Start potential [V]

Start potential of the step in volts.

End potential [V]

Terminal potential of the step in volts.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Dialog window Define flexIPAD step* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected lines to the clipboard.
Cut	Cut the selected lines and copy them to the clipboard.
Paste	Paste lines from the clipboard. After pasting, check the sequence of the potential steps.
Delete	Delete the selected lines.

Note

You can also use the copying/cutting and pasting of lines to transfer potential steps from one method to another (opened) method.

The affected lines of the source method need not be contiguous with one another.

The lines will be inserted in the target method only if the maximum number of lines is not exceeded as a result.

Cycle duration

Display of the total duration of the potential profile in milliseconds (sum of the durations of the individual steps).

Measurement

Start

Start time of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**50 ms**

End

Ending time point of the measurement.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**150 ms**

Range

Selection of the measuring range.

Selection	**20 µA** | **200 µA** | **2 mA**
Default value	**200 µA**

Note

The selection of the measurement channel (**Current** or **Charge**) takes place in the hardware assignment of the analysis *(see Chapter 7.1.3.2.5, page 661)*.

The defined potential progression is displayed in the form of a graph.

7.12.3.1.2.6 Dialog window Define flexIPAD step

Tab: **Method ▸ Devices ▸ Amp. detector ▸ Settings ▸ Settings flexIPAD mode**

In this dialog, a new flexIPAD potential step can be defined or an existing one can be edited.

Duration

Duration of the potential step in milliseconds.

Input range	**1 - 2000 ms** (Increment: **1**)
Default value	**100 ms**

Start potential

Start potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

End potential

Terminal potential of the step in volts.

Input range	**-5.000 - +5.000 V** (Increment: **0.001**)
Default value	**0.0 V**

7.12.3.1.2.7 Settings CV mode

Tab: **Method ▸ Devices ▸ Amp. detector ▸ PAD ▸ Settings**

In this dialog, you set the properties of the measuring mode **CV**.

Number of cycles for cyclic voltammograms

Preparing cycles

Number of cyclic voltammograms which are to be measured in the time program in accordance with **Start data acquisition** and then discarded. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Measuring cycles

Number of cyclic voltammograms which are to be measured and saved in the time program in accordance with **Start data acquisition**. The parameterization defined in Section Sweep parameters is used for the measurement.

Input range	**0 - 100** (Increment: **1**)
Default value	**1**

Sweep parameters

Start potential

Start voltage of the triangular profile, also corresponds to the 2nd turn-over voltage.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**-0.5 V**

End potential

Terminal voltage of the triangular profile, also corresponds to the 1st turn-over voltage with CV mode **Full cycle**.

Input range	**-5.000 - 5.000 V** (Increment: **0.001**)
Default value	**0.5 V**

Sweep rate

Voltage regulation speed for the sweep in V/s.

Input range	**0.001 - 1.00 V/s** (Increment: **0.001**)
Default value	**0.01 V/s**

CV mode

Setting of the type of the voltage profile.

With each sweep, the voltage begins with the **Start potential** and changes at first until the **End potential** is achieved.

In the **Half cycle** mode, the sweep is thus ended. A sawtooth voltage is the result.

In the **Full cycle** mode, the current voltage changes back to the **Start potential**. A delta voltage is the result.

Selection	**Full cycle** | **Half cycle**
Default value	**Full cycle**

Range

Selection of the measuring range.

Selection	**2 µA** | **20 µA** | **200 µA** | **2 mA** | **20 mA**
Default value	**2 mA**

Cycle duration

Display of the duration of a measuring cycle in [s]. The duration arises from the values of the parameters Start potential, End potential, CV mode and Sweep rate.

Input range	**2 - 1000 s**

7.12.3.2 Amperometric detector - Data channels

Tab:Method ▸ Devices ▸ Hardware assignment

Property	Label of Y axis	Unit	Evaluation
Current	Current	nA	Yes
Charge	Charge	nC	Yes
Current vs. Potential	Current	nA	No

Note

The only channels available for the output of the measured values by means of the *891 Professional Analog Out (see Chap. 7.1.3.1.13.1, p. 654)* are **Current** and **Charge**. The output of the measured values of these channels is then **time-based**.

7.12.3.3 896 Professional Detector - Commands

Subwindow: **Method ▸ Devices**

Subwindow: **Method ▸ Time program**

Depending on the device variant, the 896 Professional Detector contains a conductivity detector, an amperometric detector or both. The available time program commands depend on the device variant.

7.12.3.3.1 Commands - Conductivity detector

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the conductivity detector:

7.12.3.3.1.1 Measuring the conductivity

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CONDUCTIVITY	Measured conductivity [µS/cm]	Number

7.12.3.3.1.2 Measure noise

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.12.3.3.1.3 Measure drift

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.12.3.3.2 Commands - Amperometric detector

Subwindow: **Method ▸ Time program**

Note

If a method uses the amperometric detector in the mode **CV** *(see Chapter 7.1.3.1.12, page 646)*, then the following commands may **not** be used. This is checked by the start test of the method.

Overview of the time program commands available for the amperometric detector:

7.12.3.3.2.1 Measure current

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure current**

The device-dependent time program command **Measure current** (command with feedback) measures the current.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CURRENT	TP.'Command number'.CURRENT Measured current [nA].	Number

7.12.3.3.2.2 Measure charge

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure charge**

The device-dependent time program command **Measure charge** (command with feedback) measures the charge.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CHARGE	TP.'Command number'.CHARGE Measured charge [nC].	Number

7.12.3.3.2.3 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.12.3.3.2.4 Measure drift

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.12.3.3.2.5 Modify mode

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Modify mode**

The device-dependent time program command **Modify mode** (command without feedback) permits a change of measuring mode: It can change the parameterization of the current measuring mode or select a different measuring mode and set its parameters.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

When the command is opened, the mode parameters which are set in the start parameters are displayed by default.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Mode

Selection of the measuring mode of the amperometric detector. The CV mode mode is not available here.

Selection	**DC** | **PAD** | **flexIPAD**

DC
Measurement with constant potential.

PAD
Measurement with several potentials.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric detector. The same settings can be undertaken as in the *Start parameters, see Chap. 7.1.3.1.12, p. 646*.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.12.4 896 Professional Detector - Manual control

Program part: **Manual control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

No manual control is available with the conductivity detector.

7.12.4.1 Manual control - Amperometric detector

7.12.4.1.1 General settings

Tab: **Manual ▸ 'Amp. detector'**

Mode

Generally speaking, the measuring mode and its settings can be changed only in the manual control of the workplace, not in the Global manual control.

Selection of the measuring mode of the amperometric detector which is set in the device when **[Apply]** is pressed. The following rules apply for the changeability of the mode when a determination is running:

- When a determination is running in the mode DC, PAD or flexIPAD, it is **not** possible to change to the mode CV.
- When a determination is running in the mode CV it is **not** possible to change to the modes DC, PAD or flexIPAD.

Selection	**DC** | **PAD** | **flexIPAD** | **CV**

DC
Measurement with constant potential.

PAD
Measurement with several potentials.

flexIPAD
Measurement with flexible potential steps (levels, ramps) and integration.

CV
Measurement of cyclovoltammograms.

[Settings]

Opens the dialog for setting the parameters of the selected measuring mode of the amperometric *(see Chapter 7.1.4.11.2, page 697)*. Not available in the manual control of the CV mode.

[Apply]

The parameterization of the selected measuring mode is sent to the device. The device and the measuring cell are switched on. Not available in the manual control of the CV mode.

Cell

[Cell On]

The measuring cell is switched on. If it had been switched off beforehand, then it will continue to run with the settings which were active prior to being switched off. Not available in the manual control of the CV mode.

[Cell Off]

The measuring cell is switched off. Not available in the manual control of the CV mode.

Temperature

Current Value

Display of the current temperature in the detector.

Input

Input of a new temperature which is to be set in the device when **[Apply]** is pressed.

Input range	**10.0 - 80.0 °C** (Increment: **0.1**)
Default value	**35.0 °C**

[Apply]

Sets the new temperature value in the device.

7.12.4.1.2 Dialog window «Settings»

In this dialog window, the selected measuring mode can be parameterized in the manual control of the workplace.

7.12.4.1.2.1 Settings DC mode

The parameterization of the DC mode in the manual control offers the same options as in the Start parameters *(see Chapter 7.1.3.1.12.2, page 648)*.

7.12.4.1.2.2 Settings PAD mode

The parameterization of the PAD mode in the manual control offers the same options as in the Start parameters *(see Chapter 7.1.3.1.12.3, page 648)*.

7.12.4.1.2.3 Settings flexIPAD mode

The parameterization of the flexIPAD mode in the manual control offers the same options as in the Start parameters *(see Chapter 7.1.3.1.12.5, page 650)*.

7.12.4.1.2.4 Settings CV mode

The parameterization of the CV mode can **not** be changed in the manual control.

7.13 872 Extension Module

The **872 Extension Module** can be connected to an **850 Professional IC** and supplemented according to the available functional range in order to be able to carry out even very elaborate applications.

Different versions are available for different fields of application:

- **2.872.0010 Extension Module IC Pump**
  Extension module with high pressure pump.
- **2.872.0030 Extension Module IC Module**
  Extension module with high pressure pump, injection valve and degasser.

- **2.872.0050 Extension Module Sample Prep**
  Extension module with peristaltic pump and injection valve.
- **2.872.0060 Extension Module Liquid Handling**
  Extension module with peristaltic pump, 10-port valve and injection valve.
- **2.872.0110 Extension Module Suppression**
  Extension module with suppressor and peristaltic pump.
- **2.872.0120 Extension Module Suppression – MCS**
  Extension module with suppressor, peristaltic pump and Metrohm CO_2 Suppressor (MCS).

7.13.1 872 Extension Module IC Pump

7.13.1.1 872 Extension Module IC Pump - Configuration

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module IC Pump** device is selected in the device table, the menu item **[Edit]** ▸ **Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.13.1.1.1 Properties - General

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.13.1.1.2 Properties - High-pressure pump

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Input range	**0.90 - 1.10**
Default value	**1.00**

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.13.1.1.3 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.13.1.2 872 Extension Module IC Pump - Method

Program part: **Method**

The start parameters, data channels and program commands can be defined for the 872 Extension Module IC Pump in the program part **Method**.

7.13.1.2.1 872 Extension Module IC Pump - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **872 Extension Module IC Pump** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.13.1.2.1.1 Start parameters - High pressure pump

Tab: **Method** ▸ **Devices** ▸ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.1.2.2 872 Extension Module IC Pump - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.13.1.2.2.1 High-pressure pump - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.13.1.2.3 872 Extension Module IC Pump - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 872 Extension Module IC Pump:

7.13.1.2.3.1 Commands - High-pressure pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the high-pressure pump:

7.13.1.2.3.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.1.2.3.1.2 Flow

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.1.2.3.1.3 Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)*.

Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.1.2.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Flow

Setting the flow of the high-pressure pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear
The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.13.1.2.3.1.5 Measuring pressure

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.13.1.2.3.1.6 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.1.3 872 Extension Module IC Pump - Manual control

7.13.1.3.1 Manual Control - High-pressure pump

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.13.2 872 Extension Module IC Module

7.13.2.1 872 Extension Module IC Module - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module IC Module** device is selected in the device table, the menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.13.2.1.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.13.2.1.2 Properties - High-pressure pump

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Input range	**0.90 - 1.10**
Default value	**1.00**

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.13.2.1.3 Properties - Degasser

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Degasser**

The degasser has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - Degasser** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.13.2.1.4 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.13.2.2 872 Extension Module IC Module - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module IC Module.

7.13.2.2.1 872 Extension Module IC Module - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **872 Extension Module IC Module** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.13.2.2.1.1 Start parameters - High pressure pump

Tab: **Method** ▸ **Devices** ▸ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump *(see Chapter 5.6.6.1, page 391)* the value from the properties of the column *(see "Recommended operation values", page 561)* can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Input range	**0 - 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.2.2.1.2 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.2.2.1.3 Start parameters - Degasser

Tab: **Method** ▸ **Devices** ▸ **Degasser**

Status

Selection	**On** | **Off**

On
The degasser is switched on when the hardware is started with **[Start HW]**.

Off
The degasser is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.2.2.2 872 Extension Module IC Module - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.13.2.2.2.1 High-pressure pump - Data channels

Tab: **Method** ▸ **Devices** ▸ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.13.2.2.3 872 Extension Module IC Module - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 872 Extension Module IC Module:

7.13.2.2.3.1 Commands - High-pressure pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the high-pressure pump:

7.13.2.2.3.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.2.2.3.1.2 Flow

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.2.2.3.1.3 Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)*.

Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.2.2.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Flow

Setting the flow of the high-pressure pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear
The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.13.2.2.3.1.5 Measuring pressure

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.13.2.2.3.1.6 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.2.2.3.2 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.13.2.2.3.2.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.2.2.3.2.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.2.2.3.2.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.2.2.3.3 Commands - Degasser

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the degasser:

7.13.2.2.3.3.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the degasser on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.2.3 872 Extension Module IC Module - Manual control

7.13.2.3.1 Manual Control - High-pressure pump

Tab: **Manual** ▶ **Manual Control - 'Device name'** ▶ **'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.13.2.3.2 Manual Control - Injection valve

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.13.2.3.3 Manual Control - Degasser

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Degasser'**

[On]

Start degasser. This is inactive if the degasser is already running.

[Off]

Stop degasser. This is inactive if the degasser is not running.

7.13.3 872 Extension Module Sample Prep

7.13.3.1 872 Extension Module Sample Prep - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Sample Prep** device is selected in the device table, the menu item **[Edit] ▶ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.13.3.1.1 Properties - General

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.13.3.1.2 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.13.3.2 872 Extension Module Sample Prep - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module Sample Prep.

7.13.3.2.1 872 Extension Module Sample Prep - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **872 Extension Module Sample Prep** in the top part of the window causes the tabs of the modules in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.13.3.2.1.1 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.3.2.1.2 Start parameter - Injection valve

Tab: **Method ▸ Devices ▸ Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.3.2.2 872 Extension Module Sample Prep - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 872 Extension Module Sample Prep:

7.13.3.2.2.1 Commands - Peristaltic pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peristaltic pump:

7.13.3.2.2.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

	-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.3.2.2.1.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 … 64 characters**

7.13.3.2.2.2 Commands - Injection valve

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the injection valve:

7.13.3.2.2.2.1 Fill

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.3.2.2.2.2 Inject

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.3.2.2.2.3 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.3.3 872 Extension Module Sample Prep - Manual control

7.13.3.3.1 Manual control - Peristaltic pump

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.13.3.3.2 Manual Control - Injection valve

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.13.4 872 Extension Module Liquid Handling

7.13.4.1 872 Extension Module Liquid Handling - Configuration

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Liquid Handling** device is selected in the device table, the menu item **[Edit]** ▸ **Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.13.4.1.1 Properties - General

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.13.4.1.2 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.13.4.2 872 Extension Module Liquid Handling - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module Liquid Handling.

7.13.4.2.1 872 Extension Module Liquid Handling - Start parameters

Subwindow: **Method** ▸ **Devices**

Clicking on the symbol for the **872 Extension Module Liquid Handling** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.13.4.2.1.1 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.4.2.1.2 Start parameters - 10-port valve

7.13.4.2.1.2.1 Start parameters

Method: **Devices ▸ 10-port valve**

Here the parameter values are defined which are sent to the 10-port valve at the start of the method.

Valve position selection

Selecting the corresponding option determines whether the valve remains in its current position when the method starts or whether a particular port is moved to.

Selection	**Maintain current port** | **Port**
Default value	**Maintain current port**

Maintain current port
If this option is selected, then the valve remains in its current position at the start of the method.

Port
If this option is selected, then at the start of the method the port which is selected in the parameter **Port** will be set.

Port

List of the port names for selecting the target port.

Selection	**'Name Port 1'** | **'Name Port 2'** | **'Name Port 3'** | **'Name Port 4'** | **'Name Port 5'** | **'Name Port 6'** | **'Name Port 7'** | **'Name Port 8'** | **'Name Port 9'** | **'Name Port 10'**
Default value	**'Name Port 1'**

[Port configuration]

Opens the dialog window **Port configuration** in which a user-defined name can be assigned for each port and a solution can be allocated from the solution table *(see Chapter 7.13.4.2.1.2.2.1, page 1051)*.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.4.2.1.2.2 Port configuration

Method **Devices ▸ 10-port valve ▸ Port configuration**

The dialog **Port configuration** displays in tabular fashion the names and optionally assigned solutions of the individual ports, and permits the editing of these port properties.

7.13.4.2.1.2.2.1 Port table

The dialog **Port configuration** shows the table of the ports.

Name

Name of the port. The default name is **Port #**, where # stands for the number of the port. A user-defined port name must be unique in the context of the respective method.

Entry	**24 characters**

Solution

Optional allocation of a ("non-intelligent") solution from the solution table.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

[Edit]

Opens the dialog window **Edit port**, in which the name for the selected port can be defined and a solution from the solution table can be allocated *(see Chapter 7.13.4.2.1.2.2.2, page 1051)*.

7.13.4.2.1.2.2.2 Editing port

Method **Devices ▸ 10-port valve ▸ Port configuration ▸ Edit port**

A user-defined name can be assigned in the dialog **Port configuration** for each port and a solution can be allocated from the solution table .

Port

Display of the number of the selected port.

Name

Name of the port. The default name is **Port #**, where # stands for the number of the port. A user-defined port name must be unique in the context of the respective method.

Entry	**24 characters**

Solution

Optional allocation of a ("non-intelligent") solution from the solution table.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

[OK]

Save the port properties.

[Cancel]

Cancel the editing of the port properties.

7.13.4.2.1.3 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.4.2.2 872 Extension Module Liquid Handling - Commands

Subwindow:Method ▸ **Time program**

Overview of the time program commands available for the 872 Extension Module Liquid Handling:

7.13.4.2.2.1 Commands - Peristaltic pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peristaltic pump:

7.13.4.2.2.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.4.2.2.1.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.4.2.2.2 Commands - 10-port valve

Method **Method ▶ Time program**

Overview of the time program commands available for the 10-port valve:

7.13.4.2.2.2.1 Change port

Method **Time program ▶ Edit ▶ 'Device' - 'Module' - Change port**

The device-dependent time program command **Change port** (command with feedback) switches the 10-port valve over to the desired port. The parameters described in the following can be used as aids for a precise definition of how the switching of the ports is to be carried out.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Changing port

Port

List of the port names for selecting the target port.

Selection	**'Name Port 1'** | **'Name Port 2'** | **'Name Port 3'** | **'Name Port 4'** | **'Name Port 5'** | **'Name Port 6'** | **'Name Port 7'** | **'Name Port 8'** | **'Name Port 9'** | **'Name Port 10'**
Default value	**'Name Port 1'**

Shift direction

List of the shift modes of the 10-port valve.

Selection	**ascending** | **descending** | **automatic** | **not over**
Default value	**automatic**

ascending
The valve moves towards the target port in ascending direction. Example: if the current position is *Port 9*, and the target port is to be *Port 2*, then the valve in this mode will select the path 9 – 10 – 1 – 2.

descending
The valve moves towards the target port in descending direction. Example: if the current position is *Port 1*, and the target port is to be *Port 7*, then the valve in this mode will select the path 1 – 10 – 9 – 8 – 7.

automatic
The valve determines the shortest path to the target port on its own.

not over
The valve moves towards the target port in such a way that the port specified in the parameter "Not over" will not be traversed.

Not over

Combobox for selecting the port which is not to be traversed when the port is changed; will have no effect here if the port selected is the same as the target port. Only active when the parameter's "Not over" option is selected for the shift direction. The user-defined name, if available, is used as the 'Port name', otherwise the default name.

Selection	**'Port name' of Port 1** | **'Port name' of Port 2** | **...** | **'Port name' of Port 10**
Default value	**'Port name' of Port 10**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.4.2.2.2.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.4.2.2.3 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.13.4.2.2.3.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.4.2.2.3.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.4.2.2.3.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.4.3 872 Extension Module Liquid Handling - Manual control

7.13.4.3.1 Manual control - Peristaltic pump

Tab: **Manual control** ▸ **Manual control - All devices - 'Device name'** ▸ **'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.13.4.3.2 Manual control - 10-port valve

Tab: **Manual Control - 'Device name'** ▸ **'10-port valve'**

Current port

Shows the current port.

Port

List of the port names for selecting the target port.

Selection	**'Name Port 1'** | **'Name Port 2'** | **'Name Port 3'** | **'Name Port 4'** | **'Name Port 5'** | **'Name Port 6'** | **'Name Port 7'** | **'Name Port 8'** | **'Name Port 9'** | **'Name Port 10'**
Default value	**'Name Port 1'**

Shift direction

List of the shift modes of the 10-port valve.

Selection	**ascending** | **descending** | **automatic** | **not over**
Default value	**automatic**

ascending
The valve moves towards the target port in ascending direction. Example: if the current position is *Port 9*, and the target port is to be *Port 2*, then the valve in this mode will select the path 9 – 10 – 1 – 2.

descending
The valve moves towards the target port in descending direction. Example: if the current position is *Port 1*, and the target port is to be *Port 7*, then the valve in this mode will select the path 1 – 10 – 9 – 8 – 7.

automatic
The valve determines the shortest path to the target port on its own.

not over
The valve moves towards the target port in such a way that the port specified in the parameter "Not over" will not be traversed.

Not over

Combobox for selecting the port which is not to be traversed when the port is changed; will have no effect here if the port selected is the same as the target port. Only active when the parameter's "Not over" option is selected for the shift direction. The user-defined name, if available, is used as the 'Port name', otherwise the default name.

Selection	**'Port name' of Port 1** | **'Port name' of Port 2** | **...** | **'Port name' of Port 10**
Default value	**'Port name' of Port 10**

[Apply]

Move to the target port in the specified manner.

7.13.4.3.3 Manual Control - Injection valve

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.13.5 872 Extension Module Suppression

7.13.5.1 872 Extension Module Suppression - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Suppression** device is selected in the device table, the menu item **[Edit] ▶ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.13.5.1.1 Properties - General

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.13.5.1.2 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.13.5.2 872 Extension Module Suppression - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module Suppression.

7.13.5.2.1 872 Extension Module Suppression - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **872 Extension Module Suppression** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.13.5.2.1.1 Start parameters - MSM

Tab: **Method ▸ Devices ▸ MSM**

7.13.5.2.1.1.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was

released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.5.2.1.2 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.5.2.2 872 Extension Module Suppression - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 872 Extension Module Suppression:

7.13.5.2.2.1 Commands - MSM

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.13.5.2.2.1.1 Step

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.13.5.2.2.1.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.5.2.2.2 Commands - Peristaltic pump

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the peristaltic pump:

7.13.5.2.2.2.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.5.2.2.2.2 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.5.3 872 Extension Module Suppression - Manual control

7.13.5.3.1 Manual Control - MSM

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'MSM'**

7.13.5.3.1.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.13.5.3.2 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.13.6 872 Extension Module Suppression – MCS

7.13.6.1 872 Extension Module Suppression – MCS - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Suppression – MCS** device is selected in the device table, the menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.13.6.1.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.13.6.1.2 Properties - MCS

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **MCS**

The MCS (Metrohm CO_2 Suppressor) has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - MCS** in which the criteria for monitoring this module can be defined *(see Chapter 7.1.2.11, page 631)*.

7.13.6.1.3 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.13.6.2 872 Extension Module Suppression – MCS - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module Suppression – MCS.

7.13.6.2.1 872 Extension Module Suppression – MCS - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **872 Extension Module Suppression – MCS** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.13.6.2.1.1 Start parameters - MCS

Tab: **Method ▸ Devices ▸ MCS**

Status

Selection	**On** | **Off**
Default value	**On**

On
The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off
The MCS (Metrohm CO_2 Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.6.2.1.2 Start parameters - MSM

Tab: **Method ▸ Devices ▸ MSM**

7.13.6.2.1.2.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.6.2.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▸ **Devices** ▸ **Peristaltic**

Status

Selection	**On** | **Off**
Default value	**Off**

On
The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off
The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.13.6.2.2 872 Extension Module Suppression – MCS - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 872 Extension Module Suppression – MCS:

7.13.6.2.2.1 Commands - MCS

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MCS (Metrohm CO_2 Suppressor):

7.13.6.2.2.1.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the MCS (Metrohm CO_2 Suppressor) on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.6.2.2.2 Commands - MSM

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.13.6.2.2.2.1 Step

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Input range	**0.1 - 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Entry	**64 characters**

Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS***(see Chapter 2.4.3.5, page 37)*, even if the condition was not used.

7.13.6.2.2.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.6.2.3 Commands - Peristaltic pump

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.13.6.2.3.1 On/Off

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Status

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Rate

Rate of the peristaltic pump.

-7 ... +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 ... +15** (without 0)

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.13.6.2.2.3.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.13.6.3 872 Extension Module Suppression - Manual control

7.13.6.3.1 Manual Control - MCS

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'MCS'**

[On]

Start MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is already running.

[Off]

Stop MCS (Metrohm CO_2 suppressor). This is inactive if the suppressor is not running.

7.13.6.3.2 Manual Control - MSM

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'MSM'**

7.13.6.3.2.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then **-----** will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Input range	**1.0 - 10000.0 min**
Default value	**10.0 min**

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.13.6.3.3 Manual control - Peristaltic pump

Tab: **Manual control ▸ Manual control - All devices - 'Device name' ▸ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 … +7 (without 0); with the 858 Professional Sample Processor and 919 IC Autosampler plus: **-15 … +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.14 771 IC Compact Interface

The 771 IC Compact Interface serves to record and evaluate the analog signal of existing Metrohm IC devices of the Compact, Modular and Advanced series with MagIC Net.

7.14.1 771 IC Compact Interface - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **771 IC Compact Interface** device is selected in the device table, then menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.14.1.1 Properties - General

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.14.1.2 Properties - RS 232

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **RS 232**

The connection to 771 IC Compact Interface is configured on this tab.

COM Port

Selection of the serial port to which the 771 IC Compact Interface is connected.

Note

Make sure that the following settings have been made for the FIFO buffer of the selected interface:

Receive buffers	maximum
Transmit buffers	minimum

Input range	**COM 1 - COM n**
Default value	**First COM port found**

[Connect]

Establishes a connection to the device.

[Disconnect]

Disconnects the connection to the device (only then the device can be deleted out of the configuration).

7.14.1.3 Properties - GLP

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ GLP**

Tab: **Configuration ▶ Accessories ▶ [Edit] ▶ Properties... ▶ Accessories - 'Name' ▶ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.14.2 771 IC Compact Interface - Method

Program part: **Method**

Start parameters, data channels and program commands can be defined for the 771 IC Compact Interface in the program part **Method**.

7.14.2.1 771 IC Compact Interface - Start parameters

Subwindow: **Method ▸ Devices**

Clicking on the symbol for the **771 IC Compact Interface** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.14.2.1.1 Channel

Tab: **Method ▸ Devices ▸ Channel #**

Warning limit

The warning limit for the signal from **channel #** is defined. If it is exceeded, the display in the Watch Window turns **red**. No messages are displayed or documented and no action is triggered.

Input range	**1 - 2499 mV**
Default value	**2499 mV**

7.14.2.2 771 IC Compact Interface - Data channels

Tab: **Method ▸ Devices ▸ Analysis ▸ Hardware assignment**

In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

The 771 IC Compact Interface has **two data channels**, both of which have the same properties:

Label of Y axis	Unit	Evaluation
Analog signal	mV	Yes

7.14.2.3 771 IC Compact Interface - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the 771 IC Compact Interface:

7.14.2.3.1 Waiting for injection IC Net

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Wait for injection IC Net**

With this device-dependent time program command **Wait for Injection IC Net** (command with feedback) **MagIC Net** waits until the signal is set for the completed injection at the remote input of the 771 IC Compact Interface.

Max. waiting time

on | off (Default value: **off**)

If this option is activated, the time program is continued as soon as either the requested input signal is received or the waiting time has expired.

Time

Input range	**0 - 9999**
Default value	**10**

Unit

Selection	**s** | **min**
Default value	**min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.14.2.3.2 Measure analog signal

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure analog signal**

The device-dependent time program command **Measure analog signal** (command with feedback) measures the voltage and makes it available as a variable **TP.'command number'.analog signal**. If this command is executed more than once in a time program, then the resulting variable will be overwritten each time.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.14.2.3.3 Measure noise

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
NOISE	TP.'Command number'.NOISE Measured noise. **Units:** ▪ Conductivity detector: µS/cm ▪ 887 Professional UV/VIS Detector: mAU ▪ 771 IC Compact Interface: mV	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
NOISE_Q	TP.'Command number'.NOISE Measured noise. Unit: nC.	Number
NOISE_I	TP.'Command number'.NOISE Measured noise. Unit: nA.	Number

7.14.2.3.4 Measure drift

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **Measuring time**.

Note

If a method uses the amperometric detector in the mode **CV***(see Chapter 7.1.3.1.12, page 646)*, then this command may **not** be used. This is checked by the start test of the method.

Measuring time

Input range	**0.2 - 999.0 min** (Increment: **0.2**)
Default value	**1.0 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The command generates variables of the type **'TP.command number.Variable name'**.

In the case of the conductivity detector, the 887 Professional UV/VIS Detector and the 771 IC Compact Interface, 1 variable is generated:

Variable name	Description	Data type
DRIFT	TP.'Command number'.DRIFT Measured drift. **Units:** ▪ Conductivity detector: (µS/cm)/h ▪ 887 Professional UV/VIS Detector: mAU/h ▪ 771 IC Compact Interface: mV/h	Number

2 variables are generated with the amperometric detector:

Variable name	Description	Data type
DRIFT_Q	TP.'Command number'.DRIFT Measured drift. Unit: nC/h.	Number
DRIFT_I	TP.'Command number'.DRIFT Measured drift. Unit: nA/h.	Number

7.14.3 771 IC Compact Interface - Manual control

The **771 IC Compact Interface** has no functions that can be performed manually.

7.15 High-pressure gradient pump

The high-pressure gradient pump is a «virtual» device, i.e. it is not physically present as **one** device.

It therefore has no properties that could be configured in the device table.

Within a method, it can be formed in the **subwindow: Method ▸ Devices** by combining several existing high-pressure pump modules. In the software, they then behave as a single device. It has properties which differ from those of the separate assemblies from which it was created.

Note

Any number of pump modules can be combined to form a gradient pump. They must fulfill the following conditions:

- The pump modules must all be on the same **850 Professional IC**; it does not matter whether they are permanently installed or connected via an **872 Extension Module**.
- The pump modules must all have the same type of pump head mounted.
- A low-pressure gradient pump can not be part of a high-pressure gradient pump.

7.15.1 High-pressure gradient pump - Configuration

The high-pressure gradient pump is not entered in the device table. It is a «virtual» device that exists only within the method.

7.15.2 High pressure gradient pump - Method

Program part: **Method**

The high-pressure gradient pump is a «virtual» device that exists only within the method.

Start parameters, data channels and program commands can be defined for the high-pressure gradient pump in the program part **Method**.

7.15.2.1 High-pressure gradient pump - Start parameters

Tab: **Method ▸ Devices ▸ 'Name of the high-pressure gradient pump**

Flow

Flow of the high-pressure pump when the hardware is started with **[Start HW]**.

Note

If a separation column or a high-pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high-pressure pump can be set automatically to the standard flow of the column.

Input range	**0.000 - 20.000 mL/min**
Default value	**0.500 mL/min**

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high-pressure pump automatically switches off if this pressure level is not achieved.

Input range	**0.00 - P_{max} MPa**
Default value	**0.00 MPa**

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high-pressure pump automatically switches off if this pressure is exceeded.

Note

If a separation column or a high-pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Input range	**P_{min} - 50.00 MPa**
Default value	**35.00 MPa**

Eluent A

Selecting the eluent A that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent A

Displays the proportion of eluent A in the mixing ratio. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C + % Eluent D)**.

Eluent B

Selecting the eluent B that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent B

Enter the proportion of eluent B in the mixing ratio.

Input range	**0 - 100 - % Eluent C - % Eluent D % %**

Eluent C

Selecting the eluent C that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent C

Enter the proportion of eluent C in the mixing ratio.

Input range	**0 - 100 - % Eluent B - % Eluent D % %**

Eluent D

Selecting the eluent D that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	**not defined** | **Eluents from the Eluent table**
Default value	**not defined**

% Eluent D

Enter the proportion of eluent D in the mixing ratio.

Input range	**0 - 100 - % Eluent B - % Eluent C % %**

When there is a change from one dialog/tab to another, the percentages are checked (**$\sum$ = 100%**).

7.15.2.2 High-pressure gradient pump - Data channels

Tab: **Method ▸ Devices ▸ Hardware assignment**

In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

Property	Label of Y axis	Unit	Evaluation
Flow	Flow	mL/min	No

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Proportion eluent A	Eluent name	%	No
Proportion eluent B	Eluent name	%	No
Proportion eluent C	Eluent name	%	No
Proportion eluent D	Eluent name	%	No

7.15.2.3 High-pressure gradient pump - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the high-pressure gradient pump:

7.15.2.3.1 Off/On

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure gradient pump on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Pump

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.15.2.3.2 Flow

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure gradient pump to the defined value.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Flow

Input range	**0.000 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.15.2.3.3 Gradient

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the virtual high pressure gradient pump made up of several high pressure pumps.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.

- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window **Edit gradient** *(see Chapter 7.15.2.3.4, page 1094)*.
Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.15.2.3.4, page 1094)*.
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The mixing ratio and the flow of the programmed gradient as a factor of time are displayed in a graph below the gradient table. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.15.2.3.4 Editing gradient

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - Gradient ▸ [Edit] ▸ New / Edit ▸ Edit gradient**

Time

Time at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Eluent A

Displays the proportion of eluent A in the mixing ratio as %. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C + % Eluent D)**.

Eluent B

Enter the proportion of eluent B in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent C + % Eluent D) %**
Default value	**0 %**

Eluent C

Enter the proportion of eluent C in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent B + % Eluent D) %**
Default value	**0 %**

Eluent D

Enter the proportion of eluent D in the mixing ratio.

Input range	**0 - 100 - (% Eluent A + % Eluent B + % Eluent C) %**
Default value	**0 %**

When there is a change from one dialog/tab to another, the percentages are checked ($\sum$ = 100%).

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Convex 1...4** | **Linear** | **Concave 1...4** | **Step**

Convex 1...4
The proportion of the eluents of the pump is altered along the selected curve from the setting of the previous command line to the value of the current command line. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Linear
The modification of the eluents of the pump from the setting of the previous command line to the value of the current command line is linear. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear over time. The change in the mixing ratio is not however linear in this situation.

Concave 1...4
The proportion of the eluents of the pump is altered along the selected curve from the setting of the previous command line to the value of the current command line. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step

The proportion of eluents remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line. The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

Flow

Setting the flow of the high-pressure gradient pump to the given value.

Input range	**0.001 - 20.000 mL/min**
Default value	**(Start parameters for flow in the method) mL/min**

7.15.2.3.5 Measuring pressure

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system and makes it available in the form of variable **TP.'command number'.MPA** (in MPa), **TP.'command number'.BAR** (in Bar) and **TP.'command number'.PSI** (in Psi).

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.15.2.3.6 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.15.3 High-pressure gradient pump - Manual Control

Tab: **Manual ▸ Manual control - All devices - 'Device name' ▸ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Input range	**0 - 20 mL/min** (Increment: **0.001**)
Default value	**0.50 mL/min**

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Input range	**0.00 - P_{max} MPa** (Increment: **0.01**)
Default value	**0.00 MPa**

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Input range	**P_{min} - 50.00 MPa** (Increment: **0.01**)
Default value	**35.00 MPa**

Pressure

Current value

Shows the current pressure in the system.

Mixing ratio

Eluent A

Current value

Current percentage of the proportion of eluent A in the mixing ratio

Input

Enter the new proportion of eluent A in the mixing ratio

Input range	**0 - 100 - (% Eluent B + % Eluent C + % Eluent D)**
Default value	**100**

Eluent B

Current value

Current percentage of the proportion of eluent B in the mixing ratio

Input

Enter the new proportion of eluent B in the mixing ratio

Input range	**0 - 100 - % Eluent C - % Eluent D %**
Default value	**100**

Eluent C

Current value

Current percentage of the proportion of eluent C in the mixing ratio

Input

Enter the new proportion of eluent C in the mixing ratio

Input range	**0 - 100 - % Eluent B - % Eluent D %**
Default value	**100**

Eluent D

Current value

Current percentage of the proportion of eluent D in the mixing ratio

Input

Enter the new proportion of eluent D in the mixing ratio

Input range	**0 - 100 - % Eluent B - % Eluent C %**
Default value	**100**

[Start]

The button starts the pump with the set parameters. This is inactive if the pump is running.

[Stop]

The button stops the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Button sends the set parameters to the pump.

[Exit]

Button closes the dialog window **Manual control** and returns to the program part last edited.

7.16 800 Dosino

7.16.1 800 Dosino - General

The **800 Dosino** is a flexible dosing drive which, as an MSB device, can be used with a host of Metrohm main devices. Together with the intelligent **807 Dosing Unit**, it is well suited for both simple dosing and for automation and liquid handling tasks, such as sample transfer or pipetting.

Note

MagIC Net only supports the use of intelligent **807 Dosing units**!

Devices with which the 800 Dosino can be used

- *7.1 850 Professional IC*
- *7.2 881 Compact IC pro*
- *7.3 882 Compact IC plus*
- *7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL*
- *7.6 858 Professional Sample Processor*
- *7.9 919 IC Autosampler plus*
- *7.17 846 Dosing Interface*
- *7.10886 Professional Thermostat / Reactor*
- *7.23920 Absorber module*

7.16.2 Configuration MSB Device

An MSB device is not entered in the device table. In the configuration it is only listed under the MSB connections of the main device to which it is connected (e.g. **850 Professional IC** or **858 Professional Sample Processor**).

7.16.3 800 Dosino - Method

Subwindow: **Method ▸ Devices**

An 800 Dosino (as is the case with all MSB devices) cannot be added separately to a method. It is added to the list of devices and the main device to which it is attached is added as the method.

If the method is created without connected devices, the MSB device can be added separately. The MSB connector on the main device must be entered manually in such cases.

In the device group, the 800 Dosino behaves like a stand-alone device. It can be selected and graphically displayed in the upper area of the device window.

7.16.3.1 800 Dosino - Start parameters

Tab: **Method** ▸ **Devices** ▸ **Dosino**

Solution

Select the solution for the Dosino that is to be available when the hardware is started with **[Start HW]**. A check is carried out in the method run to ensure that the correct solution has been put on the dosing device. When the method is started, the working life and GLP test interval are checked for the selected solution.

Selection	**not defined** | **Solutions from the solution table**
Default value	**not defined**

not defined
The solution is not checked.

Solutions from the solution table
Only "intelligent" solutions, i.e. solutions that are assigned to an 807 Dosing Unit, can be selected.

Connector

Shows the main device and the MSB connector which the **800 Dosino** is on.

7.16.3.2 800 Dosino - CommandsCommands

Subwindow: **Method** ▸ **Time program**

Overview of the time program commands available for the 800 Dosino:

7.16.3.2.1 Dosing

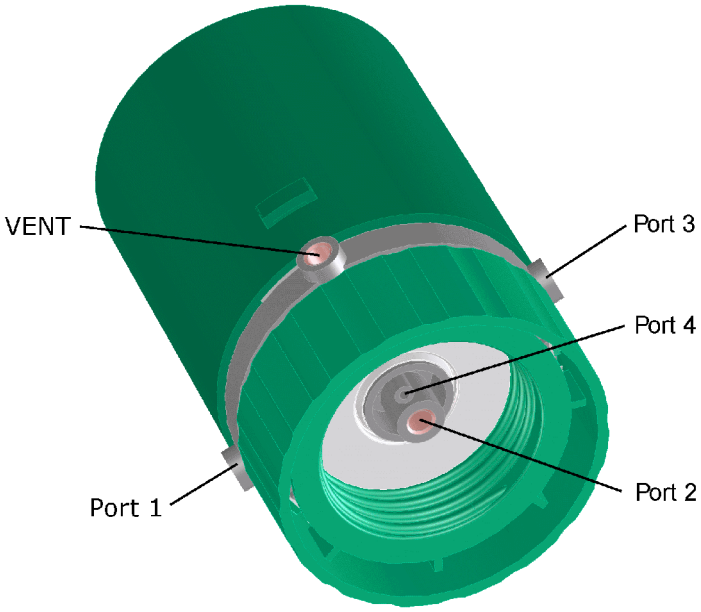
Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Dose**

The device-dependent time program command **Dosing** (command with feedback) doses the specified volume via the defined port. There is no automatic filling beforehand or afterwards.

Parameters

Port

Port via which dosing takes place. Formula input possible.



Input range	**1 - 4**
Default value	**1**

Volume

Volume to be transported. Formula input possible.

Input range	**0.0000 - 99999.9000 mL**
Default value	**1.0000 mL**

Dosing rate

Speed at which discharge takes place. The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Filling rate

Speed at which filling takes place. The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Default value	**1.00 mL/min**
Selection	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
CONC	Concentration of the dosed solution as long as one has been assigned to the Dosino.	Number
DVOL	Dosed volume [mL]	Number

7.16.3.2.2 Aspirate

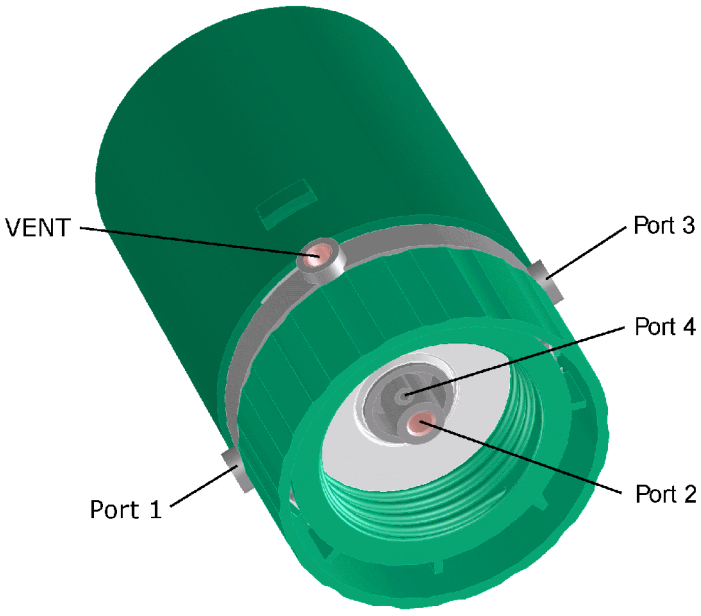
Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Aspirate**

The device-dependent time program command **Aspirate** (command with feedback) draws in the specified volume via the defined port. As with the command **Dosing**, the cylinder is not filled automatically beforehand or afterwards. It should be possible to reach the volume to be aspirated with a single piston stroke.

Parameters

Port

Port via which aspiration takes place. Formula input possible.



Input range	**1 - 4**
Default value	**1**

Volume

Volume to be transported. Formula input possible.

Input range	**0.0000 - 50.0000 mL**
Default value	**1.0000 mL**

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
AVOL	Aspirated volume [mL].	Number

7.16.3.2.3 Filling

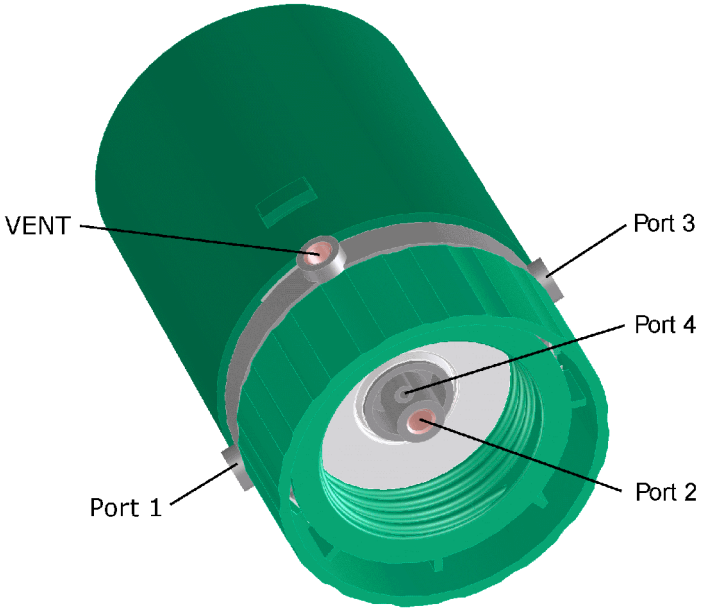
Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Fill**

The device-dependent time program command **Fill**Fill (command with feedback) fills the cylinder via the specified port. The valve disc stops afterwards on the selected port.

Parameters

Port

Port via which filling takes place. Formula input possible.



Input range	**1 - 4**
Default value	**2**

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.4 Eject to end volume

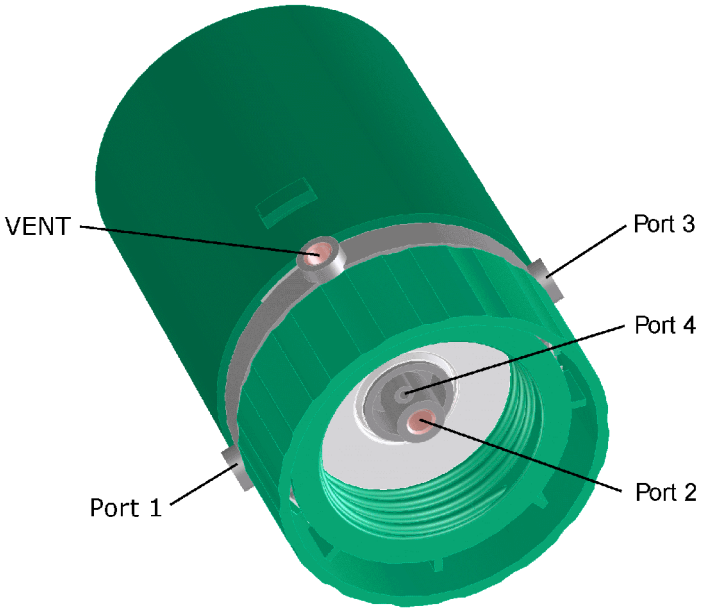
Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Eject to end volume**

The device-dependent time program command **Eject to end volume** (command with feedback) ejects the entire contents of the cylinder via the specified port. In contrast to the command **Eject to stop**, the piston travels to the maximum volume mark, i.e. until it has performed 10,000 pulses. This command should be used for pipetting functions for emptying the cylinder.

Parameters

Port

Port via which ejection takes place. Formula input possible.



Input range	**1 - 4**
Default value	**4**

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**

Selection	**maximum**
Default value	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.5 Eject to stop

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Eject to stop**

The device-dependent time program command **Eject to stop** (command with feedback) ejects the entire contents of the cylinder via the specified port. The piston is lowered to the stop point, i.e. past the maximum volume mark.

Note

This function should only be carried out to eject any air bubbles present.

Caution

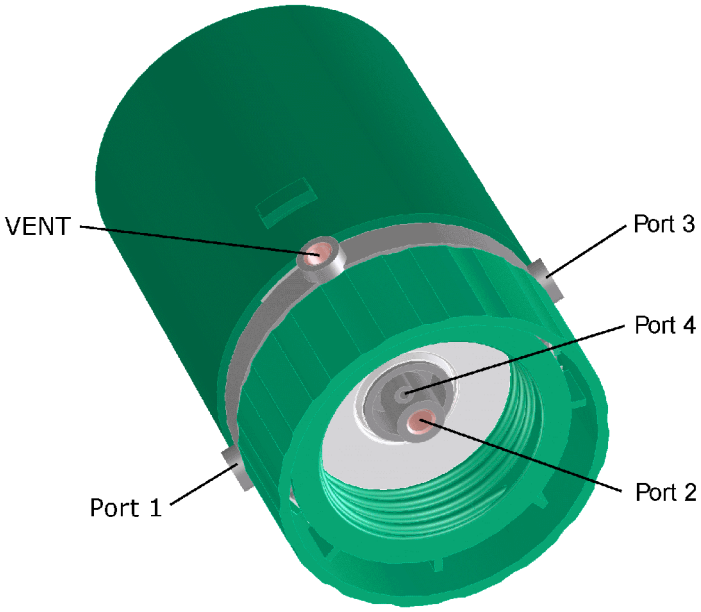
The command **Aspirate** does not function directly after **Eject to stop**.

If aspiration is to take place after **Eject to stop**, then **Eject to end volume** must first be carried out. In this command, the port via which aspiration is to take place must already be selected.

Parameters

Port

Port via which ejection takes place. Formula input possible.



Input range	**1 - 4**
Default value	**4**

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**

Selection	**maximum**
Default value	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.6 Exchange position

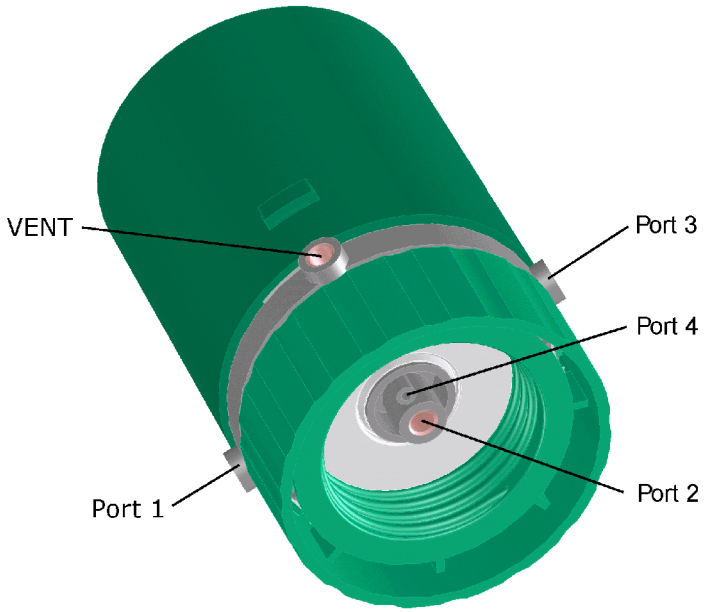
Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Exchange position**

With the device-dependent time program command **Exchange position** (command with feedback) the cylinder is first filled via the port specified. The valve disc is then turned to **Port 2** and the dosing drive can be removed from the dosing unit.

Parameters

Fill port

Port via which filling takes place. Formula input possible.



Input range	**1 - 4**
Default value	**2**

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**

Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.7 Change port

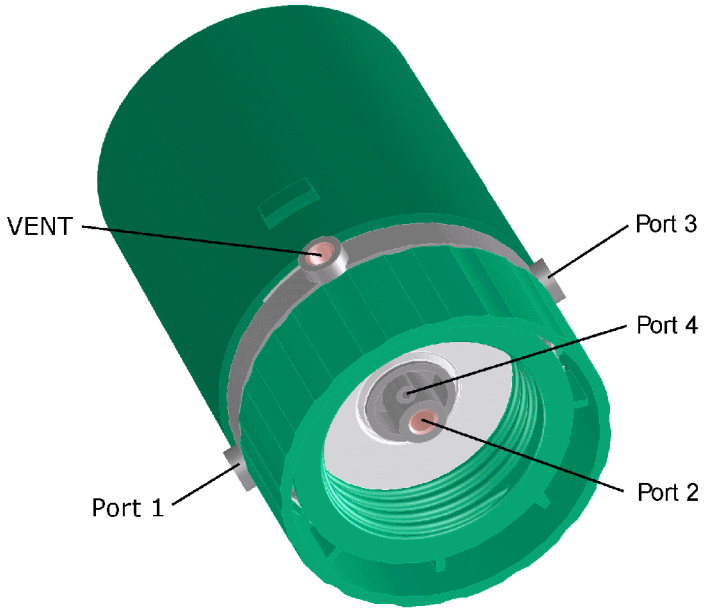
Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Change port**

The device-dependent time program command **Change port** (command with feedback) results only in one rotation of the valve to the given port and not in any piston movement.

Parameters

Port

The stopcock is moved to the given port. Formula input possible.



Input range	**1 - 4**
Default value	**2**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.8 Compensate

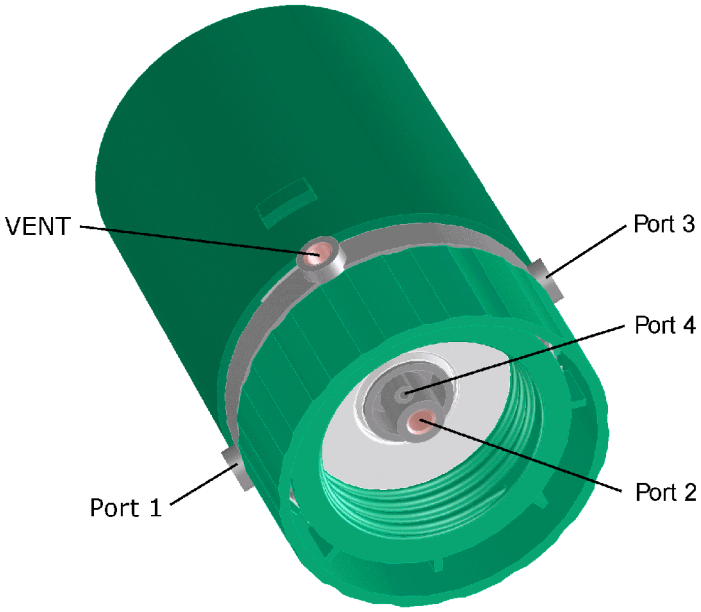
Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Compensate**

Because of the fact that the dosing units are interchangeable, the coupling of the Dosino piston rod (spindle) exhibits a low mechanical tolerance that can be noticed when the piston changes its direction of movement. This tolerance can be compensated for with the device-dependent time program command **Compensate** (command with feedback). A short piston movement is first made in the same direction as the previous movement, which is then followed by a piston movement in the reverse direction.

Parameters

Port

Port via which the piston motions run. Formula input possible.



Input range	**1 - 4**
Default value	**4**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.9 Preparing

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Prepare**

The device-dependent time program command **Prepare** (command with feedback) is used to prepare a dosing unit.

The cylinder and all the tubing of a dosing unit are rinsed in an extensive cleaning sequence. The parameters required for this process are stored in the configuration of the solution.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.10 Dosino-Gradient

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - Dosino gradient**

The device-dependent time program command **Dosino gradient** (command without feedback) starts a flow gradient program for the Dosino. The dosing unit port via which the Dosino doses a solution is specified in Configuration and is read out while the time program runs*(see page 584)*.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Dosino gradient

Flow

High pressure pump flow (see Start parameter Pump).

Table

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles**:
  Sets the column width.
- **Double-click on the margin between column titles**:
  Sets the optimal column width.
- **Drag the column title**:
  Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the **Edit gradient** *(see Chapter 7.1.3.3.1.4, page 664)* window.
Edit	Edit selected line in the table in the **Edit gradient** window *(see Chapter 7.1.3.3.1.4, page 664)*.
Copy	Copy the selected lines to the clipboard.
Paste	Insert line from the clipboard into the table.
Cut	Cut the selected lines and copy them to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a function of time. The graph is updated automatically after the gradient table has been edited.

Tandem dosing

If the check box **Tandem dosing** is activated, then a second dosing device can be defined in order to enable continuous dosing. Dosing is carried out with a combination of two dosing devices so that the second dosing device is dosing while the first one is being filled and vice-versa *(see Chapter 7.16.3.2.14, page 1117)*.

Dosing device

Selection of the second dosing device for the tandem dosing.

Filling rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.11 Edit Dosino gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Moment at which the gradient command is to be executed.

Input range	**0.00 - 1000.00 min**
Default value	**0.00 min**

Proportion

Proportion of flow from the Dosino to the flow of the high pressure pump.

Input range	**0.001 - 20.00 %**
Default value	**(Start parameters for flow in the method) %**

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	**Linear** | **Step**

Linear
The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step
The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then modified to the value of the current command line.

7.16.3.2.12 Empty

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Empty**

The device-dependent time program command **Empty** (command with feedback) is used to empty the cylinder and the tubing of a dosing unit.

The cylinder and all the tubing of a dosing unit are emptied in an extensive sequence. The parameters required for this process are stored in the configuration of the solution.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.16.3.2.13 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.16.3.2.14 Tandem dosing

A second dosing device can be defined with **Tandem dosing** activated in order to enable uninterrupted dosing. Dosing is carried out with a combination of two dosing devices so that the second dosing device is dosing while the first one is being filled and vice-versa.

However, in order to ensure continuous dosing, the following points must be taken into account:

- **Keeping filling times short**
  Use the highest possible filling rate in order to keep the filling times as short as possible. Please note the viscosity and density of the liquid.
- **Filling rate with different cylinders**
  When you use two dosing devices with different cylinder volumes (dosing cylinder 2 > dosing cylinder 1), then the minimum filling rate of the larger cylinder 2 must be:
  Filling rate 2 $\geqq$ Filling rate 1 • ($V_{\text{dosing cylinder 2}}/V_{\text{dosing cylinder 1}}$)
- **Rule for dosing rate**
  The dosing rate must not exceed 75 % of the filling rate of the smaller cylinder. This corresponds to the following values (at the maximum filling rate):

Cylinder volume	maximum dosing rate		max. flow rate	
	Exchange unit	Dosing unit	Exchange unit	Dosing unit
1 mL	2.25 mL/min	---	approx. 130 mL/h	---
2 mL	---	5.00 mL/min	---	approx. 300 mL/h
5 mL	11.25 mL/min	12.50 mL/min	approx. 670 mL/h	approx. 750 mL/h
10 mL	22.50 mL/min	25.00 mL/min	approx. 1.3 L/h	approx. 1.5 L/h
20 mL	45.00 mL/min	50.00 mL/min	approx. 2.7 L/h	approx. 3.0 L/h
50 mL	112.50 mL/min	124.50 mL/min	approx. 6.7 L/h	approx. 7.5 L/h

7.16.4 800 Dosino - Manual control

Tab: **Manual ▸ Manual control - 'Device name' ▸ 'Dosino'**

Command

Selection of the Dosino command that is to be manually triggered.

Selection	**Dose** | **Aspirate** | **Fill** | **Prepare** | **Empty**
Default value	**Dose**

Dose
Doses the specified volume via the defined port. There is no automatic filling beforehand or afterwards.

Aspirate
Draws in the specified volume via the defined port. There is no automatic filling beforehand or afterwards.

Fill
The cylinder is filled in a fixed sequence. The parameters required for this process are stored in the configuration of the solution.

Prepare
The cylinder and all the tubing of a dosing unit are rinsed in an extensive cleaning sequence. The parameters required for this process are stored in the configuration of the solution.

Empty
The cylinder and all the tubing of a dosing unit are emptied in an extensive sequence. The parameters required for this process are stored in the configuration of the solution.

Solution

Display of the solution assigned to the Dosino.

Volume

Current value

Display of the current dosed volume.

Input

Enter the volume that is to be dosed / moved.

Input range	**0.0000 - 99999.9000 (Exception: with command "Aspirate" 50.0000) mL**
Default value	**1.0000 mL**

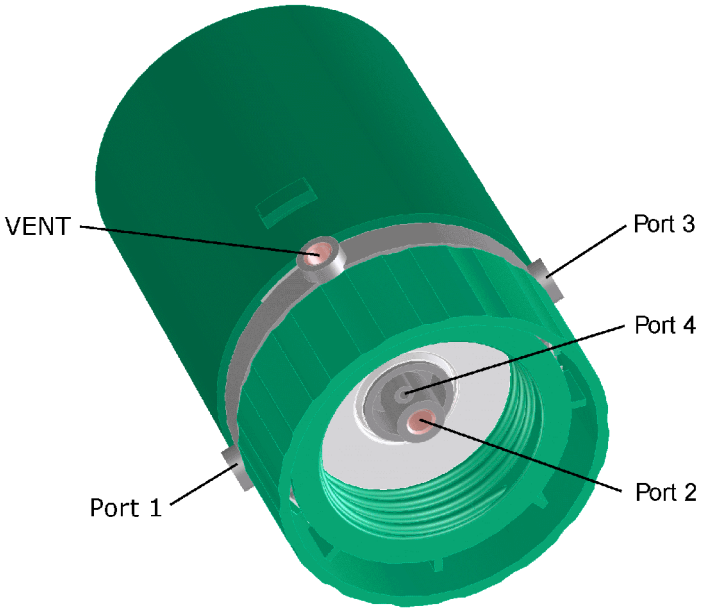
Port

Current value

Shows the current port.

Input

Selection of a port for the action selected in the parameter **Command**.



Input range	**1 - 4**
Default value	**1**

Dosing rate

Input

Dosing rate input. The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL

Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL

Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL

Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Filling rate

Input

Filling rate input. The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Input range	**0.01 - 6.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 5 mL

Input range	**0.01 - 16.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 10 mL	
Input range	**0.01 - 33.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 20 mL	
Input range	**0.01 - 66.00 mL/min**
Selection	**maximum**
Default value	**maximum**

Cylinder volume 50 mL	
Input range	**0.01 - 166.00 mL/min**
Selection	**maximum**
Default value	**maximum**

[Start]

Start Dosino command.

[Stop]

Stop Dosino command.

7.17 846 Dosing Interface

The **846 Dosing Interface** is a USB-capable control unit for connecting 1 – 4 MSB devices.

7.17.1 846 Dosing Interface - Configuration

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

If a type **846 Dosing Interface** device is selected in the device table, then the menu item **[Edit] ▸ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

The device can be initialized if necessary by means of the **[Initialize]** menu item in the device table *Device table - Desktop*.

7.17.1.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.17.1.2 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Processor**, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB #

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.17.1.3 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.17.2 846 Dosing Interface - Method

The **846 Dosing Interface** itself has no start parameters and no method commands.

In order to be able to use MSB devices connected to an 846 Dosing Interface, the 846 Dosing Interface must be added to the list of devices in the method *(see Chapter 5.6.3.1, page 381)*.

In the same way, the MSB devices connected to the 846 Dosing Interface must be added to the method. The MSB connector must be selected for each MSB device *(see Chapter 5.6.3.5, page 386)*.

7.17.3 846 Dosing Interface - Manual control

The **846 Dosing Interface** has no functions that can be performed manually.

7.18 801 Stirrer, 803 Ti Stand, 804 Ti Stand

7.18.1 Stirrer - General

The devices **801 Magnetic Stirrer**, **803 Ti Stand** and **804 Ti Stand** are MSB devices and can be operated in a host of Metrohm main devices. They are referred to and described here together as **stirrers**.

Devices with which the stirrers can be used

- *7.1 850 Professional IC*
- *7.2 881 Compact IC pro*
- *7.3 882 Compact IC plus*
- *7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL*
- *7.6 858 Professional Sample Processor*
- *7.9 919 IC Autosampler plus*
- *7.17 846 Dosing Interface*
- *7.10886 Professional Thermostat / Reactor*

7.18.2 Configuration MSB Device

An MSB device is not entered in the device table. In the configuration it is only listed under the MSB connections of the main device to which it is connected (e.g. **850 Professional IC** or **858 Professional Sample Processor**).

7.18.3 Stirrer - Method

Subwindow: **Method ▸ Devices**

A stirrer (as is the case with all MSB devices) cannot be added separately to a method. It is added to the list of devices and the main device to which it is attached is added as the method.

If the method is created without connected devices, the MSB device can be added separately. The MSB connector on the main device must be entered manually in such cases.

In the device group, the stirrer behaves like a stand-alone device. It can be selected and graphically displayed in the upper area of the device window.

7.18.3.1 Stirrer - Start parameters

Tab: **Method ▸ Devices ▸ Stirrer**

Status

Selection	**On** | **Off**

On
The stirrer is switched on when the hardware is started with **[Start HW]**.

Off
The stirrer is switched off when the hardware is started with **[Start HW]**.

Speed

Stirring rate when the hardware is started with **[Start HW]**.

Input range	**-15 - 15 (without 0)**
Default value	**8**

Connector

Display of the connector on the device to which the stirrer is connected.

7.18.3.2 Stirrer - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the stirrers **801 Magnetic Stirrer**, **803 Ti Stand** and **804 Ti Stand**:

7.18.3.2.1 On/Off

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the stirrer on/off.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Stirrer

Selection	**On** | **Off**
Default value	**On**

On
Switches the module on.

Off
Switches the module off.

Speed

Input field for the stirring rate.

Input range	**-15 - 15 (without 0)**
Default value	**8**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.18.3.2.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.18.4 Stirrer - Manual control

Tab: **Manual ▶ Manual control - 'Device name' ▶ 'Stirrer name'**

Speed

Current value

Current value of the dosing rate.

Input

Entering a new value for the dosing rate.

Input range	**-15 - 15 (without 0)**
Default value	**8**

[On]

The button starts the stirrer with the set parameters. This is inactive if it is already running.

[Off]

The button stops the stirrer. This is inactive if it is not running.

[Apply]

The button sends the set parameters to the stirrer.

7.19 Remote Box MSB

7.19.1 Remote Box MSB - General

The **6.2148.010 Remote Box MSB** is an MSB device and can be operated with a wide range of Metrohm main devices. It makes it possible to control third-party devices andMagIC Net can receive external control signals.

Devices with which the Remote Box MSB can be used

- *7.1 850 Professional IC*
- *7.2 881 Compact IC pro*
- *7.3 882 Compact IC plus*
- *7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL*
- *7.6 858 Professional Sample Processor*
- *7.9 919 IC Autosampler plus*
- *7.17 846 Dosing Interface*
- *7.10886 Professional Thermostat / Reactor*

7.19.2 Configuration MSB Device

An MSB device is not entered in the device table. In the configuration it is only listed under the MSB connections of the main device to which it is connected (e.g. **850 Professional IC** or **858 Professional Sample Processor**).

7.19.3 Remote Box MSB - Method

Subwindow: **Method ▸ Devices**

A Remote Box MSB (as is the case with all MSB devices) cannot be added separately to a method. It is added to the list of devices and the main device to which it is attached is added as the method.

If the method is created without connected devices, the MSB device can be added separately. The MSB connector on the main device must be entered manually in such cases.

A Remote Box MSB behaves in the list of devices like a stand-alone device. It can be selected and graphically displayed in the upper area of the device window.

7.19.3.1 Remote Box MSB - Start parameters

Tab: **Method ▸ Devices ▸ Remote Box MSB**

Output signal

Input of the binary pattern for the output signal of exactly 14 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

***** = retain line status

p = set pulse (pulse length = 200 ms). If an impulse with a different length is to be emitted, a corresponding template must be defined.

The outputs are always numbered from right to left: 13 12 11 10 9 8 7 6 5 4 3 2 1 0.

Example: **********1*** sets the output line 1 to active (= set), **************0*** sets the line to inactive.

Note

We recommend masking the irrelevant output lines with an asterisk ***** so as not to alter these line conditions.

Entry	**0, 1, *, p (14 characters)**
Default value	******************

Selection	**Select a predefined signal template**

Connector

Shows the main device and the MSB connector at which the Remote Box MSB is located.

7.19.3.2 Remote Box MSB - Commands

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the Remote Box MSB:

7.19.3.2.1 Scan lines

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Scan lines**

The device-dependent time program command **Scan lines** (command with feedback) serves to request remote input signals. It waits until the lines show the required status, then runs the time program.

7.19.3.2.1.1 Scan lines - Parameters

Input signal

Input of the binary pattern for the input signal of exactly 8 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

***** = retain line status

The input lines are always numbered from right to left: 7 6 5 4 3 2 1 0.

Example: *******1 expects an active input line 0 (**1** = set).

Note

Input lines that are of no interest or for which no defined condition can be predicted should also be masked with an asterisk *****.

Entry	**0, 1, * (8 characters)**
Default value	************
Selection	**Select a predefined signal template**

Max. waiting time

on | off (Default value: **off**)

If this option is activated, the time program is continued as soon as either the requested input signal has been received or the waiting time has expired.

Note

The **Max. waiting time** is rounded to a whole number by MagIC Net. A **Max. waiting time** less than 1.0 second will be rounded down to 0.

A **Max. waiting time** of 0 causes MagIC Net to wait "endlessly long".

Therefore, make sure when making a manual entry or when using a formula that the **Max. waiting time** is at least 1.0 second.

Time

Input range	**0.0 - 9999.9**
Default value	**10.0**

Unit

Selection	**s** | **min**
Default value	**min**

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
TOU	**1** = max. waiting time expired **0** = max. waiting time not expired	Number

7.19.3.2.1.2 Scan lines - 849 Level Control / Mitsubishi GA-100 for Combustion IC

Here you will find the list of signals with which the **849 Level Control** / the **Mitsubishi GA-100** (for Combustion IC) device can be actuated via Remote Box MSB in **MagIC Net**. These signals can be saved for the purpose of convenient reuse as templates.

Note

Preconditions for correct scanning of the 849 Level Control:

- The 6.2148.010 Remote Box MSB is connected to the MSB connector of a device *(see "Devices with which the Remote Box MSB can be used", page 1129)*, and this is in turn connected to the PC.
- The Remote Box MSB is connected to the 849 Level Control with the cable 6.2125.090.

Table 2 Remote signals for scanning the 849 Level Control

Sensor	Function	Input signal	Canister
Overall status ok	No sensor signal active	*****0**	
Overall status "active"	At least one sensor signal active	*****1**	
Full level 1 ok	Overflow monitoring 1: everything ok	***0****	
Full level 1 "active"	Overflow warning at sensor 1	***1****	full
	Overflow warning at sensor 1	***1*1**	full
Full level 2 ok	Overflow monitoring 2: everything ok	**0*****	
Full level 2 "active"	Overflow warning at sensor 2	**1*****	full
	Overflow warning at sensor 2	**1**1**	full
Empty level 1 ok	Empty level monitoring 1: everything ok	*0******	
Empty level 1 "active"	Empty level warning at sensor 1	*1******	empty
	Empty level warning at sensor 1	*1***1**	empty
Empty level 2 ok	Empty level monitoring 2: everything ok	0*******	
Empty level 2 "active"	Empty level warning at sensor 2	1*******	empty
	Empty level warning at sensor 2	1****1**	empty

Note

Preconditions for correct scanning of the Mitsubishi GA-100:

- The 6.2148.010 Remote Box MSB is connected to the MSB connector of a device *(see "Devices with which the Remote Box MSB can be used", page 1129)*, and this is in turn connected to the PC.
- The MSB Remote Box is connected to the Mitsubishi GA-100 with the 6.2141.140 cable. The two cable ends are correctly connected to the connector strip of the GA-100.

Table 3 Remote signal for scanning the Mitsubishi GA-100

Function	Input signal
Inject signal of the GA-100 to the IC device (synchronization)	*****1**

7.19.3.2.2 Set lines

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Set lines**

The device-dependent time program command **Set lines** (command with feedback) is used to control third-party devices during a run. It sets the remote lines to the defined values.

7.19.3.2.2.1 Set lines - Parameters

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Output signal

Input of the binary pattern for the output signal of exactly 14 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

***** = retain line status

p = set pulse (pulse length = 200 ms). If an impulse with a different length is to be emitted, a corresponding template must be defined.

The outputs are always numbered from right to left: 13 12 11 10 9 8 7 6 5 4 3 2 1 0.

Example: **********1*** sets the output line 1 to active (= set), **************0*** sets the line to inactive.

Note

We recommend masking the irrelevant output lines with an asterisk ***** so as not to alter these line conditions.

Entry	**0, 1, *, p (14 characters)**
Default value	******************
Selection	**Select a predefined signal template**

7.19.3.2.2.2 Set lines - Output signals for control of devices

Here you will find lists of signals with which older-generation Metrohm IC devices, as well as devices from other manufacturers, can be actuated in **MagIC Net** via Remote Box MSB. These output signals can be saved for the purpose of convenient reuse as templates.

Note

Preconditions for the correct control:

- The 6.2148.010 Remote Box MSB is connected to the MSB connector of a device *(see "Devices with which the Remote Box MSB can be used", page 1129)*, and this is in turn connected to the PC.
- The Remote Box MSB is connected to the IC device with a corresponding remote cable.

Table 4 Remote signals for controlling Metrohm IC devices

Device	Function	Output signal	Cable (Remote Box MSB - Device)
833 IC Liquid Handling Unit	Starting the peristaltic pump	**********1*	6.2143.200 6.2143.210 6.2143.220 (Connection B)
833 IC Liquid Handling Unit	Stopping the peristaltic pump	**********0*	6.2143.200 6.2143.210 6.2143.220 (Connection B)
833 IC Liquid Handling Unit	Switch actuator forward, e.g. switch MSM suppressor	**********P**	6.2143.210 6.2143.220 (Connection C)
833 IC Liquid Handling Unit	Starting a second peristaltic pump, e.g. dialysis pump	*******1******	6.2143.220 (Connection D)
833 IC Liquid Handling Unit	Stopping a second peristaltic pump	*******0******	6.2143.220 (Connection D)
813 Compact Autosampler 838 Advanced IC Sample Processor	Starting the sample changer, reply to "Wait 1"	*********P****	6.2141.190
812 Valve Unit	Filling valve A	******P*******	6.2141.160
812 Valve Unit	Inject valve A	********P******	6.2141.160
812 Valve Unit	Filling valve B	**********P***	6.9921.189

Device	Function	Output signal	Cable (Remote Box MSB - Device)
812 Valve Unit	Inject valve B	**********P	6.9921.189
853 MCS CO_2 Suppressor	Starting the CO_2 Suppressor	******1******	6.2143.230
853 MCS CO_2 Suppressor	Stopping the CO_2 Suppressor	******0******	6.2143.230

Table 5 Remote signals for controlling other devices

Device	Function	Output signal	Cable (Remote Box MSB - Device)
Agilent 61X0 Quadrupole MSD	Start data acquisition MS	**********p	6.2141.310

7.19.3.2.3 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.19.4 Remote Box MSB - Manual control

Tab: **Manual** ▸ **Manual control - 'Device name'** ▸ **'Remote Box MSB'**

Current status

Input signal

Display of the current status of the 8 input lines.

Output signal

Display of the current status of the 14 output lines.

Templates/Entry

Input signal

If the current status corresponds to one of the defined templates for the inputs, the corresponding name is shown here.

> **Note**
>
> Only templates without asterisks ***** are recognized.

Output signal

Input of the binary pattern for the output signal of exactly 14 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

***** = retain line status

p = set pulse (pulse length = 200 ms). If an impulse with a different length is to be emitted, a corresponding template must be defined.

The outputs are always numbered from right to left: 13 12 11 10 9 8 7 6 5 4 3 2 1 0.

Example: **********1*** sets the output line 1 to active (= set), **************0*** sets the line to inactive.

> **Note**
>
> We recommend masking the irrelevant output lines with an asterisk ***** so as not to alter these line conditions.

Entry	**0, 1, *, p (14 characters)**
Default value	******************
Selection	**Select a predefined signal template**

[Apply]

Setting the binary pattern defined under **output signal**.

7.20 Barcode reader

7.20.1 Barcode reader - General

A barcode reader is used to enter sample and other data in **MagIC Net**.

Note

A barcode reader only has to be configured as a **device** in **MagIC Net** when the functions for automatic data import into sample tables are to be used. If a USB barcode reader not configured as a device is connected to the PC, it will be recognized (in the same way as a keyboard) as being an **HID** (Human Interface Device) that can be used for data entries in all fields.

Barcode reader as device

Note

If the functions of a barcode reader are to be used for automatic data import into sample tables, the barcode reader must be added as a device in **MagIC Net**, and configured so that during each data transfer the following preamble and postamble control characters are also transmitted:

Preamble #1: **02hex** (^B, STX)

Preamble #2: **02hex - 09hex** (different identification code **02hex - 09hex** for each barcode reader connected)

Postamble #1: **04hex** (^D, EOT)

Finish: **<CR><LF>**

Refer to the barcode reader manual for instructions regarding its configuration.

Barcode reader as HID

Note

If a barcode reader is to be used as HID it must be configured in such a way that it does not transmit any preamble control characters.

Refer to the barcode reader manual for instructions regarding its configuration.

7.20.2 Barcode reader - Overview

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

The parameters for a **barcode reader** are set on the following tabs:

- *General*
  General device information such as device name, device type, serial number, etc.
- *Settings*
  Settings for the barcode reader.
- *GLP*
  Information on GLP tests and GLP monitoring.

7.20.3 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected** | **not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.20.4 Properties - Settings

Tab: **Configuration** ▸ **Device** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Settings**

Barcode reader ID

Shows the identification of the barcode reader.

Input target

Selection of the field into which the output from the barcode reader is to be entered.

Selection	**Active input field** | **Method** | **Ident** | **Sample type** | **Position** | **Injections** | **Volume** | **Dilution** | **Sample amount** | **Info 1...4** | **Value 1...4**
Default value	**Active input field**

[Connect]

Establishes a connection to the barcode reader. The dialog window **Establish connection** *(see Chapter 7.20.6, page 1143)* appears.

[Disconnect]

Disconnects the connection to the barcode reader (only then the device can be deleted out of the configuration).

7.20.5 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing ... in the dialog window **Select date** *(see Chapter*

2.5.1, page 81). After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.20.6 Establish a connection to the barcode reader

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Settings** ▸ **[Connect]** ▸ **Establish connection**

In order to check a connection to a barcode reader the button **[Connect]** on the tab **Settings** has to be pressed.

If then a barcode is read in with the barcode reader, the received data will be inserted in the following fields:

Barcode reader ID

Identifier of the barcode reader.

Data

Read-in data.

7.21 RS-232 device

The generic device **RS-232 device** allows any RS-232-conforming device to be used with MagIC Net. The time program command **Transfer** *(see Chapter 7.21.2.2, page 1150)* is used for communicating with the device.

Note

Overview of which MagIC Net version support the RS-232 device: *Versions*

7.21.1 RS-232 device - Configuration

Note

Devices which are to be integrated in MagIC Net as generic RS-232 devices, will **not** be recognized automatically. They must be added **manually** to the table of devices *(see Chapter 6.5.2.2, page 553)*.

If a device type **RS-232 device** is selected in the device table, then menu item **[Edit]** ▸ **Properties...** can be used to open the dialog window **Properties -'Device name' - 'Device type'** with the device-specific tabs.

7.21.1.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

General properties of the RS-232 device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**RS-232 device #**

Device type

Display of the device type.

Program version

Optional text input.

Entry	**50 characters**
Default value	**empty**

Device serial number

The device serial number to be entered by the user when registering the device. A **unique** device serial number must be entered for each device of the type **RS-232 device**.

Entry	**50 characters**

Start-up

Shows the date on which the RS-232 device was manually added to the device table.

Remarks

Remarks about the RS-232 device

Entry	**1000 characters**
Default value	**empty**

7.21.1.2 Properties - RS-232

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ RS-232**

The properties of the RS-232 interface are defined on this tab.

COM Port

Selection of the serial interface on the PC to which the device is connected.

Selection	**COM1** | **COM2** | **…** | **COMn**
Default value	**COMn**

COMn
First free COM port.

Baud rate

Transmission rate. The baud rate selected here must also be set on the device itself.

Selection	**300** | **600** | **1200** | **2400** | **4800** | **9600** | **19200** | **38400** | **57600** | **115200**
Default value	**9600**

Data bit

Number of data bits.

Selection	**7** | **8**
Default value	**8**

Parity

Type of parity testing.

Selection	**None** | **Odd** | **Even**
Default value	**None**

Stop bit

Number of stop bits.

Selection	**1** | **2**
Default value	**1**

Handshake

Type of data transmission protocol.

Selection	**None** | **HW** | **SW**
Default value	**None**

Timeout

Maximum waiting time for receiving characters. If this time is exceeded, receiving will be stopped.

Input range	**1000 - 9999 ms**
Default value	**2000 ms**

Terminator for send

Terminator for send in hexadecimal code.

Selection	**\0D** | **\0D\0A** | **\0D\0A\0A** | **\0D\0D\0A**
Default value	**\0D\0A** (**\0D** = CR, **\0A** = LF)

Terminator for receiving

Final character for receiving in hexadecimal code.

Selection	**\0D** | **\0D\0A** | **\0D\0A\0A** | **\0D\0D\0A**
Default value	**\0D\0A** (**\0D** = CR, **\0A** = LF)

Code page

Code page used for the data transfer.

Selection	**Cp437** | **Cp850** | **Cp852** | **ASCII**
Default value	**Cp437**

Sending characters separately

on | off (Default value: **off**)

If this option is enabled each character is sent separately. The delay time is allowed to run before sending the next character.

Delay time

Delay time until the sending of the next character.

Input range	**0 - 9999 ms**
Default value	**0 ms**

[Connect]

Establishes the connection to the RS-232 device. The dialog window **Establish connection** appears *(see Chapter 7.21.1.4, page 1148)*.

[Disconnect]

Disconnects the connection to the RS-232 device (only then the device can be deleted out of the configuration).

7.21.1.3 Properties - GLP

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ GLP**

Tab: **Configuration ▸ Accessories ▸ [Edit] ▸ Properties... ▸ Accessories - 'Name' ▸ GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing … in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.21.1.4 Establish a connection to the RS-232 device

Dialog window: **Configuration ▸ Devices ▸ Properties ▸ RS-232 ▸ Connect**

In order to establish a connection to a RS-232 device the button **[Connect]** has to be pressed on the tab **RS-232**.

If then a message is entered in the field besides the button **[Send]** and is sent, the message received by the device appears in the large text field.

Text field

The messages sent to and received by the device are shown in the large text field.

Input field

Input field for a message to be sent to the device.

[Send]

Sends the message shown in the input field to the device.

7.21.2 RS-232 device - Method

Subwindow: **Method** ▸ **Devices**

Start parameters can be defined for the **RS-232 device** in the program part **Method**. The **Transfer** command of the RS-232 device can be used in time programs.

7.21.2.1 RS-232 device - Start parameters

A sequence of up to 10 device-specific instructions can be defined as the start parameter(s) of the RS-232 device. These will be sent to the connected RS-232 device by pressing **[Start HW]**. This way, the RS-232 device is able to react to instructions when the IC hardware begins the equilibration.

Note

Only instructions of the type **Write** are possible in the start parameters of the RS-232 device.

7.21.2.1.1 Table of Single Instructions

Tab: **Method** ▸ **Devices** ▸ **RS-232**

The table lists the single instructions which are sent to the respective RS-232 device with **[Start HW]**. Up to 10 single instructions are possible. The table contains the following columns, which are described in detail in *Edit Instruction*:

Name

Optional name of the instruction.

Instruction

Literal instruction text or formula, which is evaluated as being an instruction.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Edit Instruction* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Edit Instruction* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected line to the clipboard.
Insert	Paste line from the clipboard below in the table.

Cut	Cut the selected line and copy it to the clipboard.
Delete	Delete the selected line.

7.21.2.1.2 Edit Instruction

Dialog window: **Method** ▸ **Devices** ▸ **RS-232** ▸ **Edit** ▸ **'Instruction #'**

In this dialog, an instruction is being newly recorded or an existing instruction is being edited.

Note

Please consult the documentation of the respective RS-232 device in order to determine which instructions are permitted and how they must be formulated.

Name

Optional name of the instruction, for the purpose of improved comprehensibility of the entries in the instruction table.

Entry	**50 characters**

Instruction

Text to be sent to the device. The text can be entered literally or be defined as a formula *(see Chapter 2.4, page 31)*.

Entry	**1 ... 250 characters**

7.21.2.2 RS-232 device - Commands

Method **Method** ▸ **Time program**

7.21.2.2.1 Transfer

Method **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Transfer**

The device-dependent time program command **Transfer** (command with feedback) is used for communications between MagIC Net and an RS-232 device.

Variables generated by the Transfer command

The **Transfer** command creates, independent of the number of single transfer instructions, 3 variables in the form **'TP.Command number.Variable name'**:

Variable name	Description	Data type
BSY	Command status; **1 = BUSY**, **HOLD** or **ERROR**; **0 = READY**; **invalid** (variable not available) **=** Command has never been started	Number
FIN	Command status; **1 = Command has ended at least once**, **0**, **invalid** (variable not available) **= Command has never ended**	Number
TOU	Timeout status: **1 = Timeout expired**; **0 = Timeout not expired**	Number

Single instructions of a **Transfer** command can for their own part generate additional variables *(see Chapter 7.21.2.2.1.2, page 1152)*.

7.21.2.2.1.1 Table of Single Instructions

Method **Time program ▶ Edit ▶ 'Device' - 'Module' - Transfer**

The table lists the single instructions which are sent to the respective RS-232 device in the **Transfer** command. Up to 10 single instructions are possible. The table contains the following columns, which are described in detail in *Table of Single Instructions*:

Name

The name of the instruction to be entered by the user.

Action

One of 4 predefined actions which more closely define the behavior of the instruction.

Instruction

Literal instruction text or formula, which is evaluated as being an instruction.

Comparison

Comparison pattern for the answer sent back by the device.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog *Table of Single Instructions* (is also triggered by a double-click on an empty line).
Edit	Edit selected line in separate dialog *Table of Single Instructions* (is also triggered by a double-click on a non-empty line).
Copy	Copy the selected line to the clipboard.
Insert	Paste line from the clipboard below in the table.
Cut	Cut the selected line and copy it to the clipboard.

Delete	Delete the selected line.

Max. waiting time

on | off (Default value: **off**)

If this option is activated, then a maximum waiting time can be entered. If not all transfer commands have finished after this time period, the command is canceled and the next command is started.

Input range	**0 - 9999**
Default value	**1**

Selection	**min** | **s**
Default value	**s**

7.21.2.2.1.2 Edit Instruction

Method **Time program ▸ Edit ▸ 'Device' - 'Module' - Transfer ▸ Transfer - 'Instruction #'**

Note

Please consult the documentation of the respective RS-232 device in order to determine which instructions are permitted and how they must be formulated.

If the function **[New]** or **[Edit]** is selected in the table of the **Transfer** instructions (see *Table of Single Instructions*), then the dialog **Transfer - 'Instruction #'** will open.

Name

The name of the instruction to be entered by the user. This name must be unique within the same **Transfer** command.

Entry	**1 ... 50 characters**
Default value	**Instruction #**

Action

Selection from 4 predefined actions. The action describes the behavior after the instruction has been sent to the device.

Selection	**Read** | **Write** | **Wait for** | **Poll**
Default value	**Read**

Read
An answer from the device will be expected and evaluated within the "Max. waiting time" defined in the *Configuration(see Chapter 7.21.1.2, page 1144)*.

Write
No answer will be waited for.

Wait for
Waiting will take place within the "Max. waiting time" defined in the *Command* until a character string is received which corresponds to the Regular Expression in the "Comparison" parameter. If this answer is not received within the "Max. waiting time" defined in the *Command*, then the command will be canceled.

Poll
An answer from the device will be expected and evaluated within the "Max. waiting time" defined in the *Configuration(see Chapter 7.21.1.2, page 1144)*. This action will be repeated until a character string received corresponds to the Regular Expression in the parameter "Comparison". If this answer is not received within the "Max. waiting time" defined in the *Command*, then the command will be canceled.

Instruction

Instruction which is sent to the device. The instruction can be entered literally here. As an alternative, the instruction can be defined with the help of the formula editor *(see Chapter 2.4, page 31)*. If this is the case, then the effective instruction that is sent to the device will be determined during the method run.

0 ... 250 characters

Note

All ASCII characters can be entered with its two-digit hex code after backslash (e.g. **\1B** = **Escape**).

Comparison

Optional comparison pattern for the answer sent back by the device. Can be entered only in connection with instructions with the action **Read**, **Wait for** and **Request**. The comparison pattern can be either a literal text or a *Regular Expression (see Chapter 7.21.2.2.1.3, page 1154)*.

Variables created by an instruction of a Transfer command

Each single instruction with the action **Read**, **Wait for** or **Scan** generates one or more variables of the form **TP.'Command number'.'Name of the instruction'.'DATA{x}'** (x=1, 2, etc.). These variables contain the data and/or the data segments in accordance with the Regular Expression defined in the parameter **Comparison**.

The **Transfer** command itself creates, independent of the number of single transfer instructions, 3 variables *(see "Variables generated by the Transfer command", page 1150)*.

7.21.2.2.1.3 Regular Expressions

Note

If external devices are actuated via RS-232 with the aid of Metrohm PC software such as **MagIC Net** and **tiamo**, then Regular Expressions can be used in order to examine and process the text data read by the RS-232 device.

Regular Expressions are used for browsing texts. A Regular Expression is a pattern. The text is investigated to determine whether or not and at which points the pattern matches. Sometimes it is sufficient to have the information as to whether or not and at which points the pattern matches the text being investigated; sometimes the user wishes to "extract" the matches found in the text in order to use them for a particular purpose. Both is possible with Regular Expressions.

In the simplest case, a literal text can be used as a Regular Expression. For example, a text can be searched through using the sample "hello". The pattern will match 0, 1 or n times.

"Real" Regular Expressions, which are much more expressive than literal patterns such as "hello", are written in standardized form and manner (syntax). Metrohm PC software such as **MagIC Net** and **tiamo** support Regular Expressions in accordance with **Java™ Platform Standard Edition**.

In order to familiarize yourself more with Regular Expressions, we recommend that you look up **Regular Expression** at *http://www.wikipedia.org/*.

Simple Examples for Regular Expressions

The following table shows several (very simple) examples of Regular Expressions.

Note

Certain characters such as ****, **.** or ***** have special meanings in Regular Expressions (see table). If such characters are to be understood literally, i.e. if their special meanings are to be canceled, then a backslash **** must be placed before them.

Expression	Significance	Example
hello	Literal text	Matches every incidence of **hello**, but not, for example, **Hello** (large H)
[hH]	Every specified character	Matches every incidence of **h** or **H**
[hH]ello	Literal text with small or large initial letter	Matches **hello** and **Hello**
[a-z0-9]	All characters in the specified range	Matches every small letter of the alphabet **a**, **b**, …, **z**, as well as every digit **0**, **1**, …, **9**
^hello	Text at the beginning of the line	Matches **hello** at the beginning of the line
hello$	Text at the end of the line	Matches **hello** at the end of the line
.	Any single character	Matches, for example, **c** or **4** or **!** etc.
.*	Any number of characters	**abcd** or **41** or **-$=$**, etc.
\.	Word period	Matches the character **.** (period)
\d	One digit	Matches, for example, **3**, **47** (also contains one digit!), but not **X**
\d+	At least 1 digit	**324567**
\d{4}	Sequence of four digits	Matches not only **3143**, but also **12345** (also contains 4 digits!), but not **123**.
\D	A character that is not a digit	Matches, for example, **A** or **,** or **%**
\w	A digit or a letter of the alphabet, including _; same meaning as **[a-zA-Z_0-9]**	Matches, for example, **a** or **3**, but not **$**
\W	A character that is not a digit and not a letter of the alphabet.	Matches, for example, **$** or **+**
\s	An empty space, a tab, a line break	
\S	Every single character except empty space, tab, line break	

Regular Expressions with which something useful can be accomplished are in practice longer and "more complicated" than these simple examples. A more practice-oriented example can be found in the next Section.

Match extraction

When a Regular Expression is used, matches can not only be *found*, they can also be *extracted*. This functions with the use of **parentheses** in the Regular Expression.

The following Regular Expression contains no parentheses: **\w+@\w+\.[a-zA-Z]{2,}**. It can be used to *find* E-mail addresses in a text. This means that this pattern matches, for example, the E-mail address **info@metrohm.com**.

If parentheses are used in the expression, e.g. **(\w+)@(\w+)\.([a-zA-Z]{2,})**, then the fragments which match the pattern in the parentheses can be "extracted". 4 (!) individual matches are obtained when this version of the Regular Expression is applied to the text **info@metrohm.com**:

- 1st match: the *entire* matching text = **info@metrohm.com**
- 2nd match: matching fragment in accordance with the 1st pair of brackets = **info**
- 3rd match: matching fragment in accordance with the 2nd pair of brackets = **metrohm**
- 4th match: matching fragment in accordance with the 3rd pair of brackets = **com**

The characters **@** and **.** (period) were not extracted, they are only contained in the full match.

This extraction technique is useful, for example, when it is necessary to analyze and break down the "feedback" from a device (a character string) in order to reuse data in the context of communicating with an RS-232 device.

7.21.3 RS-232 device - Manual control

The generic RS-232 device has no functions that can be performed manually.

7.22 Combustion Module

7.22.1 Combustion Module - Overview

The Combustion Module is comprised of the following components:

- Combustion oven to combust liquid or solid samples
- Auto Boat Driver including flame sensor that moves the quartz boat with a liquid or solid into the combustion tube in the oven
- Auto sampler (MMS 5000) for liquid and solid samples with the corresponding rack

The combustion oven controls the auto sampler and the Auto Boat Driver

7.22.2 Combustion Module - Configuration

If a device of type Combustion Module is selected, then menu item **Edit ▸ Properties...** can be used to open the dialog window **Properties -'Device name' - 'Device type'** . There, the properties for the various components and the GLP data can be defined.

7.22.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device, can be freely defined by user.

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Shows the program version of the device.

Only visible with devices that have their own firmware.

Device serial number

Shows the serial number of the device.

Set to work

Shows the date on which the device was automatically added to the device table.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.22.2.2 Properties - Combustion Oven

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Combustion Oven**

Combustion Oven after [Stop HW]

Standby

When **[Stop HW]** is triggered, the Combustion Module with all components goes into Standby mode. The cooling of the combustion gasses with a Peltier element is switched off. If **[Stop HW]** is triggered again, it can take a few minutes for the cooling to again reach its operating point.

Temperature

Definition of the temperature of the combustion oven in Standby mode.

Switch off

When **[Stop HW]** is triggered, the Combustion Module with all components is switched off.

7.22.2.3 Properties - Auto Boat Driver

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Auto Boat Driver**

End position

End position of the sample boat in the glass tube while combusting a sample. How far the boat is moved into the glass tube is determined by the glass tube used and the application.

Input range	**277 - 307 mm**
Default value	**277 mm**

7.22.2.4 Properties - Autosampler

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ Autosampler**

The properties of the auto sampler MMS 5000, a component of the combustion module, are defined on this tab.

Sampler

Display of which sampler is used.

Selection	**Gripper** | **Dosing syringe 50 µL** | **Dosing syringe 100 µL**

Rack type

Display of which rack type is used.

Selection	**Solid rack** | **Liquid rack**

[Initialize]

If a different rack is used, the Combustion Module has to be reinitialized. Only then is the new rack recognized by MagIC Net.

[Align]

Open the dialog window *(see Chapter 7.22.2.6, page 1161)* in which the adjustment coordinates for the sampler can be input.

Adjustment

In this table, the x, y, and z coordinates of the dosing syringe (liquid rack) and the gripper (solid rack) for position 1 on the rack and for the Auto Boat Driver sample port are shown.

Note

An adjustment of the sampler is required:

- before initial startup
- for every sample rack
- after changing the dosing syringe and Gripper
- during every recommissioning after modification, transport or storage

Selection	**Position 1** | **Sample port**

Position 1
Coordinates of the sampler for position 1 on the rack.

Sample port
Coordinates of the sampler for the sample port on the Auto Boat Driver.

Note

Upon use of a new dosing syringe, always check that the settings for the piston height are correct!

7.22.2.5 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.22.2.6 Adjustment

Dialog window: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Autosampler** ▸ ▸ **Adjustment**

Sampler

Display of which sampler is used.

Rack type

Display of which rack type is used.

Adjustment

Position 1

Input of the x, y, and z values for the first position on the liquid or solid rack.

Liquid rack

Input range	**0 (x), 0 (y), 0 (z) - 200 (x), 200 (y), 80 (z) mm** (Increment: **0.1 (x, y z)**)
Default value	**4 (x), 145 (y), 10 (z) mm**

Solid rack

Input range	**0 (x), 140 (y), 30 (z) - 20 (x), 170 (y), 60 (z) mm** (Increment: **0.1 (x, y z)**)
Default value	**3 (x), 161 (y), 30 (z) mm**

Sample port

Input of the x, y, and z values for the sample port on the Auto Boat Driver in which the quartz boat with the sample is set and subsequently is moved into the oven.

Liquid rack

Input range	**0.1 (x), 0 (y), 1 (z) - 200 (x), 350 (y), 200 (z) mm** (Increment: **0.1 (x, y z)**)
Default value	**110 (x), 11.5 (y), 75 (z) mm**

Solid rack

Input range	**90 (x), 30 (y), 80 (z) - 100 (x), 50 (y), 105 (z) mm** (Increment: **0.1 (x, y z)**)
Default value	**94 (x), 43 (y), 85 (z) mm**

[Move to position]

It moves to the position with the input x, y, and z coordinates. The values are not yet saved.

[Apply]

The button is only activated after a position has been moved to. With it, the adjustment parameters are saved in the device.

Sampler

Adjust piston height

The distance of the piston to the syringe body is set. The input values are corrections to the last respective distance of the piston from the syringe body.

Liquid rack

Input range	**0.1 - 5.0 mm** (Increment: **0.1**)
Default value	**0.1 mm**

Corrects the piston height upward by the input value.

Corrects the piston height downward by the input value.

Adjust gripper width

The gripper must be aligned in the home position so that both gripper arms are almost together.

Solid rack	
Input range	**0.1 - 5.0 mm** (Increment: **0.1**)
Default value	**0.1 mm**

Opens the gripper arms by the input value.

Closes the gripper arms by the input value.

[Close]

The adjustment parameters are saved in the device and the dialog window is closed. The auto sampler moves back to the starting position and the lock closes.

Note

The default values defined in MagIC Net are only shown if no values are saved in the auto sampler or if no values are sent to the combustion module because it is not connected or is defective.

7.22.3 Combustion Module - Method

In the program part **Method** the start parameters and program commands can be defined for the **combustion module**.

Whether the combustion module is used in a method with or without the auto sampler (MMS 5000) depends on the configuration. In the device table in the program part **Configuration**, the combustion module can be entered alone or with a connected auto sampler (MMS 5000).

If the combustion module is entered in the program part **Method** with the **New device** function, then you can select with or without auto sampler (MMS 5000).

7.22.3.1 Combustion Module - Start parameters

If you click on the symbol for the combustion module in the top part of the **Devices** subwindow, the tabs of the combustion module components appear in the bottom part of the subwindow. The start parameters for the individual components can be defined on these.

7.22.3.1.1 Start parameters - Combustion Oven

Tab: **Method ▸ Devices ▸ Combustion Oven**

The parameters defined for the combustion oven apply to liquid and solid samples. During a determination, the current values for temperature, Main flow O_2 (MFC 1), oxygen flow for post combustion (MFC2) and gas flow of the pyrolysis gas argon (MFC3) are displayed in the Watch Window.

Temperature

Oven temperature at which decomposition happens through pyrolysis.

Input range	**50 - 1100 °C**
Default value	**1050 °C**

Ar gas flow for pyrolysis

Pyrolysis gas. Argon current in which the sample components are pyrolyzed in the first step of the digestion.

Input range	**50 - 200 mL/min**
Default value	**100 mL/min**

Post-combustion time

Second phase of combustion, in which the remaining pyrolysis gas is combusted in the oxygen stream. The oxygen gas flow corresponds to the gas flow of argon during pyrolysis.

Input range	**30 - 600 s**
Default value	**120 s**

Post-cooling time

This parameter is only relevant if a liquid rack is used. With manual sample addition, the next sample may only be applied if the quartz glass boat is cooled in the lock. When applying a highly volatile substance in a hot quartz glass boat, there is a RISK OF DEFLAGRATION. The next determination starts only after the defined cooling time has past.

Input range	**300 - 900 s**
Default value	**420 s**

7.22.3.1.2 Start parameters - Autosampler

Tab: **Method ▸ Devices ▸ Autosampler**

The start parameters for the auto sampler MMS 5000, a component of the combustion module, are defined on this tab. The parameters are only relevant for a auto sampler with a liquid rack.

Syringe

Aspiration rate

The rate at which the syringe aspirates the solution during sample taking. The rate does not apply to the rinsing steps.

Input range	**1 - 15 µL/s**
Default value	**2 µL/s**

Dispensing rate

The rate at which the syringe discharges the solution during sample injection. The rate does not apply to the rinsing steps.

Input range	**1 - 20 µL/s**
Default value	**4 µL/s**

Number of rinsing steps

with sample

Specification of how often the syringe is to be rinsed with the sample solution. The sample solution is disposed of in the waste container. Rinsing with the sample solution is sufficient in most cases.

Input range	**0 - 5**
Default value	**3**

with rinsing solution

Specification of how often the syringe is to be rinsed with the rinsing solution from the external solvent container. The rinsing solution is disposed of in the waste container. Rinsing with rinsing solution is only necessary in exceptional cases, for example samples with special extracts.

Input range	**0 - 5**
Default value	**0**

Rinsing procedure

The rinsing procedure can only be defined for an auto sampler with attached liquid rack.

1 Start the determination

2 Auto sampler moves to the sample

3 **Rinsing with sample solution (number of rinsing steps with sample > 0)**

- Fit sample.
- Dispose of injection unit in waste container.

The number of both rinsing steps is read out from the start parameters and the volume from the combustion quantity. Aspiration rate and dispensing rate are fixed.

4 **Conditioning the syringe**

The following two steps are always executed and cannot be configured.

- Fix the syringe in the sample solution.
- Eject the syringe unit in the sample vessel again.

These two steps are repeated three times. Volume is fixed (approx. 30 µL). Aspiration rate and dispensing rate are likewise fixed.

5 Fit sample.

Volumes are read out from combustion quantities and the aspiration rate is read out from the start parameters.

6 Auto sampler moves to the lock.

7

Note

When using syringes, a quartz glass boat must always be in the sample port.

Samples are ejected through the injection port in the sample port into the quartz glass boat.

The dispensing rate is read out from the start parameters.

8 **Rinsing with rinsing solution (number of rinsing steps with sample > 0)**

- The auto sampler moves to the external solvent container.
- Pull up syringe with rinsing solution.
- Dispose of injection unit in waste container.

The number of rinsing steps is read out from the start parameters and the volume from the combustion quantity. Aspiration rate and dispensing rate are likewise fixed.

9 Combustion starts.

7.22.3.2 Combustion Module - Commands

Overview of the time program commands available for the Combustion Module:

7.22.3.2.1 Combust

Dialog window: **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Combust**

The device-dependent time program command **Combust** (command with feedback) moves the quartz glass boat with the liquid or solid sample into the oven and combusts it.

The command contains a sequence of multiple steps *(see Chapter 7.22.3.2.3, page 1171)*.

In contrast to other time program commands in MagIC Net, the subprograms are integrated into the **Combustion** command. That ensures that the combustion and the processes that run before or during the combustion are synchronized and are defined in the subprograms.

Sample addition

Selection	**Manual** | **Autosampler**
Default value	**Autosampler**

Manual
If this option is activated, a sample can be manually added. It is recommended that you turn off the auto sampler. This will prevent error messages from being shown that are caused by an invalid configuration of the auto sampler (for example, the solid material rack with syringe mounted).

Autosampler
If this option is activated, the sample is added with an auto sampler (MMS 5000).

Sample condition

When manually adding the sample, you must indicate whether it is a liquid or solid sample.

Selection	**solid** | **liquid**
Default value	**liquid**

solid
The quartz glass boat with the fixed sample can be set in the sample port.

liquid
A defined sample volume can be manually injected via the injection port in the sample port into the quartz glass boat.

Target

Selecting the target position on the rack. When manually adding a sample, the field is inactive.

Selection	**Sample position** | **Rack position**
Default value	**Sample position**

Sample position
Position defined for the current determination in the Run window as parameter **Position**.

Rack position
The selection **Rack position** activates the **Number** field in order to enter the number for a rack position.

Number

Specification of the number of the rack position. The number can also be defined with the aid of the formula editor *(see Chapter 2.4, page 31)*.

Input range	**1 - 112 (solid rack however has only 35 positions)**
Default value	**1**

Combustion amount

Note

A volume entered for the combustion quantity does not correspond to the volumes in the sample data in the Run window in the program part **Workplace**. The volume in the Run window is the volume of a sample loop during the ion chromatography.

Input

Selection	**From the sample amount** | **Manual**
Default value	**From the sample amount**

From the sample amount
Upon start of a determination, the sample amount is read out from the sample data from the sample amount field.

Manual
The sample amount can be entered manually. Selecting this option activates the **Value** field.

Value

Manual entry of the sample amount. The value can also be defined with the aid of the formula editor *(see Chapter 2.4, page 31)*. The unit for a liquid sample is **µL**. For a solid sample it is **mg**.

Subprograms parallel to the sample preparation

The subprograms that are running parallel to the preparation of a sample are shown in this table. Only after these subprograms end and the sample preparation is concluded (preparation of the auto sampler and after manual injection of the sample) does the combustion begin.

Subprograms are applied and defined in the subwindow Time program via the **Method** ▸ **Time program** ▸ **[Edit]** ▸ **New / Edit** ▸ **Insert subprogram** menu.

Subprogram

Name of the subprogram that runs during the sample preparation.

Condition

If this check box is activated, a condition defined with the formula editor has to be fulfilled so that the subprogram runs parallel to the sample preparation.

Formula

Formula for a condition for the start of the subprogram.

Subprograms during the combustion

In this section, subprograms are called up that run during the combustion of a sample.

Subprogram

Name of the subprogram that is run during the combustion.

Condition

If this check box is activated, the subprogram only starts if the condition defined with the aid of the formula editor is fulfilled.

Formula

Formula for a condition for the start of the subprogram.

After ending the command **Combustion**, subprograms that run during a combustion are stopped.

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.22.3.2.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.22.3.2.3 Combustion sequence

Combustion of a solid sample with auto sampler

Step	Action	Parallel action	Main flow O_2 (mL/min)	Pyrolysis Ar (mL/min)	Post combustion O_2 (mL/min)
Start					
Preparing the sample					

Step	Action	Parallel action	Main flow O_2 (mL/min)	Pyrolysis Ar (mL/min)	Post combustion O_2 (mL/min)
1	Device is initialized, i.e. temperature and gas flow are set		300	according to input in the start parameters *(see Chapter 7.22.3.1.1, page 1164)*	0
2	Adjust flame sensor	Subprograms parallel to the sample preparation			
3	If the flame sensor adjustment was not successful, wait 60 seconds. If the system does not get stable, repeat step 2.				
4	Move to sample position				
5	Open sample port				
6	Add quartz boat				
7	Move to the sample port and place quartz boat in it				
8	Close sample port				
Move sample into the combustion oven and combust it					
9	ABD feed starts and the combustion begins. It is controlled by a flame sensor. During combustion, the feed can be interrupted or	Subprograms during the combustion (for example, water inlet and transfer solution inlet)		0	Same values as Ar (according to input in the start parameters) *(see Chapter 7.22.3.1.1, page 1164)*

Step	Action	Parallel action	Main flow O_2 (mL/min)	Pyrolysis Ar (mL/min)	Post combustion O_2 (mL/min)
End					

Combustion of a solid sample with auto sampler

Step	Action	Parallel action	Main flow O_2 (mL/min)	Pyrolysis Ar (mL/min)	Post combustion O_2 (mL/min)
Start					
Preparing the sample					

Step	Action	Parallel action	Main flow O_2 (mL/min)	Pyrolysis Ar (mL/min)	Post combustion O_2 (mL/min)
1	Device is initialized, i.e. temperature and gas flow are set		300	according to input in the start parameters *(see Chapter 7.22.3.1.1, page 1164)*	0
2	Rinsing *(see Chapter 7.22.3.1.2, page 1165)*	Subprograms parallel to the sample preparation			
3	Fit sample				
4	Move to the sample port (x, y positions)				
5	Adjust flame sensor				
6	If the flame sensor adjustment was not successful, wait 60 seconds. If the system does not get stable, repeat step 5.				
7	Move to the sample port (x, y positions)				
8	The sample is injected through the septum of the closed sample port onto the quartz boat; the combustion starts simultaneously.	Subprograms during the combustion (for example, water inlet and transfer solution inlet)			
9	Rinsing with rinsing solution (optional)				
10	The auto sam-				

Step	Action	Parallel action	Main flow O_2 (mL/min)	Pyrolysis Ar (mL/min)	Post combustion O_2 (mL/min)
End					

7.22.3.3 Subprogram

Dialog window: **Method ▸ Time program ▸ [Edit] ▸ New / Edit ▸ Combust ▸ New / Edit ▸ Subprogram**

A subprogram can be selected in this dialog window that runs simultaneously with sample preparation or is to be run during a combustion. Additionally, a condition for running the subprogram with the help of a formula can be defined.

Subprogram

Selection list with the subprograms available in the subwindow Time program.

Condition

Condition for the subprogram to run. The condition defined with a formula can be activated/deactivated.

7.22.4 Combustion Module - Manual control

7.22.4.1 Manual control - Combustion Oven

Tab: **Manual ▸ Manual operation - 'Device name' ▸ Combustion Oven**

Oven temperature

Current Value

Current temperature of the combustion oven.

Input

Entering a new value for the temperature of the combustion oven.

Input range	**50 - 1100 °C**
Default value	**1050 °C**

Ar gas flow for pyrolysis

Current Value

Current gas flow of Argon (pyrolysis gas).

Input

Input of a new value for the gas flow of Argon.

Input range	**50 - 200 mL/min**
Default value	**100 mL/min**

Main flow O_2

Current Value

Fixed value (300 mL/min) of the main oxygen flow.

[On]

Switch on combustion module; in other words, the oven temperature and the gas flow. This is inactive if the combustion module is already running.

[Off]

Switch off combustion module; in other words, the oven temperature and the gas flow. This is inactive if the combustion module is not running.

[Apply]

Send the set parameters to the combustion module.

Gas flows

[On]

Switch on gas flow. If the combustion module is switched on, the gas flows can be switched on separately. This is inactive if the combustion module is switched off.

[Off]

Switch off gas flow. If the combustion module is switched on, the gas flows can be switched off separately. This is inactive if they are not running.

Auto Boat Driver

Sample port

Open and close the sample port manually.

[Open]

The sample port is opened. The sample port is closed with **[Next]** in the message.

7.23 920 Absorber module

The 920.0010 absorber module absorbs the combustion gasses in a watery medium and transfers the solution with the dissolved ions into the ion chromatography system.

7.23.1 920 Absorber module - Overview

Dialog window: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name'**

Note

The 920 absorber module is available in the 920.0010 absorber module variant:

7.23.2 920 Absorber module - Configuration

7.23.2.1 Properties - General

Tab: **Configuration ▸ Devices ▸ [Edit] ▸ Properties... ▸ Properties - 'Device type' - 'Device name' ▸ General**

On the tab **General**, general properties of the device are displayed.

Device name

Designation of the device (can be freely defined by user).

Entry	**50 characters**
Default value	**Device designation #**

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** *(see Chapter 7.1.2.10, page 630)*.

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Set to work

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is only available for devices with a leak sensor.

Selection	**connected | not connected**

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is only available for devices with a leak sensor.

Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Entry	**1000 characters**
Default value	**empty**

7.23.2.2 Properties - Connections

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC**, **881 Compact IC pro**, **882 Compact IC plus**, **814 USB Sample Pro-**

cessor, **815 Robotic USB Sample Processor XL**, **858 Professional Sample Processor**).

Extension modules

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB #

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.23.2.3 Properties - GLP

Tab: **Configuration** ▸ **Devices** ▸ **[Edit]** ▸ **Properties...** ▸ **Properties - 'Device type' - 'Device name'** ▸ **GLP**

Tab: **Configuration** ▸ **Accessories** ▸ **[Edit]** ▸ **Properties...** ▸ **Accessories - 'Name'** ▸ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on ... in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*.

Comment on GLP test

Comment on GLP test.

Entry	**1000 characters**

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is enabled then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Input range	**1 - 999 days**
Default value	**999 days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by pressing in the dialog window **Select date** *(see Chapter 2.5.1, page 81)*. After the date has been entered the field **GLP test interval** will be adjusted automatically.

Can only be edited if monitoring is switched on.

Default value	**GLP test date + 999 days**

Message

The message options can only be edited if monitoring is switched on.

Message by e-mail

on | off (Default value: **off**)

If this option is activated, the message is sent to the e-mail address defined under **[E-mail...]**l. The message is sent in text format.

[E-mail...]

[E-mail...] opens the **Send e-mail** window *(see Chapter 2.7.1, page 106)*.

Acoustic signal

on | off (Default value: **off**)

If this option is activated, an acoustic signal will be emitted in addition to the message defined above.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at start test:

Selection	**Record message** | **Display message** | **Cancel determination**
Default value	**Display message**

Record message
The message that the validity period has expired will be automatically saved with the determination.

Display message
A message is displayed and you can select whether you want to continue the sequence or cancel it. If the sequence is continued then the message that the validity period has expired will be automatically saved with the determination.

Cancel determination
The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7.23.3 920 Absorber module - Methods

7.23.3.1 920 Absorber module - Start parameter

7.23.3.1.1 Start parameter - Injection valve

Tab: **Method** ▸ **Devices** ▸ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	**Maintain current position** | **Fill** | **Inject**
Default value	**Maintain current position**

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.23.3.1.2 Start parameters - 10-port valve

7.23.3.1.2.1 Start parameters

Method: **Devices ▸ 10-port valve**

Here the parameter values are defined which are sent to the 10-port valve at the start of the method.

Valve position selection

Selecting the corresponding option determines whether the valve remains in its current position when the method starts or whether a particular port is moved to.

Selection	**Maintain current port** | **Port**
Default value	**Maintain current port**

Maintain current port
If this option is selected, then the valve remains in its current position at the start of the method.

Port
If this option is selected, then at the start of the method the port which is selected in the parameter **Port** will be set.

Port

List of the port names for selecting the target port.

Selection	**'Name Port 1'** | **'Name Port 2'** | **'Name Port 3'** | **'Name Port 4'** | **'Name Port 5'** | **'Name Port 6'** | **'Name Port 7'** | **'Name Port 8'** | **'Name Port 9'** | **'Name Port 10'**
Default value	**'Name Port 1'**

[Port configuration]

Opens the dialog window **Port configuration** in which a user-defined name can be assigned for each port and a solution can be allocated from the solution table *(see Chapter 7.13.4.2.1.2.2.1, page 1051)*.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.23.3.1.2.2 Port configuration

Method **Devices ▸ 10-port valve ▸ Port configuration**

The dialog **Port configuration** displays in tabular fashion the names and optionally assigned solutions of the individual ports, and permits the editing of these port properties.

7.23.3.1.2.2.1 Port table

The dialog **Port configuration** shows the table of the ports.

Name

Name of the port. The default name is **Port #**, where # stands for the number of the port. A user-defined port name must be unique in the context of the respective method.

Entry	**24 characters**

Solution

Optional allocation of a ("non-intelligent") solution from the solution table.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

[Edit]

Opens the dialog window **Edit port**, in which the name for the selected port can be defined and a solution from the solution table can be allocated *(see Chapter 7.13.4.2.1.2.2.2, page 1051)*.

7.23.3.1.2.2.2 Editing port

Method **Devices ▸ 10-port valve ▸ Port configuration ▸ Edit port**

A user-defined name can be assigned in the dialog **Port configuration** for each port and a solution can be allocated from the solution table .

Port

Display of the number of the selected port.

Name

Name of the port. The default name is **Port #**, where # stands for the number of the port. A user-defined port name must be unique in the context of the respective method.

Entry	**24 characters**

Solution

Optional allocation of a ("non-intelligent") solution from the solution table.

Selection	**not defined** | **Non-intelligent solutions from the solution table**
Default value	**not defined**

[OK]

Save the port properties.

[Cancel]

Cancel the editing of the port properties.

7.23.3.2 920 Absorber module - Commands

Overview of the time program commands available for the 920 Absorber Module:

7.23.3.2.1 Commands - Injection valve

Subwindow: **Method ▸ Time program**

Overview of the time program commands available for the injection valve:

7.23.3.2.1.1 Fill

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.23.3.2.1.2 Inject

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.23.3.2.1.3 Release

Dialog window: **Method ▸ Time program ▸ Edit ▸ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.23.3.2.2 Commands - 10-port valve

Method **Method ▸ Time program**

Overview of the time program commands available for the 10-port valve:

7.23.3.2.2.1 Change port

Method **Time program ▸ Edit ▸ 'Device' - 'Module' - Change port**

The device-dependent time program command **Change port** (command with feedback) switches the 10-port valve over to the desired port. The parameters described in the following can be used as aids for a precise definition of how the switching of the ports is to be carried out.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min**
Default value	**0.00 min**

Changing port

Port

List of the port names for selecting the target port.

Selection	**'Name Port 1'** | **'Name Port 2'** | **'Name Port 3'** | **'Name Port 4'** | **'Name Port 5'** | **'Name Port 6'** | **'Name Port 7'** | **'Name Port 8'** | **'Name Port 9'** | **'Name Port 10'**
Default value	**'Name Port 1'**

Shift direction

List of the shift modes of the 10-port valve.

Selection	**ascending** | **descending** | **automatic** | **not over**
Default value	**automatic**

ascending
The valve moves towards the target port in ascending direction. Example: if the current position is *Port 9*, and the target port is to be *Port 2*, then the valve in this mode will select the path 9 – 10 – 1 – 2.

descending
The valve moves towards the target port in descending direction. Example: if the current position is *Port 1*, and the target port is to be *Port 7*, then the valve in this mode will select the path 1 – 10 – 9 – 8 – 7.

automatic
The valve determines the shortest path to the target port on its own.

not over
The valve moves towards the target port in such a way that the port specified in the parameter "Not over" will not be traversed.

Not over

Combobox for selecting the port which is not to be traversed when the port is changed; will have no effect here if the port selected is the same as the target port. Only active when the parameter's "Not over" option is selected for the shift direction. The user-defined name, if available, is used as the 'Port name', otherwise the default name.

Selection	**'Port name' of Port 1** | **'Port name' of Port 2** | **...** | **'Port name' of Port 10**
Default value	**'Port name' of Port 10**

Comment

Optional comment on the time program command.

Entry	**64 characters**

7.23.3.2.2.2 Release

Dialog window: **Method** ▸ **Time program** ▸ **Edit** ▸ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Input range	**0.00 - 10000.00 min** (Increment: **0.01**)
Default value	**0.00 min**

Comment

Optional comment on the time program command.

Entry	**0 ... 64 characters**

7.23.4 920 Absorber module - Manual operation

7.23.4.1 Manual Control - Injection valve

Tab: **Manual** ▸ **Manual Control - 'Device name'** ▸ **'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.23.4.2 Manual control - 10-port valve

Tab: **Manual Control - 'Device name'** ▸ **'10-port valve'**

Current port

Shows the current port.

Port

List of the port names for selecting the target port.

Selection	**'Name Port 1'** | **'Name Port 2'** | **'Name Port 3'** | **'Name Port 4'** | **'Name Port 5'** | **'Name Port 6'** | **'Name Port 7'** | **'Name Port 8'** | **'Name Port 9'** | **'Name Port 10'**
Default value	**'Name Port 1'**

Shift direction

List of the shift modes of the 10-port valve.

Selection	**ascending** | **descending** | **automatic** | **not over**
Default value	**automatic**

ascending
The valve moves towards the target port in ascending direction. Example: if the current position is *Port 9*, and the target port is to be *Port 2*, then the valve in this mode will select the path 9 – 10 – 1 – 2.

descending
The valve moves towards the target port in descending direction. Example: if the current position is *Port 1*, and the target port is to be *Port 7*, then the valve in this mode will select the path 1 – 10 – 9 – 8 – 7.

automatic
The valve determines the shortest path to the target port on its own.

not over
The valve moves towards the target port in such a way that the port specified in the parameter "Not over" will not be traversed.

Not over

Combobox for selecting the port which is not to be traversed when the port is changed; will have no effect here if the port selected is the same as the target port. Only active when the parameter's "Not over" option is selected for the shift direction. The user-defined name, if available, is used as the 'Port name', otherwise the default name.

Selection	**'Port name' of Port 1** | **'Port name' of Port 2** | **...** | **'Port name' of Port 10**
Default value	**'Port name' of Port 10**

[Apply]

Move to the target port in the specified manner.

8 Manual control

8.1 Manual control - General

Program part: **Manual control**

Definition

In **MagIC Net**, **Manual control** refers to the program part in which the connected devices can be directly controlled, i.e. without a predefined execution specification. The precondition for this is that the devices are switched on and detected by **MagIC Net**. Manual control is also possible live when running a method.

Organization

A distinction is made between the **Manual control of the Workplace** and the **Global Manual control**. They differ in respect to selection of the devices and in the rights concerning when the Manual control is allowed.

- **Manual control of the workplace**
  Only devices which are used in the method of the selected workplace are available. These devices can be operated manually at any time, also live during the run. Such live changes are, of course, noted in the relevant determination.
- **Global Manual control**
  All the devices which have been recognized by the software and which are not reserved by a workplace are available. This prevents an unintentional manipulation of devices which are used in the run of a method.

8.2 Manual control - Desktop

Program part: **Manual Control**

Manual Control symbol

If you click on the **Manual** symbol in the vertical bar on the left margin, the program part **Manual Control** will be opened in its own window, while the **Manual** symbol will be shown in color at the same time.

Elements

The desktop of the program part **Manual control** comprises the following elements:

- Selecting device
- Device window

8.3 Device selection

Program part: **Manual control**

The device selection is located in the left area of the manual control; this can be used to specify which devices are operated.

Device selection

Selection of the devices which are to be operated manually. Depending on the selection, the **Device tree** and the **Device window** will be updated.

Selection	**Workplace** | **All devices**
Default value	**Workplace**

Workplace
Manual control for devices which are used in the method of the selected workplace. All workplaces which are currently opened can be selected on the basis of their color.

All devices
Global Manual control for all devices which are recognized by the software and which are not reserved by a workplace.

Device tree

Depending on the setting in the **Device selection** field, the devices which can be operated manually are shown in tree-form.

The device currently selected is shown with a colored background. Devices which are currently assigned because they are being used in a method run or in which manually initiated actions are running, are shown with **red** lettering.

[Stop devices]

Stop all devices of the Global Manual control, active only if **All devices** has been selected.

Note

In order to stop the devices of a workplace, you need to change to the **program part Workplace** and activate **[Stop Hardware]**.

8.4 Device window

Program part: **Manual control**

The device window is located in the right area of the manual control.

Depending on the setting in the **Device selection** field, the devices which can be operated manually are shown graphically:

- For **Device selection** = **Workplace**:
  Manual control of the Workplace: The device window is surrounded by a frame with the color of the workplace selected. Only those devices are displayed which are used in the method of the selected workplace.
- For **Device selection** = **All devices**:
  Global Manual control: The device window has a **gray** frame. The device that is selected in the device tree is displayed.

The functions of the manual control are shown in the lower area of the window. The functions of a module are summarized in each tab. The required device/module can be selected using the tab or by clicking on the graph.

Devices with manual control

- *850 Professional IC - Manual control*
- *881 Compact IC pro - Manual control*
- *882 Compact IC plus - Manual control*
- *883 Basic IC plus - Manual control*
- *814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Manual control*
- *858 Professional Sample Processor - Manual control*
- *863 Compact Autosampler - Manual control*
- *889 IC Sample Center - Manual control*
- *919 IC Autosampler plus - Manual control*
- *886 Professional Thermostat / Reactor - Manual control*
- *887 Professional UV/VIS Detector - Manual control*
- *896 Professional Detector - Manual control*
- *872 Extension Module IC Pump - Manual control*
- *872 Extension Module IC Module - Manual control*
- *872 Extension Module Sample Prep - Manual control*
- *872 Extension Module Liquid Handling - Manual control*
- *872 Extension Module Suppression - Manual control*
- *872 Extension Module Suppression - Manual control*
- *771 IC Compact Interface - Manual control*
- *High-pressure gradient pump - Manual Control*
- *800 Dosino - Manual control*
- *Stirrer - Manual control*

- *Remote Box MSB - Manual control*

The manual control of the **891 Professional Analog Out** *(see Chapter 7.1.4.12, page 698)* is assigned to the main device it is connected to.

9 How to proceed?

9.1 Audit Trail

9.1.1 Opening Audit Trail

How to proceed?

Note

The Audit Trail Table can only be opened if the option **Enable Audit Trail** is switched on in **Security settings** under **Audit Trail/Modifications**.

1 Select program part **Configuration**.

2 Click on the symbol or the menu item **Tools** ▸ **Audit Trail…**.

The dialog window **Audit Trail** opens.

3 If required, adjust the column display.

9.1.2 Filtering Audit Trail

How to proceed?

Opening the "Audit Trail" dialog window

1 Select program part **Configuration**.

2 Click on the symbol or the menu item **Tools** ▸ **Audit Trail…**.

The dialog window **Audit Trail** opens.

Filtering can now be done via quick filter or special filter in the **Audit Trail** dialog window:

Quick filter

1 Click on the symbol or menu item **Filter** ▸ **Quick filter**.

After this function has been selected, the field in which the cursor is located will have a yellow background when navigating in the Audit Trail table.

2 Double click on the desired field with the left-hand mouse key.

The contents of the field selected in the table will be set as a filter condition and this filter will be applied directly to the table.

Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

Defining and using special filter

1 Click on the symbol or menu item **Filter** ▸ **Special filter**.

The dialog window **Special filter** opens for defining user-specific filters.

2 Use the **Edit** ▸ **Edit line** menu to open the dialog window **Edit filter criterion New filter**.

3 Enter the filter criteria and confirm with **OK**.

4 In the **Special filter** dialog window, click on **[Apply filter]**.

The table will be filtered.

Using special filter

1 In the **Special filter** dialog window, select the desired special filter from the list box **Filter**.

The table will be filtered.

9.1.3 Exporting Audit Trail

How to proceed?

1 Select program part **Configuration**.

2 Click on the symbol or the menu item **Tools** ▸ **Audit Trail…**.

The dialog window **Audit Trail** opens.

3 If desired, filter Audit Trail table.

4 If desired, select Audit Trail entries to be exported.

5 Click on the menu item **File ▸ Export...**.

The dialog window **Export Audit Trail** opens.

6 Enter or select directory and file name for saving the export file in the field **Save file as**.

7 In the field **Selection** select the desired option (**All records** or **Selected records**).

8 Click on **[OK]**.

The entries selected in the Audit Trail table will be exported.

Note

Audit Trail entries are exported in text format. They cannot be imported back into the Audit Trail table.

9.1.4 Archiving Audit Trail

How to proceed?

Note

Audit Trail entries can be backed up and restored together with the configuration data.

1 Select program part **Configuration**.

2 Click on the symbol or the menu item **Tools ▸ Audit Trail...**.

The dialog window **Audit Trail** opens.

3 With menu item **File ▸ Archive...** the dialog window **Archive Audit Trail** opens.

4 Enter or select directory and file name for saving the archive file in the field **Save file as**.

5 In the field **Selection** select the desired option (**All records** or **Records until** including date selection).

6 Click on **[OK]**.

The entries selected in the Audit Trail table will be archived as a text file.

Note

Archiving Audit Trail entries is identical to export, i.e. the Audit Trail entries are stored in text format. They cannot be imported back into the Audit Trail table. The difference between this and exporting is that the archived entries can be marked in the column **Archive** and then deleted.

Note

The text files generated by archiving are no longer protected and can be manipulated. If you want to ensure that these files are archived in an unaltered condition you must use a suitable external backup or archiving program.

9.1.5 Deleting Audit Trail

How to proceed?

Note

Audit Trail entries can only be deleted if they have previously been archived.

1 Select program part **Configuration**.

2 Click on the symbol or the menu item **Tools ▸ Audit Trail…**.

The dialog window **Audit Trail** opens.

3 Archive desired Audit Trail entries.

4 With the menu item **File ▸ Delete** the dialog window **Delete Audit Trail** opens.

5 Under **Selection**, select the desired option (**All archived records** or **Archived records until** including date selection).

6 User 1: Enter **User name** and **Password**.

7 User 2: Enter **User name** and **Password**.

8 Click on **[OK]**.

The archived entries selected in the Audit Trail table will be deleted.

9.2 Backup

9.2.1 Backing up database

How to proceed?

General

In **MagIC Net**, **determination databases** that, in contrast to the **configuration database**, can be generated by the user and contain the determination data, are referred to as databases. Included among such determination data is the method data used for the determination, the measuring data generated during the determination and the results calculated from it.

In local server systems (**MagIC Net professional**) the databases are stored on the drives administered by the computer and are only available to those users registered on that computer who have the appropriate access rights. In Client Server Systems (**MagIC Net multi**) the databases are stored on drives managed centrally by the server and are globally available in the whole client-server system, i.e. all users with the appropriate access rights can use these databases.

Note

Each determination database has to be backed up separately. Afterwards, it is recommended that all backed-up files be copied to an external directory or to a CD/DVD.

Backing up database manually

1 Select program part **Database**.

2 Click on the symbol or menu item **File** ▸ **Database manager…**.

The dialog window **Database manager** opens.

3 Select database.

4 Click on **[Backup]** in the dialog window **Database manager**.

The dialog window **Backup database 'Database name'** is opened.

5 Select the directory for the backup in the **Backup directory** field.

6 Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.

> **Note**
>
> If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** field because the backup date information is not available when restoring.

7 Click on **[Start]**.

The manual backup of the database is started and the database is backed up to the selected directory.

Backing up database automatically

1 Select program part **Database**.

2 Click on the symbol or menu item **File** ▸ **Database manager…**.

The dialog window **Database manager** opens.

3 Select desired database and click on **[Properties]**.

The dialog window **Properties - Database - 'Database name'** opens for editing the database properties.

4 On the **General** tab, enter a comment on the database in the field **Comment**.

5 On the **Backup** tab, enable the check box **Backup monitoring**.

6 Enter **Interval** for backup monitoring or date for the next backup in the **Next backup** field.

7 Activate the **Start backup automatically** check box.

8 Select the directory for the backup in the **Backup directory** field.

9 Click on **[OK]**.

The dialog window **Properties - Database** is closed and the database will be backed up to the selected directory at the desired time.

9.2.2 Restoring the database

How to proceed?

1 Select program part **Database**.

2 Click on the symbol or menu item **File ▸ Database manager…**.

The dialog window **Database manager** opens.

3 Click on **[Restore]** in the **Database manager** dialog window.

The **Restore databases** dialog window opens.

4 Select the directory in the **Backup directory** in which the desired database was backed up.

5 Select or enter the name for the desired **Backup file**.

6 Enter the name under **Save As** under which the database is to be restored.

7 Click on **[Start]**.

The database restoring is started.

Note

Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be recovered under its old name.

9.2.3 Backing up configuration data

How to proceed?

General

The configuration data is saved in **MagIC Net** in the **Configuration database**. Configuration includes all cross-method settings for devices, columns, eluents, solutions, accessories, common variables and rack data, as well as **Methods**, **Security settings** *(see Chapter 6.2.2.1, page 503)*, **User administration** *(see Chapter 6.2.1.1, page 494)*, **Program administration** *(see Chapter 6.2.3.1, page 514)*, templates and **Audit Trail** *(see Chapter 6.4, page 534)*

For local server systems (**MagIC Net Professional**) the configuration database is located in the program folder of the computer on which the program has been installed. In Client/Server systems (**MagIC Net Multi**) the configuration database is stored centrally on the server and saves and contains all the configuration data of all computers (clients) that are connected to this server.

Note

It is strongly recommended that the configuration database be backed up periodically.

Backing up configuration data manually

1. Select program part **Configuration**.
2. Click on the menu item **File** ▸ **Backup** ▸ **Manually**.

   The dialog window **Backup configuration data manually** opens.
3. Select the directory for the backup in the **Backup directory** field.
4. Select or enter a new name for the backup file in the **Backup name** list box. If an existing backup file is selected it will be overwritten.

Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

5 Click on **[Start]**.

The manual backup is started and the configuration database is backed up to the selected directory.

Backup configuration data automatically

1 Select program part **Configuration**.

2 Click on menu item **File ▸ Backup ▸ Automatically**.

The dialog window **Backup configuration data automatically** opens.

3 Activate the **Automatic backup** check box.

4 Enter **Interval** for backup monitoring or date for the next backup in the **Next backup** field.

5 Select the directory for the backup in the **Backup directory** field.

6 Click on **[OK]**.

The dialog window **Backup configuration data automatically** is closed and the configuration database will be backed up to the selected directory at the desired time.

9.2.4 Restoring configuration data

How to proceed?

MagIC Net professional

1 Exit **MagIC Net**.

2 Start the **ConfigRestore.exe** file in the program directory **… \MagIC Net\bin**.

The dialog window **Restore configuration data** opens *(see Chapter 6.3.2.3, page 525)*.

3 Select the directory in the **Backup directory** field in which the configuration database was backed up.

4 Select or enter the name for the desired **Backup file**.

5 Click on **[Start]**.

The restoring of the configuration database is started.

MagIC Net multi

1 Make sure that **MagIC Net** is closed on all clients connected to the server and on the server itself.

2 Start the file **ConfigRestore.exe** in the program directory **… \MagIC Net\bin** on the server.

The dialog window **Restore configuration data** opens.

3 Select the directory in the **Backup directory** field in which the configuration database was backed up.

4 Select or enter the name for the desired **Backup file**.

5 Click on **[Start]**.

The restoring of the configuration database is started.

9.2.5 Backup methods

How to proceed?

General

Methods are stored in the configuration database and globally accessible for all clients. This means that in order to save methods the configuration data must be saved manually or automatically. A further possible way is to export the methods and then to save these files outside of **MagIC Net**.

Backing up configuration data manually

1 Select program part **Configuration**.

2 Click on the menu item **File ▸ Backup ▸ Manually**.

The dialog window **Backup configuration data manually** opens.

3 Select the directory for the backup in the **Backup directory** field.

4 Select or enter the name for the desired backup file in the **Backup name** list box. If an existing backup file is selected it will be overwritten.

.

Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

5 Click on **[Start]**.

The manual backup of the configuration database is started.

Backing up configuration data automatically

1 Select program part **Configuration**.

2 Click on menu item **File ▸ Backup ▸ Automatically**.

The dialog window **Backup configuration data automatically** opens.

3 Activate the **Automatic backup** check box.

4 Enter **Interval** for backup monitoring or date for the **Next backup**.

5 Select the directory for the backup in the **Backup directory** field.

6 Click on **[OK]**.

The dialog window **Backup configuration data automatically** is closed.

Exporting methods

1 Select program part **Method**.

2 Click on the symbol or menu item **File ▸ Method manager…**.

The dialog window **Method manager** opens.

3 Select desired **Method group**.

4 Select desired methods.

5 Click on the menu item **File ▸ Export...**.

The dialog window **Select directory for export** opens.

6 Select the directory where the method should be exported and click on **[OK]**.

The selected methods are each exported as files named **'Method name'.imet**.

Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is tampered with, then it cannot be imported again.

9.2.6 Archiving Audit Trail

How to proceed?

Note

Audit Trail entries can be backed up and restored together with the configuration data.

1 Select program part **Configuration**.

2 Click on the symbol or the menu item **Tools ▸ Audit Trail…**.

The dialog window **Audit Trail** opens.

3 Click on the menu item **File ▸ Archive...**.

The dialog window **Archive Audit Trail** opens.

4 Enter or select directory and file name for saving the archive file in the field **Save file as**.

5 In the field **Selection** select the desired option (**All records** or **Records until** including date selection).

6 Click on **[OK]**.

The entries selected in the Audit Trail table will be archived as a text file.

Note

Archiving Audit Trail entries is identical to export, i.e. the Audit Trail entries are stored in text format. They cannot be imported back into the Audit Trail table. The difference between this and exporting is that the archived entries can be marked in the column **Archive** and then deleted.

Note

The text files generated by archiving are no longer protected and can be tampered with. If you want to ensure that these files are archived in an unaltered condition you must use a suitable external backup or archiving program.

9.3 Determinations

9.3.1 Starting single determination

How to proceed?

Starting single determination

1. Select program part **Workplace** *(see Chapter 3.1, page 107)*.
2. In the subwindow **Run**, click on the **Single determination** tab.
3. Select **Method** from the desired method group that is to be used for carrying out the determination.

   The time program of the loaded method is shown in the subwindow **Time program** *(see Chapter 3.11, page 191)*.
4. Enter **sample data**.
5. Click on **[Start]**.

   The single determination will be started. The run is displayed in the subwindow **Time program**, live curves, measured values and messages are shown in the subwindow **Live display**.

9.3.2 Starting determination series

How to proceed?

Starting determination series

1. Select program part **Workplace** *(see Chapter 3.1, page 107)*.
2. In the subwindow **Run**, click on the tab **Determination series**.
3. Load existing sample table or enter sample data directly into the working sample table.

   The time program of the method loaded in the first line is displayed in the subwindow **Time program** *(see Chapter 3.11, page 191)*.
4. Click on **[Start]**.

   The first determination of a sample series will be started. The run is displayed in the subwindow **Time program**, live curves, measured values and messages are shown in the subwindow **Live display**.

Note

If several injections have been defined for a sample line, then a multiple determination will be carried out. If so defined in the method, the statistical results will be calculated by means of the determinations that are part of the multiple determination.

9.3.3 Search for determinations

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Open...**.

   The dialog window **Open database** opens.
3. Select desired database or enter name in the field **Database name**.
4. Click on **[Open]**.

   The selected database opens and its data sets are displayed in the **Determination overview**.
5. Click on the symbol or the menu item **Determination ▸ Find...**.

   The dialog window **Search - Database 'Database name'** is opened.
6. Enter or select desired search terms and search options.
7. Click on **[Search next]**.

   The next determination containing the search term is marked in the **Determination overview**.

9.3.4 Filter determinations

How to proceed?

Opening the database

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

Filtering can now be done via quick filter or special filter in the **Determination overview** window:

Quick filter

1 Click on the symbol or on **Filter** ▸ **Quick filter** in the context menu.

After this function has been selected, the field in which the cursor is located will have a yellow background when navigating in the determination table.

2 Double click on the desired field with the left-hand mouse key.

The contents of the field selected in the table will be set as a filter condition and this filter will be applied directly to the table.

Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

Defining and using special filter

1 Click on the symbol or on **Filter** ▸ **Special filter** in the context menu

The dialog window **Special filter** opens for defining user-specific filters.

2 Use the **Edit** ▸ **Edit line** menu item to open the dialog window **Edit filter criterion New filter**.

3 Define filter criteria.

4 Click on **[Save filter]**.

5 Click on **[Apply filter]**.

The table will be filtered.

Using special filter

1 In the list box **Filter**, select the desired special filter.

The table will be filtered.

9.3.5 Displaying determinations of a batch

How to proceed?

1 Select program part **Database**.

2 Open desired **database**.

The selected database opens and its data sets are displayed in the **Determination overview**.

3 Select the desired batch in the **Batch** field.

The table shows the determination series of the batch.

9.3.6 Signing determination

How to proceed?

Selecting determination

1 Select program part **Database**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

5 Select desired determination.

Signature 1

Note

Determinations can only be signed at level 1 if the user belongs to a user group with the corresponding authorization *(see Chapter 6.2.1.2.3, page 497)*.

1 Click on the symbol or menu item **Determinations ▸ Sign ▸ Signature 1…**.

The window **Signature Level 1** opens. If the selected determination can be signed, **Signature possible** is displayed in the field **Info**.

2 Enter or select **User**, **Password**, **Reason** and **Comment**.

3 Click on **[Sign]**.

The selected determination will be signed on level 1.

Note

Determinations that have been signed at level 1 can be reprocessed and deleted. If the modified determination is saved as a new determination version then all existing signatures will be deleted automatically, i.e. the determination must be signed again.

Signature 2

Note

Determinations can only be signed at level 2 if the user belongs to a user group with the corresponding authorization *(see Chapter 6.2.1.2.3, page 497)*.

1 Click on the symbol or menu item **Determinations ▸ Sign ▸ Signature 2…**.

The window **Signature Level 2** opens. If the selected determination can be signed, **Signature possible** is displayed in the field **Info**.

2 Enter or select **User**, **Password**, **Reason** and **Comment** and click on **[Sign]**.

The selected determination will be signed on level 2.

Note

Determinations that can be signed at level 2 are **blocked**, i.e. they can neither be reprocessed nor deleted. In order to be able to edit such determinations again the signatures at level 2 must first be deleted.

9.3.7 Export determinations

How to proceed?

Defining export template

1 Select program part **Database**.

2 Click on menu item **Tools** ▸ **Templates** ▸ **Export templates…**.

The window **Export templates** opens.

3 Click on **[New]**.

The window **Export templates – 'New file'** opens.

4 Define the properties of the new export template.

5 Click on **[OK]**.

The dialog window is closed.

6 Click on **[Close]**.

The dialog window **Export templates** is closed.

Selecting determinations

1 Select program part **Database**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

5 Select desired determinations.

Export determinations

1 Click on the menu item **Determinations ▸ Export...**.

The window **Export determinations** opens.

2 In the field **Selection** select the desired option (**All records** or **Selected records**).

3 In the list box **Export template**, select an export template.

4 Click on **[OK]**.

The selected determinations are exported into the directory defined in the export template.

9.3.8 Importing determinations

How to proceed?

1 Select program part **Database**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

5 Click on the menu item **Determinations ▸ Import...**.

The window **Import determinations** opens.

6 Select desired determinations.

7 Click on **[Open]**.

The selected determinations are imported into the open database.

Note

Exported determinations can be imported in the file format ***.idet** and ***.cdf**.

9.3.9 Deleting determinations

How to proceed?

1 Select program part **Database**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

5 Select desired determinations.

6 Click on the symbol or the menu item **Determination ▸ Delete**.

7 Confirm deleting.

The selected determinations with all **Determination versions** are deleted.

Note

If the option **Comment on modification of determinations** in the **Security settings** is enabled, then the window **Modification comment determination** will appear before the modification is saved.

9.3.10 Make the determination version current

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Open...**.

   The dialog window **Open database** opens.
3. Select desired database or enter name in the field **Database name**.
4. Click on **[Open]**.

   The selected database opens and its data sets are displayed in the **Determination overview**.
5. Select desired determination.
6. Click on the symbol or menu item **Determinations ▸ Show history...**.

   Only the currently selected determination in the **determination table** as well as all the previous versions of this determination will be shown.
7. Select desired determination that is to be made current.
8. Click on the symbol or the menu item **Determination ▸ Make current**.

   The determination version selected in the determination table will again be made the current determination version. This creates a new determination, the version number of which is increased by **+1** compared with the last version to have been saved.

9.3.11 Reprocessing determinations

9.3.11.1 Reprocessing determinations - General

How to proceed?

> **Note**
>
> Determinations that have a signature at level 2 cannot be reprocessed.

1. Select program part **Database**.
2. Open desired database.

   The selected database opens and its data sets are displayed in the **Determination overview**.
3. Select desired determinations.
4. Click on the symbol or menu item **Determinations ▸ Reprocess**.

   The dialog window **Reprocessing** opens and the first of the selected determinations is displayed.
5. Change desired properties.
   - Sample data is edited in the subwindow **Reprocessing table**.
   - Other columns and eluents are assigned with **[Method...] ▸ Change column** or **[Method...] ▸ Change eluent**.
   - The properties of the evaluation are changed in the subwindow **Evaluation parameters**.
   - Chromatograms are edited manually in the subwindow **Chromatograms**.
6. Click on **[Reprocess]**. The **Reprocessing** dialog opens; it is here that calibration in reprocessing is determined.

   Click on **[OK]** and the determinations will be reprocessed. The result of the reprocessing will be displayed in the subwindows **Results** and **Chromatograms**.
7. In the **Reprocessing** window, click on **[OK]**.

Each determination that has been modified by reprocessing will be saved as a new version with a version number increased by **+1** and the subwindow **Reprocessing** will be closed. This button is inactive when the recalculation has not yet been triggered and if not all the selected determinations could have been recalculated.

9.3.11.2 Reprocessing - Application instances

9.3.11.2.1 Incorrect sample data

9.3.11.2.1.1 Samples or standards have an incorrect ID

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Correct **Ident** in the sample data.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.1.2 Samples or standards have incorrect volume

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Correct **Volume** in the sample data.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.1.3 Samples or standards have incorrect dilution factor

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Correct the **Dilution** in the sample data.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.1.4 Samples or standards have incorrect sample amount

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Correct the **Sample amount** in the sample data.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.2 Incorrect integration

9.3.11.2.2.1 Samples are incorrectly integrated - Standards are OK

How to proceed?

1. Open samples in reprocessing.
2. Set new integration parameters, or integrate them manually.
3. Mark the determination of which the calibration is to be used.
4. Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.2.2 Samples and standards are incorrectly integrated

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Set new integration parameters, or integrate them manually.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.2.3 Standards are incorrectly integrated - Samples are OK

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Set the correct integration parameters for the standards.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

The standards are now correctly integrated and generate a correct calibration curve. The samples now have a correct calibration, although they are now incorrectly integrated.

4 Open only the incorrectly integrated samples in reprocessing.

5 Set the correct integration parameters for the samples.

6 Mark the determination of which the calibration is to be used.

7 Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.2.4 No reasonable integration parameters can be found

How to proceed?

1 Open samples with the associated standards in reprocessing.

2 Integrate manually all determinations with poor integration.

3 Start reprocessing with the calibration options **From standards of reprocessing table** and **Keep manual integration**.

9.3.11.2.2.5 A blank is to be taken into account

How to proceed?

1 Determine blank.

2 Open blank and samples with the associated standards in reprocessing.

3 Slide the newly recorded blank in the reprocessing table to the correct position.

4 In the method of the marked determination, under **Evaluation ▸ Integration ▸ Peak detection**, **activate** the check box **Subtract blank**.

5 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.2.6 No blank is to be taken into account

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. In the method of the marked determination, under **Evaluation ▸ Integration ▸ Peak detection**, **deactivate** the check box **Subtract blank**.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3 Incorrect calibration

9.3.11.2.3.1 A single point in the calibration curve is not correct

How to proceed?

1. Open the incorrectly calibrated determinations in reprocessing.
2. Delete the incorrect point from the calibration curve in one determination. Have this determination marked.
3. Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.3.2 None of the calibration points of a particular standard are correct

How to proceed?

1. Record the standard once more
2. Open the newly recorded standard, the old correct standards and the samples that are to be calibrated with them in reprocessing.
3. Move the newly recorded standard in the reprocessing table to the position at which the incorrect standard used to be located.
4. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.3 One standard has the wrong concentration

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Change the concentration in the standard table.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.4 The calibration curve should be placed through the origin

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Change the type of the calibration curve to **Linear through 0**, **Quadratic through 0** or **Cubic through 0**.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.5 One component should be evaluated in terms of height instead of area

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. In **Evaluation** ▸ **Calibration** ▸ **Calibration curves**, change the measured quantity of the affected component from **Area** to **Height**.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.6 One standard has the wrong sample type

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Correct the **Sample type** for the affected standard in the sample data.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.7 One standard was not measured correctly

How to proceed?

1. Record the standard once more
2. Open the newly recorded standard, the old correct standards and the samples that are to be calibrated with them in reprocessing.
3. Move the newly recorded standard in the reprocessing table to the position at which the incorrect standard used to be located.
4. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.8 Samples should be calibrated with standards that were recorded according to the samples

How to proceed?

Note

Relevant only with the calibration modes **Replace**, **Average** and **Moving average**.

1. Open samples with the standards in reprocessing which are to be used for calibration.
2. Move the standards in the reprocessing table in front of the samples.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.9 Samples should be calibrated with existing calibration

How to proceed?

1. Open samples in reprocessing with one determination that contains the desired calibration.
2. Mark the determination with the desired calibration.
3. Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.3.10 The concentrations of the sample are outside the calibration range

How to proceed?

1. Define in the method additional standards in the required concentration range.
2. Determine the additional standards.
3. Open samples with the associated standards and with the additionally measured standards in reprocessing.
4. **Note**

   Relevant only with the calibration modes **Replace**, **Average** and **Moving average**.

   Move the additionally measured standards in front of the samples.
5. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.11 The wrong calibration mode was used

How to proceed?

1. Open samples with the associated standards in reprocessing.
2. Change the calibration mode.
3. Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.12 Applying calibration to standards

How to proceed?

1. Open all standards in reprocessing that have contributed to a calibration.
2. Mark the determination with the desired calibration.

Note

As a rule, that is the last determination.

3 Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.4 Incorrect recovery rates

9.3.11.2.4.1 One check standard has the wrong sample type

How to proceed?

1 Open check standard with the associated standards in reprocessing.

2 Correct the **Sample type** for the check standard in the sample data.

3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.5 Incorrect recovery rates (spiking)

9.3.11.2.5.1 Spiking has the wrong sample type

How to proceed?

1 Open sample, spiking and the the associated standards in reprocessing.

2 Correct the **Sample type** for the standard addition solution in the sample data.

3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.5.2 Spiking was not measured correctly

How to proceed?

1 Record the spiking once again

2 Open in reprocessing the newly recorded standard addition solution, the sample and the associated standards.

3 Slide the newly recorded standard addition solution in the reprocessing table to the correct position.

4 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.5.3 Spiking was not measured correctly

How to proceed?

1 Record the spiking once again

2 Open in reprocessing the newly recorded standard addition solution, the sample and the associated standards.

3 Slide the newly recorded standard addition solution in the reprocessing table to the correct position.

4 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.12 Completing determinations

How to proceed?

1 Select program part **Database**.

2 Open desired database.

The selected database opens and its data sets are displayed in the **Determination overview**.

3 Select incomplete determinations.

4 Click on the menu item **Determinations ▸ Complete...**.

The incomplete determinations will be completed.

9.3.13 Printing determination report

How to proceed?

1 Select program part **Database**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

5 Select desired determinations.

6 Click on the menu item **File ▸ Print ▸ Report...**.

The dialog window **Report output** opens.

7 Under **Selection**, select desired determinations.

8 Under **Report type**, select the option **Original report** or **Report template**.

9 Under **Output target**, enable the check box **Printer** and/or select **PDF file**.

Note

If several reports are produced simultaneously as a PDF file then an index will be automatically appended to the file name.

10 In the dialog window **Report output**, click on **[OK]**.

The reports of the selected determination are put out.

9.3.14 Printing determination overview

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Open...**.

   The dialog window **Open database** opens.
3. Select desired database or enter name in the field **Database name**.
4. Click on **[Open]**.

   The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

   Note

   A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.
5. Select desired determinations.
6. Click on menu item **File ▸ Print ▸ Determination overview...**.

   The dialog window **Print determination overview (PDF)** opens.
7. Under **Selection**, select desired determinations.
8. Under **Orientation**, select the option **Portrait format** or **Landscape format**.
9. Click on **[OK]**.

   The determination overview is opened as PDF file.

9.4 Databases

9.4.1 Database in general

In **MagIC Net**, **determination databases** that, in contrast to the **configuration database**, can be generated by the user and contain the determination data, are referred to as databases. Included among such determination data is the method data used for the determination, the measuring data generated during the determination and the results calculated from it.

In local server systems (**MagIC Net Professional**) the databases are stored on the drives administered by the computer and are only available to those users registered at that computer who have the appropriate access rights. In Client/Server systems (**MagIC Net Multi**) the databases are stored on drives administered centrally by the server and are available globally throughout the entire Client/Server system, i.e. all users with the appropriate access rights can use these databases.

Note

Each determination database has to be backed up separately. Afterwards, it is recommended that all backed-up files be copied to an external directory or to a CD/DVD.

9.4.2 Open database

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Open...**.

   The dialog window **Open database** opens.
3. Select desired database or enter name in the field **Database name**.
4. Click on **[Open]**.

   The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

9.4.3 Close database

How to proceed?

Close single database

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Close...**.
   The focused database will be closed.

Close all databases

1. Select program part **Database**.
2. Click on menu item **File ▸ Close all...**.
   All opened databases will be closed.

9.4.4 Create database

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or menu item **File ▸ Database manager...**.
   The dialog window **Database manager** opens.
3. Click on the menu item **Edit ▸ New...**.
   The dialog window **New database** opens.
4. Enter a name for the new database.
5. Click on **[OK]**.

The dialog window **Properties - Database - 'Database name'** opens for editing the database properties.

> **Note**
>
> The database name must be unique in the entire Client/Server system.

6 On the tab **General** enter a comment on the database in the field **Comment**.

7 On tab **Access rights**, define access rights for reading and editing the new database for the different user groups.

8 On tab **Backup**, define backup monitoring and automatic backup for the new database.

9 On tab **Monitoring**, define monitoring of size and number of data sets.

9.4.5 Backing up database

How to proceed?

Backing up database manually

1 Select program part **Database**.

2 Click on the symbol or menu item **File ▸ Database manager…**.

The window **Database manager** opens.

3 Click on **[Backup]**.

The window **Backup database** opens.

4 Select the directory for the backup in the **Backup directory** field.

5 Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.

Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

6 Click on **[Start]**.

The manual backup is started and the database is backed up to the selected directory.

Backing up database automatically

1 Select program part **Database**.

2 Click on the symbol or menu item **File ▸ Database manager…**.

The dialog window **Database manager** opens.

3 Select desired database.

4 Click on **[Properties]**.

The dialog window **Properties - Database - 'Database name'** opens for editing the database properties.

5 On the tab **General** enter a comment on the database in the field **Comment**.

6 On the tab **Backup** enable the check box **Backup monitoring**.

7 Enter **Interval** for backup monitoring or date for the **Next backup**.

8 Activate the **Start backup automatically** check box.

9 Select the directory for the backup in the **Backup directory** field.

10 Click on **[OK]**.

11 The dialog window **Properties - Database** is closed.

The database is automatically saved in the selected directory at the desired time.

9.4.6 Restoring the database

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or menu item **File** ▸ **Database manager…**.

   The dialog window **Database manager** opens.
3. Click on **[Restore]** in the **Database manager** dialog window.

   The **Restore databases** dialog window opens.
4. Select the directory in the **Backup directory** in which the desired database was backed up.
5. Select or enter the name for the desired **Backup file**.
6. Enter the name under **Save As** under which the database is to be restored.
7. Click on **[Start]**.

   The database restoring is started.

> **Note**
>
> Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be recovered under its old name.

9.4.7 Delete database

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or menu item **File** ▸ **Database manager…**.

   The dialog window **Database manager** opens.
3. Select desired database.

4 Click on the menu item **Edit ▸ New...**.

The selected database is deleted.

Note

Databases that are open cannot be deleted.

9.5 Configuration data

9.5.1 Configuration data in general

The configuration data is saved in **MagIC Net** in the **Configuration database**. Configuration includes all cross-method settings for devices, columns, eluents, solutions, accessories, common variables and rack data, as well as **Methods**, **Security settings** *(see Chapter 6.2.2.1, page 503)*, **User administration** *(see Chapter 6.2.1.1, page 494)*, **Program administration** *(see Chapter 6.2.3.1, page 514)*, templates and **Audit Trail** *(see Chapter 6.4, page 534)*

For local server systems (**MagIC Net Professional**) the configuration database is located in the program folder of the computer on which the program has been installed. In Client/Server systems (**MagIC Net Multi**) the configuration database is stored centrally on the server and saves and contains all the configuration data of all computers (clients) that are connected to this server.

9.5.2 Exporting configuration data

How to proceed?

1 Select program part **Configuration**.

2 Click on the menu item **File ▸ Export...**.

The dialog window **Export configuration data** opens.

3 Select desired configuration data.

4 Click on **[OK]**.

The dialog window **Export configuration data** is closed and the dialog window **Save** opened.

5 Select or enter name and directory for the export file. If an existing export file is selected it will be overwritten.

6 Click on **[Save]**.

The export of the configuration data is started.

The selected configuration data is then saved in a file with the extension **.mcfg**.

9.5.3 Importing configuration data

How to proceed?

1 Select program part **Configuration**.

2 Click on the menu item **Import ▸ file...**.

The dialog window **Open** opens.

3 Select or enter a new name and directory for the import file **MCFG**.

4 Click on **[Open]**.

The dialog window **Import configuration data** opens.

5 Select desired configuration data.

Note

Data that is not present in the export file cannot be selected.

6 Click on **[OK]**.

The import is started and the selected configuration data is imported.

9.5.4 Backing up configuration data

How to proceed?

Note

It is strongly recommended that the configuration database be backed up periodically.

Backing up configuration data manually

1 Select program part **Configuration**.

2 Click on the menu item **File** ▸ **Backup** ▸ **Manually**.

The dialog window **Backup configuration data manually** opens.

3 Select the directory for the backup in the **Backup directory** field.

4 Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.

Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

5 Click on **[Start]**.

The manual backup is started and the configuration database is backed up to the selected directory.

Backup configuration data automatically

1 Select program part **Configuration**.

2 Click on menu item **Backup** ▸ **File** ▸ **Automatically**.

The dialog window **Backup configuration data automatically** opens.

3 Activate the **Automatic backup** check box.

4 Enter **Interval** for backup monitoring or date for the **Next backup**.

5 In the field **Backup directory** select a directory for the backup.

6 Click on **[OK]**.

The dialog window **Backup configuration data automatically** is closed.

The configuration database is automatically saved in the selected directory at the desired time.

9.5.5 Restoring configuration data

How to proceed?

MagIC Net professional

1 Exit **MagIC Net**.

2 Start the **ConfigRestore.exe** file in the program directory **… \MagIC Net\bin**.

The dialog window **Restore configuration data** opens *(see Chapter 6.3.2.3, page 525)*.

3 Select the directory in the **Backup directory** field in which the configuration database was backed up.

4 Select or enter the name for the desired **Backup file**.

5 Click on **[Start]**.

The restoring of the configuration database is started.

MagIC Net multi

1 Make sure that **MagIC Net** is closed on all clients connected to the server and on the server itself.

2 Start the file **ConfigRestore.exe** in the program directory **… \MagIC Net\bin** on the server.

The dialog window **Restore configuration data** opens.

3 Select the directory in the **Backup directory** field in which the configuration database was backed up.

4 Select or enter the name for the desired **Backup file**.

5 Click on **[Start]**.

The restoring of the configuration database is started.

9.6 Methods

9.6.1 Opening a method

How to proceed?

1. Select program part **Method**.
2. Click on the symbol or the menu item **File ▸ Open...**.

   The dialog window **Open method** opens.
3. In the list box **Method group** select the desired method group.
4. Select the desired method from the table or enter a name in the field **Method name**.
5. Click on **[Open]**.

   The selected method is opened in the main window in the place of a method that is already opened. The method name is displayed in the title bar of the program; the number of currently opened methods is displayed in the left upper corner of the method symbol.

Note

A maximum of 9 methods can be opened but only one can be displayed.

9.6.2 Closing a method

How to proceed?

Closing a single method

1. Select program part **Method**.
2. Click on the symbol or the menu item **Close ▸ file**.

   The selected method will be closed. If the method has been modified, there will be a request to save the method as a new version.

Closing all methods

1 Select program part **Method**.

2 Click on menu item **File ▸ Close all…**.

All opened methods will be closed. A request to save the method as a new version will appear for each method having been modified.

9.6.3 Creating a new method

How to proceed?

1 Select program part **Method**.

2 Click on the symbol or the menu item **File ▸ New….**

The dialog window **New method** opens.

3 Select **Empty method** or a fixed **Method template**.

4 Click on **[OK]**.

Opens the selected method template for editing.

9.6.4 Creating a new method

How to proceed?

Saving method under the same name

1 Click on the symbol or the menu item **File ▸ Save**.

The existing, selected method is newly saved under its name. A new **Method version** with a new method identification is created.

If the check box **Comment on modification of methods** is activated in the **Security settings**, the window **Modification comment method** is displayed before the method is saved.

Saving method under a new name

1 Click on the menu item **File ▸ Save As…**.

The dialog window **Save method** opens.

2 In the list box **Method group** select the desired method group.

3 Select the desired method from the table or enter a name in the field **Method name**.

4 Click on **[Save]**.

The selected method is saved under the desired method name in the selected method group as method version **1**.

If the check box **Comment on modification of methods** is activated in the **Security settings**, the window **Modification comment method** is displayed before the method is saved.

9.6.5 Deleting a method

How to proceed?

1 Select program part **Method**.

2 Click on the symbol or menu item **File ▸ Method manager…**.

The dialog window **Method manager** opens.

3 In the list box **Method group** select the desired method group.

4 Select the desired method from the table or enter a name in the field **Method name**.

5 Click on the menu item **Edit ▸ Delete…**.

The selected methods with all its **Method versions** are deleted.

If the check box **Comment on modification of methods** is activated in the **Security settings***(see Chapter 6.2.2.4, page 509)*, the window **Modification comment method** is displayed before the method is saved. In this window, a reason and a comment on deleting can be entered, which is logged in the **Audit Trail**.

Note

Locked methods cannot be deleted.

9.6.6 Export method

How to proceed?

1. Select program part **Method**.
2. Click on the symbol or menu item **File ▸ Method manager…**.

   The dialog window **Method manager** opens.
3. In the list box **Method group** select the desired method group.
4. Select the desired method from the table or enter a name in the field **Method name**.
5. Click on the menu item **File ▸ Export...**.

   The dialog window **Select directory for export** opens.
6. Select the directory where the method should be exported and click on **[OK]**.

   The selected methods are each exported as files named **'Method name'.imet**.

Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is tampered with, then it cannot be imported again.

9.6.7 Import methods

How to proceed?

1. Select program part **Method**.
2. Click on the symbol or menu item **File ▸ Method manager…**.

   The dialog window **Method manager** opens.
3. In the list box **Method group** select the desired method group.
4. Click on the menu item **Edit ▸ Import...**.

   The dialog window **Select files to import** opens.

5 Select desired import files named as **'Method name'.imet** in the desired directory and click on **[OK]**.

The selected methods are imported in the currently opened method group.

9.6.8 Signing method

How to proceed?

Selecting the method

1 Select program part **Method**.

2 Click on the symbol or menu item **File ▸ Method manager…**.

The window **Method manager** opens.

3 Select desired **Method group**.

4 Select desired method.

Signature 1

Note

Methods can only be signed at level 1 if the user belongs to a user group with the corresponding permission *(see Chapter 6.2.1.2.3, page 497)*.

1 Click on the menu item **Sign ▸ Signature 1…**.

The dialog window **Signature Level 1** opens. If the selected method can be signed, **Signature possible** is displayed in the field **Info**.

2 Enter or select **User**, **Password**, **Reason** and **Comment**.

3 Click on **[Sign]**.

The selected method will be signed on level 1.

Note

Methods can be signed more than once at level 1 and can also be edited and deleted. If the method is edited and saved again, a new version is created and all the signatures will be deleted i.e. the method must be signed again.

Signature 2

Note

Methods can only be signed at level 2 if the user belongs to a user group with the corresponding permission *(see Chapter 6.2.1.2.3, page 497)*.

1 Click on the menu item **Sign** ▸ **Signature 2…**.

The dialog window **Signature Level 2** opens. If the selected method can be signed, **Signature possible** is displayed in the field **Info**.

2 Enter or select **User**, **Password**, **Reason** and **Comment**.

3 Click on **[Sign]**.

The selected method will be signed on level 2.

Note

Methods signed at level 2 are **locked**, i.e. they can neither be edited nor deleted. In order to be able to edit such methods again the signatures at level 2 must first be deleted *(see Chapter 2.3.5, page 30)*.

9.6.9 Making previous method version current

How to proceed?

1 Select program part **Method**.

2 Click on the symbol or menu item **File** ▸ **Method manager…**.

The dialog window **Method manager** opens.

3 In the list box **Method group** select the desired method group.

4 Select desired method.

5 Click on **[History]**.

The dialog window **Method history** showing a table with all **versions** of the selected method is opened.

6 Select desired method that is to be made current.

7 Click on Make **[current]**.

The selected method version is set as the current method version. The method will be saved, the version number is increased by **+1** compared to the last method version that was saved.

9.6.10 Print method report

How to proceed?

1 Select program part **Method**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open method** opens.

3 In the list box **Method group** select the desired method group.

4 Select desired method or enter name in the field **Method name**.

5 Click on **[Open]**.

The selected method is opened in the main window in the place of a method that is already opened. The method name is displayed in the title bar of the program; the number of currently opened methods is displayed in the left upper corner of the method symbol.

6 Click on menu item **File ▸ Print (PDF)...**.

The dialog window **Print method reports (PDF)** *(see Chapter 5.2.10, page 361)* opens.

7 Select desired report and orientation and click on **[OK]**.

The desired report is opened as PDF file.

9.6.11 Backup methods

How to proceed?

General

Methods are stored in the configuration database and globally accessible for all clients. This means that in order to save methods the configuration data must be saved manually or automatically. A further possible way is to export the methods and then to save these files outside of **MagIC Net**.

Backing up configuration data manually

1. Select program part **Configuration**.
2. Click on the menu item **File** ▸ **Backup** ▸ **Manually**.

   The dialog window **Backup configuration data manually** opens.
3. In the field **Backup directory** select a directory for the backup.
4. Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.

   Note

   If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.
5. Click on **[Start]**.
6. The manual backup of the configuration database is started.

Backing up configuration data automatically

1. Select program part **Configuration**.
2. Click on menu item **File** ▸ **Backup** ▸ **Automatically**.

The dialog window **Backup configuration data automatically** opens.

3 Activate the **Automatic backup** check box.

4 Enter an interval for backup monitoring in the field **Interval** or a date for the next backup in the field **Next backup**.

5 In the field **Backup directory** select a directory for the backup.

6 Click on **[OK]**.

The dialog window **Backup configuration data automatically** is closed.

Exporting methods

1 Select program part **Method**.

2 Click on the symbol or menu item **File ▸ Method manager…**.

The dialog window **Method manager** opens.

3 Select desired **Method group**.

4 Select desired methods.

5 Click on the menu item **File ▸ Export...**.

The dialog window **Select directory for export** opens.

6 Select the directory where the method should be exported and click on **[OK]**.

The selected methods are each exported as files named **'Method name'.imet**.

Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is tampered with, then it cannot be imported again.

9.7 Method groups

9.7.1 Creating method group

How to proceed?

1 Select program part **Method**.

2 Click on the symbol or the menu item **File ▸ Method groups...**.

The dialog window **Method groups** opens.

3 Click on **[New]**.

The dialog window **Properties - Method group - New Group** opens.

4 On the tab **General** in the field **Name**, enter a new name for the method group and in the field **Comment** enter a comment.

5 On tab **Access rights**, assign access rights for method groups and their methods per **User group**.

Note

The user group **Administrators** always has both access rights, i.e. they cannot be disabled.

6 Click on **[OK]**.

The dialog window **Properties - Method group - New Group** is closed.

9.7.2 Deleting method group

How to proceed?

1 Select program part **Method**.

2 Click on the symbol or the menu item **File ▸ Method groups...**.

The dialog window **Method groups** opens.

3 Select desired method group.

4 Click on **[Delete]**.

The selected method group is deleted.

5 Confirm deleting with **[OK]**.

9.8 Sample tables

9.8.1 Create sample table

How to proceed?

1 Select program part **Workplace**.

2 Click on the symbol or the menu item **Tools ▸ Sample table ▸ New…**.

The dialog window **Sample table 'New sample table** with an empty sample table opens.

3 Click on the menu item **Sample table ▸ Properties...**.

The dialog window **Properties - Sample table 'New sample table'** opens.

4 Edit properties of the new sample table.

5 Click on **[OK]**.

The dialog window **Properties - Sample table 'New sample table'** is closed.

6 In the dialog window **Sample table 'New sample table'**, click on the menu item **Edit ▸ Edit line**.

The dialog window **Edit line - Sample table 'New sample table** opens.

7 In the list box **Method**, select the desired method and enter sample data.

8 Click on **[Apply]**.

The sample data entered will be applied in the respective line of the sample table.

9 Repeat step **6** for each desired determination.

10 Click on **[Close]**.

The dialog window **Edit line - Sample table 'New sample table'** is closed.

11 In the dialog window **Sample table 'New sample table'** click on the menu item **Sample table ▸ Save as...**.

The dialog window **Save sample table** opens.

12 In the field **Name** enter the desired name.

13 Click on **[Save]**.

The sample table will be saved under the name that was entered.

9.8.2 Edit sample table

How to proceed?

1 Select program part **Workplace**.

2 Click on the symbol or the menu item **Tools ▸ Sample table ▸ Open…**.

The dialog window **Open sample table** opens.

3 Select desired sample table.

4 Click on **[Open]**.

The dialog window with the selected sample table opens.

5 Click on the menu item **Sample table ▸ Properties…** in the dialog window **Sample table**.

The dialog window **Properties - Sample table** opens.

6 Define the properties for the sample table.

7 Click on **[OK]**.

8 Select the line to be modified in the dialog window **Sample table**.

9 Click on the menu item **Edit ▸ Edit line** in the dialog window **Sample table**.

The dialog window **Edit line** opens.

10 Select **Method** from the desired method group, enter **Sample data** and click on **[Apply]**.

The sample data entered will be applied in the respective line of the sample table.

11 Repeat step **8** for each desired determination.

12 Close the dialog window **Edit line** with **[Close]**.

13 In the dialog window **Sample table** click on the menu item **Sample table ▸ Save as...**.

The dialog window **Save sample table** opens.

14 In the field **Name**, enter a new name for the sample table or overwrite the old name.

15 Click on **[Save]**.

The edited sample table is saved.

9.8.3 Loading working sample table

How to proceed?

1 Select program part **Workplace**.

2 In subwindow **Run**, click on the **Determination series** tab.

3 Click on the menu item **Sample table ▸ Load...**.

The dialog window **Load sample table** opens.

4 Select desired sample table.

5 Click on **[Load]**.

The data of the selected sample table is loaded into the working sample table.

9.8.4 Edit working sample table

How to proceed?

1. Select program part **Workplace**.
2. In subwindow **Run**, click on the **Determination series** tab.
3. If desired, load existing sample table into working sample table.
4. If desired, click on the menu item **Sample table ▸ Properties...** in the subwindow **Run**.

   The dialog window **Properties - Determination series** opens.
5. Define the properties for the determination series.
6. Click on **[OK]**.

   The dialog window **Properties - Determination series** is closed.
7. Select line to be modified in the subwindow **Run**.
8. Click on the menu item **Edit ▸ Edit line**.

   The dialog window **Edit line** opens.
9. In the list box **Method**, select the desired method and enter sample data.
10. Click on **[Apply]**.

    The sample data entered will be applied in the respective line of the working sample table.
11. Repeat step **8** for each desired determination.
12. Click on **[Close]**.

    The dialog window **Edit line** is closed.
13. If desired, click on the menu item **Sample table ▸ Save as...** in the subwindow **Run**.

The dialog window **Save sample table** opens.

14 In the field **Name** enter a name.

15 Click on **[Save]**.

The working sample table will be saved under the name entered as sample table.

9.9 Reports

9.9.1 Creating report template

How to proceed?

1 Select program part **Database**.

2

Note

A database must be open in order to carry out subsequent steps.

Click on the menu item **Tools ▸ Report templates ▸ New ▸ Form report**.

The program window **Report template** with an empty report template opens.

3 Click on the menu item **File ▸ Page setup…** in the program window **Report template**.

The dialog window **Page setup** opens.

4 Define desired settings for the report format.

5 Click on **[OK]**.

The dialog window **Page setup** is closed.

6 In the program window **Report template**, click on the menu item **Tools ▸ Options...**.

The dialog window **Options for report templates** opens.

7 Define desired settings for the report template.

8 Close the dialog window with **[OK]**.

9 Select desired module symbol on the Module bar and place it on the report template by creating a field with the left mouse button.

The properties window for the corresponding module opens automatically.

10 Enter desired settings for the module.

11 Click on **[OK]**.

The properties window is closed.

12 Repeat steps **7** and **8** for each desired module.

13 Click on the symbol or the menu item **File ▸ Save as...**.

The dialog window **Save report template** opens.

14 In the field **Name** enter a name.

15 Click on **[Save]**.

The report template is saved under the name entered.

9.9.2 Edit report template

How to proceed?

1 Select program part **Database**.

2 Click on the symbol or on the menu item **Tools ▸ Report templates ▸ Open...**.

The program window **Open report template** opens.

3 Open desired report template.

4 Click on **[Open]**.

The program window with the selected report template opens.

5 Click on the menu item **File ▸ Page setup...**.

The dialog window **Page setup** opens.

6 Define desired settings for the report format.

7 Close the dialog window with **[OK]**.

8 In the program window **Report template**, click on the menu item **Tools ▸ Options...**.

The dialog window **Options for report templates** opens.

9 Define desired settings for the report template.

10 Close the window with **[OK]**.

Editing existing modules

1 Select the symbol on the module bar and double-click on the desired module in the report template.

The properties window of the selected module opens automatically.

2 Enter desired settings for the module.

3 Close the properties window with **[OK]**.

4 Repeat steps **1** and **2** for each desired module.

Creating new modules

1 Select desired module symbol on the Module bar and place it on the report template by creating a field with the left mouse button.

The properties window for the corresponding module opens automatically.

2 Define desired setttings for the module.

3 Close the properties window with **[OK]**.

4 Repeat steps **1** and **2** for each desired new module.

5 Click on the symbol or the menu item **File ▸ Save**.

The report template is saved.

9.9.3 Printing determination report

How to proceed?

1. Select program part **Database**.
2. Click on the symbol or the menu item **File ▸ Open...**.

   The dialog window **Open database** opens.
3. Select desired database or enter name in the field **Database name**.
4. Click on **[Open]**.

   The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

   Note

   A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.
5. Select desired determinations.
6. Click on the menu item **File ▸ Print ▸ Report...**.

   The dialog window **Report output** opens.
7. Under **Selection**, select desired determinations.
8. Under **Report type**, select the option **Original report** or **Report template**.
9. Under **Output target**, enable the check box **Printer** and/or select **PDF file**.

Note

If several reports are produced simultaneously as a PDF file then an index will be automatically appended to the file name.

10 In the dialog window **Report output**, click on **[OK]**.

The reports of the selected determination are put out.

9.9.4 Printing determination overview

How to proceed?

1 Select program part **Database**.

2 Click on the symbol or the menu item **File ▸ Open...**.

The dialog window **Open database** opens.

3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

5 Select desired determinations.

6 Click on menu item **File ▸ Print ▸ Determination overview...**.

The dialog window **Print determination overview (PDF)** opens.

7 Under **Selection**, select desired determinations.

8 Under **Orientation**, select the option **Portrait format** or **Landscape format**.

9 Click on **[OK]**.

The determination overview is opened as PDF file.

9.10 Instruments

9.10.1 Adjust auto sampler

How to proceed?

It is required that you always adjust position 1 and the sample port together.

Adjustment of the dosing syringe for position 1

For the adjustment, the liquid rack and a syringe must be mounted. The Combustion Module may have to be initialized.

To adjust position **1** on the liquid rack, do the following:

1 Place a sample vessel at position **1** of the rack.

2 Select program part **Configuration**.

3 In the **Devices** subwindow, select the Combustion Module with the rack for liquids attached and double click.

The dialog window **Properties - Combustion Module - 'Name'** opens.

4 On the **Autosampler** tab click **[Adjust]** and confirm the message with **[Yes]**.

The dialog window **Adjustment** opens.

5 Enter values for the x and y coordinates of position **1**.

Note

The value for the z coordinate is only entered if the dosing syringe is positioned in the x and y direction. In the event of a faulty x-y position, the needle can become damaged.

6 Click **[Move to position]**.

The auto sampler control arm moves to the specified position. Repeat steps 5 and 6 until the injection cannula is exactly at the center of the sample vessel.

7 Click **[Apply]**.

The x and y coordinates are saved in the auto sampler.

8 Incrementally enter the value for the z coordinate of position 1 to carefully lower the needle.

9 As soon as the injection cannula is just above the floor of the sample vessel, click **[Apply]**.

The z coordinate is saved in the auto sampler.

The dosing syringe is adjusted for position **1**.

Adjustment of the dosing syringe for position Sample port

To adjust the position **Sample port** on the Auto Boat Driver, do the following:

1 Select program part **Configuration**.

2 In the **Devices** subwindow, select the Combustion Module with the rack for liquids attached and double click.

The dialog window **Properties - Combustion Module - 'Name'** opens.

3 On the **Autosampler** tab click **[Adjust]** and confirm the message with **[Yes]**.

The dialog window **Adjustment** opens.

4 Enter values for the x and y coordinates of the sample port.

Note

The value for the z coordinate is only entered if the dosing syringe is positioned in the x and y direction. In the event of a faulty x-y position, the needle can become damaged.

5 Click **[Move to position]**.

The auto sampler control arm moves to the specified position. Repeat steps 5 and 6 until the dosing syringe is exactly at the center of the injection port septum of the lock.

6 Click **[Apply]**.

The x and y coordinates are saved in the auto sampler.

7 Incrementally enter the value for the z coordinate of the sample port to carefully lower the needle.

8 As soon as the injection cannula is just above the floor of the quartz boat, click **[Apply]**.

The z coordinate is saved in the auto sampler.

The dosing syringe is adjusted for position **Sample port**.

Note

Clicking on **[Apply]** always saves all coordinates in the auto sampler, in other words from position 1 and Sample port.

Adjusting the piston height

An adjustment to the piston height is required if a gap can be seen between the piston and the syringe body or if the piston hits the syringe body hard and audibly. Adjust the pistons as follows:

1 Select program part **Configuration**.

2 In the **Devices** subwindow, select the Combustion Module with the rack for liquids attached and double click.

The dialog window **Properties - Combustion Module - 'Name'** opens.

3 On the **Autosampler** tab click **[Align]** and confirm the message with **[Yes]**.

The dialog window **Adjustment** opens.

4 In the **Adjust piston height** field, enter values in small increments to those that the current distance of the piston from the syringe body are to be changed to.

5 Click ▲ or ▼.

The piston height is corrected up or down by the value entered.

Adjusting the gripper for position 1

For the adjustment, the solid rack and the gripper must be mounted. The Combustion Module may have to be initialized.

To adjust position **1** on the liquid rack, do the following:

1 Set a quartz boat on position **1** of the solid rack.

2 Select program part **Configuration**.

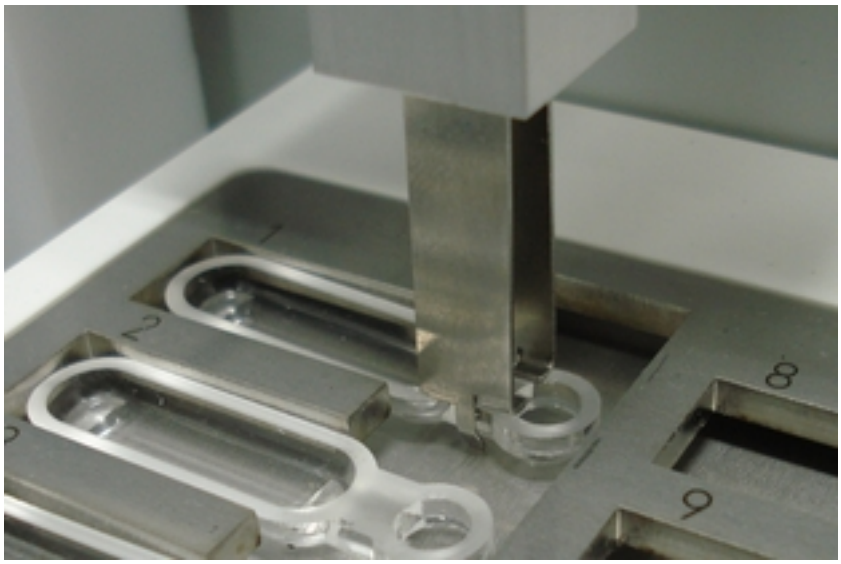
3 In the **Devices** subwindow, select the Combustion Module with the rack for solids attached and double click.

The dialog window **Properties - Combustion Module - 'Name'** opens.

4 On the **Autosampler** tab click **[Adjust]** and confirm the message with **[Yes]**.

The dialog window **Adjustment** opens.

5 For position **1** change the preset values of the x and y direction in small increments until the gripper is exactly in the center of the base of the quartz boat.



6 Change the preset value of the z direction in small increments until the gripper plate is at the rack height.

7 Click **[Apply]**.

The z coordinate is saved in the auto sampler.

The gripper is adjusted for position **1**.

Adjusting the gripper for position Sample port

To adjust the position **Sample port** on the Auto Boat Driver, do the following:

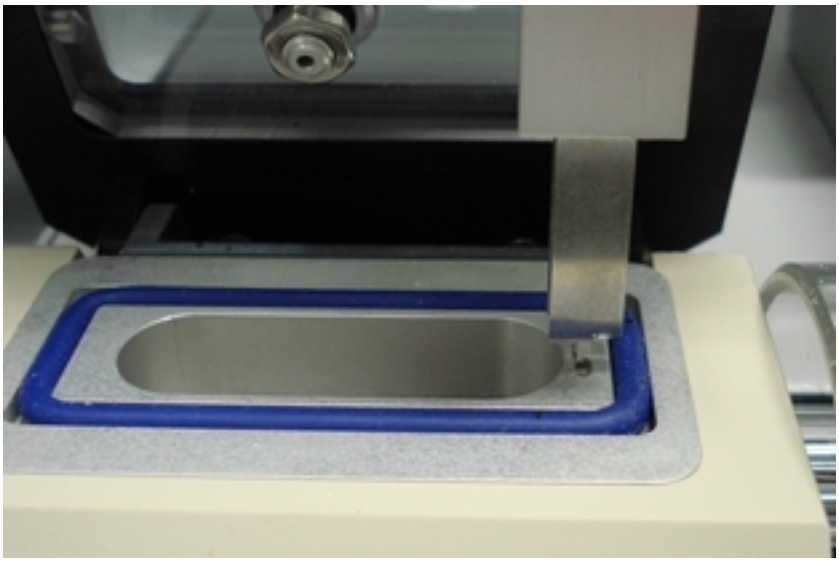
1 Select program part **Configuration**.

2 In the **Devices** subwindow, select the Combustion Module with the rack for solids attached and double click.

The dialog window **Properties - Combustion Module - 'Name'** opens.

3 Change the preset values of the x and y direction for the sample port in small increments until the gripper is exactly in the center of the adjustment mark.

4 Change the preset value of the z direction in small increments until the gripper is submerged approx. 1 mm in the adjustment mark. The gripper may not rest on the mark



5 Click **[Apply]**.

The z coordinate is saved in the auto sampler.

The gripper is adjusted for position **Sample port**.

Adjusting the gripper opening

Adjust the gripper opening as follows:

1 Select program part **Configuration**.

2 In the **Devices** subwindow, select the Combustion Module with the rack for liquids attached and double click.

The dialog window **Properties - Combustion Module - 'Name'** opens.

3 On the **Autosampler** tab click **[Align]** and confirm the message with **[Yes]**.

The dialog window **Adjustment** opens.

4 In the **Adjust gripper width** field enter a value to which the gripper should be opened.

5 Click or .

The gripper arms are moved together or apart by the value entered.

9.11 No help available

Note

There is unfortunately no help available for this topic.

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