

# tiBase 1.1 Patch 1

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**Version 1.1**

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Online help

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# **tiBase 1.1 Patch 1**

**Online help**

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# 1 Introduction

## 1.1 Welcome to tiBase

Introduction



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tiBase is a program for administering analysis data on the basis of PC/LIMS reports. The reports of the corresponding Metrohm instruments can be read into tiBase.

### **Overview of the main program features**

- *Easy-to-operate and easily configurable user interface*
- *Application*
- *Comprehensive online help*
- *Program versions*



## 1.4 Device integration

Introduction

PC/LIMS reports can be read into tiBase by:

- Titrino plus  
848, 870, 877
- Touch Control  
840 (5.840.0150), 900
- pH Meter/Conductometer  
912, 913, 914
- Ti-Touch  
915, 916
- PC Control
- 862 Compact Titrosampler
- 899 Coulometer

## 1.5 Database

Introduction

**tiBase** 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. **tiBase** is however scalable and grows with operational requirements. As soon as data security and central data management make it necessary, **tiBase** is installed as a **client/server configuration**. The **tiBase** 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 managing, searching for and grouping results. Quick filters allow the user to browse 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 3.2.3.1, page 97*).



- Layout manager for the database view (see Chapter 4.1.7, page 123).
- Quick filters (see Chapter 4.5.2.4.3, page 220).
- Efficient search functions (see Chapter 4.5.2.3, page 217).
- Access permissions control for every database (see Chapter 4.3.5.3, page 132).
- Automatic database backup (see Chapter 4.3.5.4, page 133).
- Control charts (see Chapter 4.5.2.16, page 258).
- Reprocess determinations (see Chapter 4.5.2.6, page 230).

## 1.6 Communication

### Introduction

The decisive factor for acceptance is the possibility of easy and economical **integration** in existing laboratory information systems, central databases and long-term archiving systems.

**tiBase** is communicative. Data generated in **tiBase** can be exported in XML and CSV 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 new **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 format or as a printout.

### Overview of functions

- Import of PC/LIMS reports (see Chapter 3.4.3, page 110).
- Various export formats, e.g. XML, CSV, SLK (see Chapter 4.4.4.2.1, page 183).
- Report designer (see Chapter 4.4.1.4.1.1, page 140).
- E-mail functions for security settings (see Chapter 3.2.2.7, page 95).
- Send determinations by e-mail (see Chapter 4.5.2.7, page 253).

## 1.7 Conformity

Introduction

**tiBase** also sets new standards with respect to the fulfilling of **GMP and GLP requirements**. The latest quality standards and validation procedures were implemented in developing and programming the software. A centralized user administration defines the access permissions for program functions and determinations, whereby any number of users with freely definable access profiles are possible. The system administrator can conveniently access the user administration from any tiBase client. Access to the software is password-protected and there is a choice of tiBase or Windows login.

The use of **digital signatures** makes it possible to sign determinations. 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 shared and protected against further modifications. It is thus possible to mirror customized workflows in **tiBase**.

All data is **version-controlled** 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.

### Conformity-relevant properties of tiBase 1.1 Patch 1

- Conformity is priority in development and validation.
- Central user administration (*see Chapter 3.2.1.1, page 79*).
- Detailed access permissions (*see Chapter 3.2.1.2.2, page 82*).
- Password protection under tiBase or Windows (*see Chapter 3.2.2.2, page 88*).
- Digital signature on two levels (*see Chapter 2.3, page 15*).
- One signature each for methods and results.
- Documentation of all determination modifications (*see Chapter 4.5.2.13, page 257*).



## 1.8 Versions

Introduction

tiBase is available in the following **sales versions** which differ with regard to scope and functions. An **upgrade** is possible at any time.


|                                  | tiBase 1.1 Patch<br>1 full | tiBase 1.1 Patch<br>1 multi |
|----------------------------------|----------------------------|-----------------------------|
| Product                          | 6.6063.112                 | 6.6063.113                  |
| User administration              | •                          | •                           |
| Security settings                | •                          | •                           |
| Client/server support            |                            | •                           |
| Number of licenses               | 1                          | 3                           |
| Additional licenses as an option |                            | •                           |
| XML data export to LIMS          | •                          | •                           |
| Upgrade possible                 | •                          | •                           |

## 1.9 Online help

Introduction

### Calling up the help




tiBase has a very extensive and detailed online help that can be accessed in two ways:

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

### Symbols and conventions

The following symbols and formatting are used in this documentation:

|                      |   |
|----------------------|---|
| <i>Configuration</i> | Link to another help topic in which information is shown for the marked term. |
|----------------------|---|

|  |  |
|--|--|
| <b>Database</b>  | <b>Dialog text</b><br>Designation for names of parameters, menu items, tabs and dialog windows in the software.  |
| <b>100</b>   | Designation for parameter values in input fields.  |
| <b>File ► New</b>  | Menu or menu item; Path needed to reach a certain point in the program.  |
| <b>[Next]</b>  | <b>Button</b>  |
|   | <b>Formula editor</b><br>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 21). |
| <b>1</b>   | <b>Instruction step</b><br>Carry out these steps in the sequence shown.  |
|   | <b>Caution</b><br>This symbol draws attention to possible damage to instruments or instrument parts.   |
|  | <b>Note</b><br>This symbol marks additional information and tips.  |

## 1.10 What is new in tiBase 1.1?

This chapter describes the changes that were made from tiBase 1.0 to tiBase 1.1.

### 1.10.1 Improvements

#### Database program part

- PC/LIMS reports with extended character set (UTF-8) can be read in.
- The message **008-414 Not possible to import data** now additionally specifies the line and character in which the error has occurred.

#### Configuration program part

- A new feature is that the recommended settings in the **Security settings** dialog window can be set using the **Recommended settings** check box; this disables all of the fields that pertain to this setting.
- In a new import operation, this is started automatically if the corresponding selection is made.



- Importing (import operation under configuration) of a determination is continued even if the determination is not readable. Determinations that cannot be read in are moved to a folder named **unreadable** in the source directory.

## 1.10.2 Fixed bugs and problems

### Database program part

- PC/LIMS reports created with the 900 Touch Control were unable to be read in.
- PC/LIMS reports cannot be imported on computers (PCs) with Chinese Windows operating system.
- Recalculating did not work if the titer has been invalid.
- The formula editor did not open on double-clicking.
- The PC/LIMS report could not be read in if the user entry field contained a number.
- Variables were not found if an additional command had been inserted.
- In the fixed report **Results**, the result names were not printed out.
- The assignment of calibration curves and raw data was wrong for methods with more than one calibration command.
- The user name was not printed out correctly as short and long name.
- The PC/LIMS report could not be read in if the cylinder serial number for the titrant is missing in a report.
- At recalculation, the ID (number) was shown in exponential syntax.
- Error when reading in the data if only numbers were in the text field (e.g. sample identification, device name).
- Error when reading in the data if the **Sample size** field was empty.
- The titer was able to be set to **invalid** when being reprocessed for the first time; an additional recalculation caused a crash.
- Error when reading in the data that contained method commands that support the electrode check.
- Error when reading in the data if the ID designation was empty.
- Under the raw data, the variables EME, FP#.MEA, MI.MEA, MA.MEA, BP#.MEA were output with two instead of four decimal places.
- Error when reading in the data if the titer field and/or titer unit field was empty.
- In the measuring point list and on the axis of the curve, the label of the drift was missing for **MEAS Cond**.
- The method version and change status of the method (Method saved by) were read out incorrectly.
- If, in a report template, a line thickness was entered that is greater than the allowed range (0.1 to 10.0 mm), the program crashed.
- The message **014-140 Limit value infringed** with the note **Press [Continue]** was misleading.
- The device serial number was displayed preceded by the field designation **S**.

### Configuration program part

- Error when automatically importing large PC/LIMS reports that are saved via the network.

## 1.11 What is new in tiBase 1.1 Patch 1?

This chapter describes the changes that were made from tiBase 1.1 (Build 16) to tiBase 1.1 Patch 1 (Build 16-1).

### 1.11.1 Improvements

#### General

- tiBase runs on Windows 8 operating system. Windows 2000 is no longer supported. The installation manual has been revised.

### 1.11.2 Fixed bugs and problems

#### General

- In the online help, the wrong character was assigned to the value **044** in the ASCII table.


#### Database program part

- Reprocessing of determinations from 912 and 914 portable meter instruments led to a software crash.
- If the message **008-401 File already exists in the database** and then **008-402 Delete or remove already existing file** were both rejected during importing of a PC/LIMS report into a database, then the message **008-415 Import canceled by user** did not appear.
- The curve overlay did not function correctly if there were several identical commands (e.g. **MEAS** commands) of different command types (e.g. **MEAS pH** and **MEAS Cond**) in a determination.

#### Configuration program part

- If the check box **Recommended settings** was activated in the **Security settings** dialog window and if the user then changed from the option **Password monitoring by tiBase** to the option **Password monitoring by Windows**, then the message **005-001 No password protection** did not appear.

Herisau, November 26, 2014






P. Hunziker  
Vice President,  
Head of Development

U. Kürsteiner  
Head of Quality Management

## 2 General program functions

### 2.1 Program parts

#### 2.1.1 Program parts

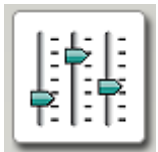
General program functions

tiBase has two 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 symbol for the other program part in black and white. The menus, symbol bars and content of the main window depend on the program part currently opened.



#### Database program part

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



#### Configuration program part

- Configuration of data import, login, backup, etc.
- Security settings
- User administration
- Program administration



#### NOTE

Access to a program part can be deactivated in the user administration. The respective symbol is disabled in such cases.

#### 2.1.2 Database - User interface

Program part: **Database**

#### Database symbol



Clicking on the database symbol in the vertical bar on the left opens the **Database** program part, 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 127).

### Elements

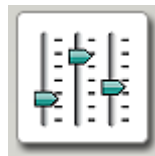
The user interface of the **Database** program part is comprised of the following elements:

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

## 2.1.3 Configuration - User interface

Program part: **Configuration**

### Configuration symbol



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

### Elements

The user interface of the **Configuration** program part is comprised of the following elements:

- Configuration-specific menu bar.
- Configuration-specific toolbar.
- Main window in which 2 subwindows are displayed.

## 2.2 Login/Password protection

### 2.2.1 General information on login / password protection

Program part: **Configuration / Database**

#### Login into tiBase

**tiBase** 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).

### Recommended settings

The **[Set]** button on the **Login/Password protection** tab in the **Security settings** dialog window has to be pressed in order to make the settings. The following conditions will then be complied with:

- A **login with user name and password** is required each time the program is started.
- Depending on the setting, the **password administration** is carried out in **tiBase** or in **Windows**.
- **User names** must be **unique**. Users cannot be deleted once they have been entered.
- **Passwords** must be **unique** for each user. None of the expired passwords already used once by the user may be reused.
- Passwords must comprise a **minimum number of characters**.
- Passwords must be changed after a defined **validity period**.
- The **number of login attempts** is limited. If this number is exceeded, the user will automatically be set to **inactive** status.

### Actions

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

- *Logging in at program start*
- *Logging out manually*
- *Logging out automatically*
- *Changing password*

## 2.2.2 Logging in

Program parts: **Configuration / Database**

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

### User

Entry of the short name of the user.

---

Entry **24 characters**

---

### Password

Entry of the password.

---

Entry **24 characters**

---

**NOTE**

Users who log in for the first time or users whose status has been reset from **inactive** or **removed** back to **active** must log in with the **Start password** (see *Chapter 3.2.1.3.1, page 85*) specified by the administrator. Afterwards, the **Change password** window will automatically open in which a new password must be entered.

**[Change password]**

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

**[Cancel]**

The login is canceled and the program is terminated.

**2.2.3 Logging out manually**

Menu item: **Configuration / Database ▶ File ▶ Logout**

A logged-in user can log out at any time with the **File ▶ Logout** menu item. The logout options defined in the **Security settings** apply. After the logout, the **Log in** window opens in which a new user can log in.

**2.2.4 Logging out automatically**

Program part: **Configuration**

If the automatic logout is activated in the **Security settings**, then the user will be logged out automatically after the defined waiting time if no operating functions have been performed in the meantime via keyboard or mouse. The **Log in** window appears again afterwards, but only the same user or members of the same user group can use it to log back in again.

**NOTE**

Users with administrator rights can always log in.

**2.2.5 Changing the password**

Dialog window: **Log in ▶ [Change password] ▶ Change password**

**NOTE**

In **tiBase**, the password can only be changed if the **Password monitoring by tiBase** option is set in the security settings.

**[Change password]**

This button in the **Log in** dialog window opens the **Change password** window, in which the new password must be entered and confirmed.

**NOTE**

The password must always be changed before the **Validity** of the password expires. For users who are logging in for the first time or users whose status has been reset from **inactive** or **removed** back to **active**, this window opens automatically after login with the **Start password**. Here you will also need to enter the **Start password** assigned by the administrator in the **Old password** field.

**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 **Login/Password protection** tab.

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 part: **Database**

In tiBase, determinations can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**  
Determinations can be signed at two levels (signature level 1 and signature level 2) by entering the user name and a password.
- **Multiple signing**  
Determinations can be signed several times at each level.
- **Signing at level 1**  
If level 2 has been signed, then no more signatures are possible at level 1.



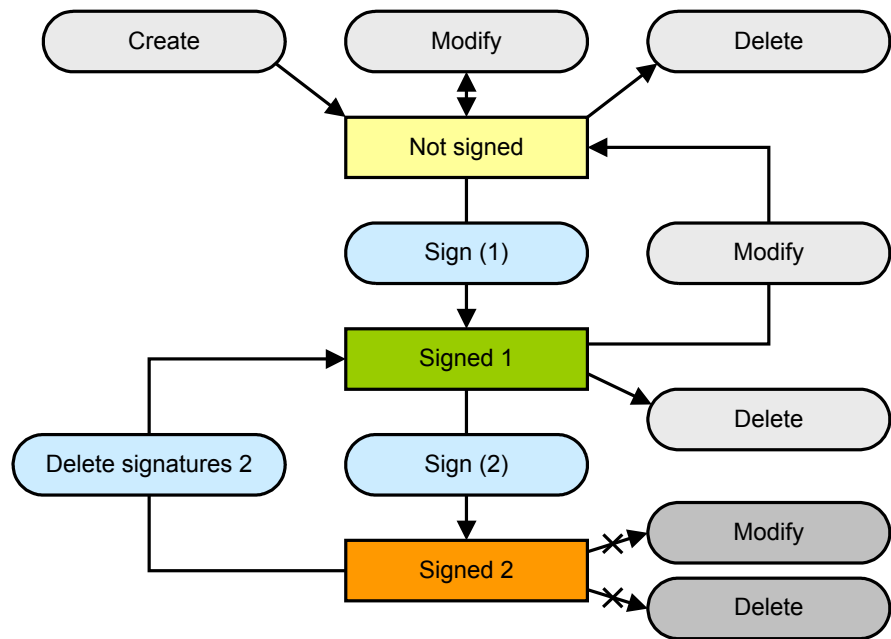
- **Signing at level 2**  
Level 2 can not be signed unless there are already signatures on level 1.
- **Different users**  
The same user may not sign on both level 1 and level 2.
- **Reason and comment**  
Each signature must be accompanied by a reason selected from predefined default reasons. An additional comment can also be entered.
- **Saved data**  
Signature date, user name, full name, reason and comments are saved for each signature.
- **Deleting signatures 1**  
Signatures at level 1 are automatically deleted again when a new version is created.
- **Deleting signatures 2**  
Signatures at level 2 can only be deleted by users who have the respective permission.
- **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

Program part: **Database**

Determinations exhibit one of the following three statuses with respect to signatures (see flow diagram):

- **Not signed**  
Determinations that are not signed can be deleted and changed, with a new version being created each time there is a change.
- **Signed (1)**  
No new versions are generated when determinations are signed at level 1. If determinations signed at level 1 are changed, then a new version will be generated that no longer contains any signatures. Determinations signed at level 1 can be deleted.
- **Signed (2)**  
No new versions are generated when determinations are signed at level 2. Determinations signed at level 2 can neither be changed nor deleted. It is, however, possible to delete the signatures (2), although the signatures (1) will be retained.



### 2.3.3 Signature Level 1

**Dialog window: Database ▶ Determinations ▶ Sign ▶ Signature 1... ▶ Signature level 1**

Determinations can be signed at level 1 in the **Signature level 1** window.



**NOTE**

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

**Info**

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

|           |  |
|-----------|--|
| Selection | <b>Signature possible   Signature 1 not possible (signature 2 exists)   Signature not possible (accessed by other client)   Signature not possible for multiple determinations</b> |
|-----------|--|

**Signature possible**

The selected determination can be signed.

**Signature 1 not possible (signature 2 exists)**

The selected 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 determination cannot be signed as it is already marked to be signed on a different client.

### **Signature not possible for multiple determinations**

Several determinations have been selected; they may, however, only be signed individually.

#### **User**

Entry of the user name (short name).

Entry **24 characters**

#### **Password**

Entry of the password.

Entry **24 characters**

#### **Reason**

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

Selection **Selection from the default reasons**

#### **Comment**

Entry of a comment on the signature.

Entry **1,000 characters**

#### **[Sign]**

Sign the determination. The window remains open.



#### **NOTE**

Determinations can only be signed at level 1 if the user belongs to a user group with the respective permission.

### **2.3.4 Signature level 2**

**Dialog window: Database ▶ Determinations ▶ Sign ▶ Signature 2... ▶ Signature level 2**

Determinations can be signed at level 2 in the **Signature level 2** window.

**NOTE**

Determinations signed at level 2 are **locked**, i.e. they can be neither modified nor deleted. In order to be able to edit such 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 | <b>Signature possible   Signature 2 not possible (signature 1 missing)   Signature not possible (accessed by other client)</b> |
|-----------|--|

**Signature possible**

The selected determination can be signed.

**Signature 2 not possible (signature 1 missing)**

The selected 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 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 | <b>24 characters</b> |
|-------|----------------------|

**Password**

Entry of the password.

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

**Reason**

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

|           |   |
|-----------|---|
| Selection | <b>Selection from the default reasons</b> |
|-----------|---|

**Comment**

Entry of a comment on the signature.

|       |                         |
|-------|-------------------------|
| Entry | <b>1,000 characters</b> |
|-------|-------------------------|

**[Sign]**

Sign the determination. The window remains open.

**NOTE**

Determinations can only be signed at level 2 if the user belongs to a user group with the respective permission.

### 2.3.5 Deleting signatures Level 2

**Dialog window: Database ▶ Determinations ▶ Sign ▶ Delete Signatures 2... ▶ Delete Signatures Level 2**

The **Delete Signatures Level 2** window allows you to delete all of the signatures on level 2 for the selected method or determination.

#### User

Entry of the user name (short name).

Entry **24 characters**

#### Password

Entry of the password.

Entry **24 characters**

#### Reason

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

Selection **Selection from the default reasons**

#### Comment

Entry of a comment on the signature.

Entry **1,000 characters**

#### [Delete]

Delete signatures 2.

**NOTE**

Signatures 2 can only be deleted if the user belongs to a user group with the respective permission.

## 2.4 Formula editor

Dialog window: **Formula editor**

The formula editor serves as a support when entering formulas for result calculation. It has an automatic **syntax check**, which is activated when the formula is applied. 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 21*).
- **Buttons**  
Buttons for the quick entry of operators, parentheses and brackets (*see Chapter 2.4.1, page 21*).
- **Operators/functions**  
Selection of the operators and functions available for the calculation formula (*see Chapter 2.4.4.1, page 38*).
- **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 buttons

Mathematical operators and parentheses or brackets can simply be inserted in the formula using the corresponding buttons. A space is automatically inserted before and after the character.



|  |                |  |                          |  |                       |
|--|----------------|--|--------------------------|--|-----------------------|
|  | Addition       |  | Equal to                 |  | Logical AND           |
|  | Subtraction    |  | Greater than             |  | Logical OR            |
|  | Multiplication |  | Less than                |  | Round parentheses     |
|  | Division       |  | Not equal to             |  |                       |
|  | 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 **Variables** or **Operators** fields can be added to the formula by double-clicking or with **[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 as well as the absolute and relative standard deviation of results  $R$  are calculated using the following formulas:

**Mean value**

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

**Absolute standard deviation**

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

**Relative standard deviation (in %)**

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

The calculation of the mean value and the standard deviation requires a multitude of calculation operations, which are carried out with full accuracy. The input data (results) and the output data (mean value, standard deviation), however, are then rounded off to the accuracy specified by the user.

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. As a result of the binary 64-bit numerical format implemented on the basis of the IEEE 754 standard, the resulting decimal numbers have 15 reliable 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 displayed result of **1,234.56789158763 mg/L** has 15 reliable digits. It should be rounded off to three decimal places according to the above rounding-off process:

**1,234.568 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 with respect to accuracy caused by rounding off in the range of the maximum reliable places are only theoretically relevant. Most of the time they are lower by several orders of magnitude than, for example, the uncertainties resulting from sample size.

**2.4.3 Variables****2.4.3.1 Variables - Overview**

Dialog window: **Formula editor**

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 in reports as a result.

**Variable types**

The following types of variables are differentiated:

| <b>Name</b>                    | <b>Syntax</b>                                   | <b>Description</b>  |
|--------------------------------|---|---|
| <i>Method variables</i>        | <b>'MV.Variable name'</b>                       | Method variables include the variables <b>FCT</b> and <b>DIV</b>  |
| <i>Sample data variables</i>   | <b>'MV.Variable name'</b>                       | Sample data variables include the variables <b>Sample size</b> , <b>Unit</b> , <b>Sample position</b> , <b>ID1</b> and <b>ID2</b> .   |
| <i>Command variables</i>       | <b>'Command name.Variable name'</b>             | Command variables are variables which are generated by the individual commands in the method run. The command variables are displayed in the order determined by the commands executed in the method run. |
| <i>Result variables</i>        | <b>'RS.Result name.Variable identification'</b> | Result variables are special command variables which are generated by <b>CALC</b> commands and which are available under a designation of their own.  |
| <i>Determination variables</i> | <b>'DV.Variable identification'</b>             | Determination variables are general variables and cannot be assigned to individual commands.  |

| Name                    | Syntax                              | Description  |
|-------------------------|-------------------------------------|--|
| <i>System variables</i> | <b>'SV.Variable identification'</b> | System variables are general variables which are adopted in the determination at the start of the determination. |
| <i>Common variables</i> | <b>'CV.Name'</b>                    | Common variables are global variables. Depending on the device, the names are set or can be defined by the user. |

### Enter variables

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



#### NOTE

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

### 2.4.3.2 Method variables

Tab: **Database** ▶ **Determinations** ▶ **Reprocessing** ▶ **Variables**

Method variables include the variables **FCT** (factor) and **DIV** (divisor).

#### Syntax

**'MV.Variable name'**

Examples: **'MV.FCT'** and **'MV.DIV'**

#### Occurrence

These two variables occur in the formula saved in the 870 KF Titrino plus. By modifying these variables the result can be indicated as different concentration units (mg/mL, ppm etc.).

#### Method variables

| Variable name | Description                                   | Data type |
|---------------|---|-----------|
| FCT           | Conversion factor for the calculation formula | Number    |
| DIV           | Divisor for the calculation formula           | Number    |



### Conversion table of the formula for KF titration

| Result unit | Sample size in... | Factor                        | Divisor                             |
|-------------|-------------------|-------------------------------|-------------------------------------|
| %           | g                 | 0.1                           | 1                                   |
| %           | mg                | 100                           | 1                                   |
| %           | mL                | 0.1                           | Density of the sample in g/mL       |
| ppm         | g                 | 1000                          | 1                                   |
| ppm         | mL                | 1000                          | Density of the sample in g/mL       |
| ppm         | μ L               | 1                             | Density of the sample in g/mL       |
| mg/mL       | g                 | Density of the sample in g/mL | 1                                   |
| mg/mL       | mL                | 1                             | 1                                   |
| mg          | 1                 | 1                             | 1                                   |
| mL          | 1                 | 1                             | Density of H <sub>2</sub> O in g/mL |
| mg/piece    | Pieces            | 1                             | 1                                   |

#### 2.4.3.3 Sample data variables

Dialog window: **Formula editor** ▶ **Sample data variables**

Sample data variables include the variables **Sample size**, **Unit**, **Sample position**, **ID1** and **ID2**.

In the field **Variables** of the formula editor all **sample data variables** are listed.

#### Syntax

**'MV.Variable name'**

Examples: **'MV.Sample Size'** , **'MV.Sample Unit'** , **'MV.ID1'**

You can select the sample data variables directly in the formula editor under **Variables** ▶ **Sample data variables** in order to avoid syntax errors.

**Sample data variables**

| <b>Variable name<br/>(PC-Control)</b> | <b>Variable name<br/>( tiBase 1.1<br/>Patch 1)</b> | <b>Description</b>         | <b>Data<br/>type</b> |
|---------------------------------------|--|----------------------------|----------------------|
| CI1                                   | ID1  | Sample identification<br>1 | Number               |
| CI2                                   | ID2  | Sample identification<br>2 | Number               |
| C00                                   | Sample Size  | Sample size                | Number               |
|                                       | Sample Unit  | Sample unit                | Text                 |

**NOTE**

If the PC/LIMS report contains a negative value for the sample size (from reweighing), it will be converted during the import into tiBase 1.1 Patch 1. The variable **COO** becomes **Abs MV.Sample.Size** in tiBase 1.1 Patch 1

**2.4.3.4 Command variables**

Dialog window: **Formula Editor ▶ Variables**

The command variables are method-specific. They depend on which commands are used in the method. Included among the command variables are also solution and sensor variables, which are applied automatically from the corresponding tables in the **Configuration** for the device-dependent commands at the time the determination is started and which are allocated to the individual commands. The **Variables** field of the Formula editor lists all **Command variables** which are available for the current method.

**Syntax**

**'Command name.Variable identification'**

Examples: **'DET U 3.SME'** , **'Liquid Handling 4.CONC'**

You can select the command variables directly in the formula editor under **Variables ▶ Command Variables** in order to avoid syntax errors.

If a method run before the calculation contains more than one data generating command (titrations, measurements, calibrations, monitored dosing, evaluations, calculations), then there is a command identification before the variable.



M. for titration mode, measuring mode and monitored dosing

<E. for EVAL

C. for CALC

### Command variables

Unless marked otherwise, all of the variables listed here in alphabetical order are of the **Number** type.



#### NOTE

In the case of variables with Index **{x}**, the desired number **1...9** must be entered for **x** (e.g. **.EP{3}.ERC** for the third endpoint).

If no index is specified, then the last index will be used automatically (e.g. **.EP.ERC** for the last endpoint).

| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description   | Command  |
|-------------------------------|---|---|--|
| .BM#                          | .BP{x}.MEA                                | Measured value for the break point x (1...9) in the unit of the measured value                  | DET, MET, MEAS (without T/Flow)                            |
| .BT#                          | .BP{x}.TEM                                | Temperature for the break point x (1...9) in °C   | DET, MET, MEAS (without T/Flow)                            |
| .BD#                          | .BP{x}.TIM                                | Time for the break point x (1...9) in s   | DET, MET, MEAS (without T/Flow)                            |
| .BP#                          | .BP{x}.VOL                                | Volume for the break point x (1...9) in mL  | DE, MET  |
| .CONC                         | .CONC                                     | Concentration of the solution used for the command (number)                                     | DET, MET, SET, KFT, STAT, STDADD, ADD, DOS, LQH            |
| .MCD                          | .DBL                                      | Duration command (total duration for the processing of the command) in s                        | DET, MET, SET, KFT, KFC, STAT, MEAS, CAL MEAS, STDADD, DOS |
| .MDC                          | .DRI                                      | Current and/or last drift for drift correction in mL/min  | SET, KFT, KFC  |
| .MSD                          | .DSC                                      | Duration start conditions (time for processing all start conditions) in s                       | DET, MET, SET, KFT, STAT                                   |
| .DDC                          | .DTI                                      | Time for drift correction (time from the start of the titration to the end of the command) in s | SET, KFT, KFC  |

| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description   | Command  |
|-------------------------------|---|---|--|
| .MCM                          | .EME                                      | End measured value (measured value after processing of the command) in the unit of the measured value   | DET, MET, SET, KFT, KFC, STAT, MEAS, CAL MEAS, STDADD, DOS   |
| .MEN                          | .ENP                                      | Electrode zero point for the sensor used for the command (dimensionless for pH sensor or in mV for the ISE sensor, number) and/or electrode zero point calculated from the calibration (for <b>STDADD</b> and <b>CAL LOOP</b> ) | DET pH, DET U, MET pH, MET U, SET pH, SET U, STAT, MEAS pH, MEAS U, MEAS T, MEAS Conc, CAL LOOP, DOS, STDADD |
|                               | .EP{x}.DME                                | Measured value differential for the endpoint x (1...9)  | MET  |
| .EF#                          | .EP{x}.ERC                                | ERC for the endpoint x (1...9)  | DET  |
| .EM#                          | .EP{x}.MEA                                | Measured value for the endpoint x (1...9) in the unit of the measured value   | DET, MET, SET, KFT, KFC  |
| .ESI#                         | .EP{x}.MEP                                | Marking for the endpoint x (1...9); 1 = 1 endpoint, 2 = 2 or more endpoints   | DET, MET, SET, KFT   |
| .EP#                          | .EP.QTY                                   | Measured value (water) for the endpoint in mg   | KFC  |
| .ET#                          | .EP{x}.TEM                                | Temperature for the endpoint x (1...9) in °C  | DET, MET, SET, KFT   |
| .ED#                          | .EP{x}.TIM                                | Time for the endpoint x (1...9) in s  | DET, MET, SET, KFT, KFC  |
| .EP#                          | .EP{x}.VOL                                | Volume for the endpoint x (1...9) in mL   | DET, MET, SET, KFT   |
| .MCT                          | .ETE                                      | End temperature (temperature following processing of the command) in °C   | DET, MET, SET, KFT, KFC, STAT, MEAS (without T/Flow), CAL MEAS, STDADD, DOS                                  |
| .MCV                          | .EVT                                      | End volume (total dosed volume at the end of the command) in mL   | DET, MET, SET, KFT, STAT, DOS  |
| .FM#                          | .FP{x}.MEA                                | Measured value for the fixed endpoint x (1...9) in the unit of the measured value   | DET, MET, SET, KFT, STAT   |
|                               | .FP{x}.QTY                                | Measured value (water) for the fixed endpoint x (1...9) in mg   | KFC  |



| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description  | Command  |
|-------------------------------|---|--|--|
| .FT#                          | .FP{x}.TEM                                | Temperature for the fixed endpoint x (1...9) in °C   | DET, MET, SET, KFT, STAT, MEAS (without T/Flow)                        |
| .FD#                          | .FP{x}.TIM                                | Time for fixed endpoint x (1...9) in s   | DET, MET, SET, KFT, KFC, STAT, MEAS (without T/Flow)                   |
| .FP#                          | .FP{x}.[VOL]                              | Volume for the fixed endpoint x (1...9) in mL  | DET, MET, SET, KFT, STAT   |
| .HM#                          | .HP{x}.MEA                                | Measured value for HNP x (1...9) in mV <sup>1)</sup>   | DET, MET   |
| .HT#                          | .HP{x}.TEM                                | Temperature for HNP x (1...9) in °C  | DET, MET   |
| .HD#                          | .HP{x}.TIM                                | Time for HNP x (1...9) in s  | DET, MET   |
| .HP#                          | .HP{x}.[VOL]                              | Volume for HNP (half neutralization potential) x (1...9) in mL   | DET, MET   |
| #M.MIM                        | .IME                                      | Initial measured value (measured value before start conditions are processed) in the unit of the measured value (number) | DET, MET, SET, KFT, STAT, MEAS, CAL MEAS, STDADD, DOS                  |
| .MIT                          | .ITE                                      | Initial temperature (temperature before start conditions are processed) in °C  | DET, MET, SET, KFT, STAT, MEAS (without T/Flow), CAL MEAS, STDADD, DOS |
| .XAM                          | .MA.MEA                                   | Maximum measured value in the unit of the measured value   | DET, MET, SET, KFT, STAT, MEAS   |
| .XAT                          | .MA.TEM                                   | Temperature for the maximum measured value in °C   | DET, MET, SET, KFT, STAT, MEAS   |
| .XAD                          | .MA.TIM                                   | Time for the maximum measured value in s   | DET, MET, SET, KFT, STAT, MEAS   |
| .XAP                          | .MA.[VOL]                                 | Volume with maximum measured value in mL   | DET, MET, SET, KFT, STAT   |
|                               | .MI.GFL                                   | Minimum gas flow rate in mL/min  | MEAS T/Flow  |
| .XIM                          | .MI.MEA                                   | Minimum measured value in the unit of the measured value   | DET, MET, SET, KFT, STAT, MEAS   |
| .XIT                          | .MI.TEM                                   | Temperature for minimum measured value in °C   | DET, MET, SET, KFT, STAT, MEAS   |
| .XID                          | .MI.TIM                                   | Time for the minimum measured value in s   | DET, MET, SET, KFT, STAT, MEAS   |

| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description  | Command  |
|-------------------------------|---|--|--|
| .XIP                          | .MI.[VOL]                                 | Volume for minimum measured value in mL  | DET, MET, SET, KFT, STAT   |
| .RMC                          | .MR.MRC                                   | Correlation coefficient for mean dosing rate for the whole range   | STAT, DOS  |
| .RMS                          | .MR.MRS                                   | Standard deviation for mean dosing rate for the whole range in mL/min  | STAT, DOS  |
| .RM                           | .MR.MRT                                   | Mean dosing rate for the whole range in mL/min   | STAT, DOS  |
| .MTM                          | .MTE                                      | Temperature measurement with sensor; <b>1</b> = on, <b>0</b> = off   | DET, MET, SET, KFT, STAT, MEAS (without T/Flow), CAL MEAS, STDADD, DOS                                       |
| .MMP                          | .NMP                                      | Number of measuring points (number of measuring points in the measuring point list)  | DET, MET, SET, KFT, KFC, STAT, MEAS, CAL MEAS, DOS   |
| .RDC#                         | .RE{x}.DRC                                | Correlation coefficient for mean dosing rate in window x (1...9)   | STAT   |
| .RDS#                         | .RE{x}.DRS                                | Standard deviation for mean dosing rate in window x (1...9) in mL/min  | STAT   |
| .RD#                          | .RE{x}.[DRT]                              | Mean dosing rate in window x (1...9) in mL/min   | STAT   |
| .MCM                          | .RES                                      | Result calculated from the standard addition curve (concentration of the selected unit)  | STDADD   |
| .MSL                          | .SLO                                      | Electrode slope of the sensor used for the command (in % for pH sensor or mV for ISE sensor, number) or electrode slope calculated from the calibration (for <b>CAL LOOP</b> ) | DET pH, DET U, MET pH, MET U, SET pH, SET U, STAT, MEAS pH, MEAS U, MEAS T, MEAS Conc, CAL LOOP, DOS, STDADD |
| .MSM                          | .SME                                      | Start measured value (measured value after processing the start conditions) in the unit of the measured value  | DET, MET, SET, KFT, KFC, STAT  |
| .MST                          | .STE                                      | Start temperature (temperature after processing of the start conditions) in °C   | DET, MET, SET, KFT, KFC, STAT  |



| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description  | Command  |
|-------------------------------|---|--|--|
| .MTS                          | .STY                                      | Type of stop with which the command was stopped: <b>1</b> = normal; <b>0</b> = manual or after error                           | DET, MET, SET, KFT, STAT, MEAS, CAL MEAS, STDADD, DOS            |
| .MSA                          | .SVA                                      | Start volume absolute (volume that was added according to the start condition "start volume") in mL                            | DET, MET, SET, KFT, STAT   |
| .MSP                          | .SVM                                      | Start volume measured value (volume which was added according to the start measured value given in the start conditions) in mL | DET, MET   |
| .MSS                          | .SVS                                      | Start volume measured value (volume that was added according to the start condition "start slope") in mL                       | DET, MET   |
| .MSV                          | .SVT                                      | Total start volume (volume that was added in dependence on all three start conditions) in mL                                   | DET, MET, SET, KFT, STAT   |
| .TITER                        | .TITER                                    | Titer value of the solution used for the command (number)  | DET, MET, SET, KFT, STAT, STDADD dos, STDADD auto, ADD, DOS, LQH |
| .MVA                          | .VAR                                      | Variance of the result calculated from the standard addition curve   | STDADD   |
| .MCV                          | .VOL                                      | Dosed volume   | STDADD, ADD, LQH   |

1) HNP = Half neutralization potential

### 2.4.3.5 Result variables

Dialog window: **Formula Editor ▶ Variables**

Result variables are method-specific and are defined in the **CALC** command of the method. The **Variables** field of the Formula editor lists all **Result variables** which are available for the current method.

#### Syntax

**'RS.Result name.Variable identification'**

Examples: **'RS.RS01.VAL'** (= **'RS.RS01'**), **'RS.testTime.UNI'**

You can select the method variables directly in the formula editor under **Variables ▶ Result Variables** in order to avoid syntax errors.

### Result variables

| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description   | Command     |
|-------------------------------|---|---|-------------|
| .R1 to .R9                    | [.VAL]                                    | Result value ( .VAL optional;<br>number)  | <b>CALC</b> |
| SSA#                          | .ASD                                      | Absolute standard deviation for<br>the result (number)                                | <b>CALC</b> |
| SMN#                          | .MNV                                      | Mean value of the result (num-<br>ber)  | <b>CALC</b> |
| SNR                           | .NSR                                      | Statistics actual counter for the<br>result (number)                                  | <b>CALC</b> |
| SSD                           | .NST                                      | Statistics setpoint counter for the<br>result (number)                                | <b>CALC</b> |
| SSR#                          | .RSD                                      | Relative standard deviation for<br>the result (number)                                | <b>CALC</b> |
| SNT                           | .STS                                      | Statistics status for the result<br>(number 1 = Statistics on, 0 =<br>Statistics off) | <b>CALC</b> |
| #C.R# unit                    | .UNI                                      | Result unit (Text)  | <b>CALC</b> |

#### 2.4.3.6 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<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description                                       | Data type     |
|-------------------------------|---|---|---------------|
| DD                            | DUR                                       | Duration of the determination in s                | Number        |
|                               | STT                                       | Time point at which the determination was started | Date/<br>Time |

#### 2.4.3.7 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<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description   | Data type |
|-------------------------------|---|---|-----------|
| %AC                           | .ACC                                      | Autostart actual counter.   | Number    |
| %AD                           | .ACE                                      | Autostart setpoint counter.   | Number    |
| %RN                           | .RUN                                      | Sample number.  | Number    |
| %SE                           | .SEN                                      | Indication whether the end of the sample table has been reached ( <b>1 = yes, 0 = no</b> ).   | Number    |
| %AS                           | .SIN                                      | Indication whether the determination has been started as a single determination or within a series ( <b>1 = single determination, 0 = series determination</b> ). | Number    |
| %SL                           | SLI                                       | Sample table actual line.   | Number    |

| Variable name<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description  | Data type |
|-------------------------------|---|--|-----------|
| SNT                           | .STA                                      | Indication whether the statistics is activated ( <b>1 = yes, 0 = no.</b>             | Number    |
| %SC                           | .STC                                      | Start counter  | Number    |
| %SS                           |   | Sample table status<br><br><b>1 = Sample table on</b><br><b>0 = Sample table off</b> | Number    |

### 2.4.3.8 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<br>(PC-Control) | Variable name<br>( tiBase 1.1<br>Patch 1) | Description                         | Data type                 |
|-------------------------------|---|-------------------------------------|---------------------------|
| CV01...CV25                   | [.VAL]                                    | Value of common variables (number). | Text, number or date/time |

#### Usage

##### 870 KF Titrino Plus

With this instrument the two common variables, CV01 and CV02, are defined for blind values.

##### 877 Titrino Plus, 848 Titrino Plus, 862 Titrosampler



With these instruments there can be defined up to five method-independent common variables, CV01 to CV05. Common variables are e.g. useful for the following applications:

- Determination of a blank value which will be taken into account during the content determination of the sample.
- Determination of the content of a standard solution, which will be taken into account during the content determination of the sample.

#### 2.4.3.9 Alphabetical command overview

- **BRC**  
Coulometric bromine number determination
- **CAL Cond**  
Determination of cell constants of conductivity sensors with the aid of a known standard solution.
- **CAL MEAS Conc**  
Measuring of calibration buffers for the calibration of ion-selective electrodes.
- **CAL MEAS pH**  
Measuring of calibration buffers for the calibration of pH sensors.
- **DET pH**  
Potentiometric pH measurement with pH electrodes (measured quantity pH).
- **DET U**  
Potentiometric voltage measurement with metal electrodes (measured quantity voltage U).
- **DET Ipol**  
Voltametric measurement with selectable polarization current (measured quantity voltage U).
- **DET Upol**  
Amperometric measurement with selectable polarization voltage (measured value current I).
- **DOS pH**  
Dosing of a specified volume with a solution (measured quantity pH)
- **DOS U**  
Dosing of a specified volume with a solution (measured quantity voltage U).
- **KFC**  
Coulometric Karl Fischer titration with voltametric measurement.
- **KFT Ipol**  
Volumetric Karl Fischer titration with voltametric measurement (selectable polarization current).
- **KFT Upol**  
Volumetric Karl Fischer titration with amperometric measurement (selectable polarization current).
- **MEAS Conc**  
Concentration measurement (direct measurement).

- **MEAS Cond**  
Conductivity measurement.
- **MEAS Ipol**  
Voltametric measurement with selectable polarization current
- **MEAS pH**  
Potentiometric pH measurement with pH electrodes.
- **MEAS T**  
Temperature measurement.
- **MEAS U**  
Potentiometric voltage measurement.
- **MEAS Upol**  
Amperometric measurement with selectable polarization current.
- **MET Ipol**  
Monotonic equivalence point titration with voltametric measurement (selectable polarization current).
- **MET pH**  
Monotonic equivalence point titration with potentiometric pH measurement.
- **MET U**  
Monotonic equivalence point titration with potentiometric voltage measurement.
- **MET Upol**  
Monotonic equivalence point titration with amperometric measurement (selectable polarization voltage).
- **SET pH**  
Endpoint titration with potentiometric pH measurement.
- **SET U**  
Endpoint titration with potentiometric voltage measurement.
- **SET Ipol**  
Endpoint titration with voltametric measurement (selectable polarization current).
- **SET Upol**  
Endpoint titration with amperometric measurement (selectable polarization voltage).
- **STAT pH**  
STAT titration by keeping the measured value pH constant.
- **STAT U**  
STAT titration by keeping the measured value U constant.



## 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   |
|--|---|
| <b>Arithmetic:</b> <ul style="list-style-type: none"> <li>▪ Addition (+)</li> <li>▪ Subtraction (-)</li> <li>▪ Multiplication (*)</li> <li>▪ Division (/)</li> <li>▪ Potentiation (^)</li> </ul>   | <b>Arithmetic:</b> <ul style="list-style-type: none"> <li>▪ Exponential function (Exp)</li> <li>▪ Natural logarithm (Ln)</li> <li>▪ Common logarithm (Log)</li> <li>▪ Square root (Sqrt)</li> <li>▪ Absolute value (Abs)</li> <li>▪ Fraction (Frac)</li> <li>▪ Integer (Int)</li> <li>▪ Round integer (Round)</li> <li>▪ Sign (Sign)</li> <li>▪ Quantiles of the Student's t-distribution (Tinv)</li> </ul> |
| <b>Logic:</b> <ul style="list-style-type: none"> <li>▪ AND</li> <li>▪ OR</li> </ul>  | <b>Date/Time:</b> <ul style="list-style-type: none"> <li>▪ Time()</li> <li>▪ Time(Date)</li> <li>▪ Time(Date+Time)</li> </ul>   |
| <b>Comparison:</b> <ul style="list-style-type: none"> <li>▪ Equal to (=)</li> <li>▪ Greater than (&gt;)</li> <li>▪ Greater than or equal to (&gt;=)</li> <li>▪ Less than (&lt;)</li> <li>▪ Less than or equal to (&lt;=)</li> <li>▪ Not equal to (&lt;&gt;)</li> </ul> | <b>Type conversion:</b> <ul style="list-style-type: none"> <li>▪ NumberToText</li> <li>▪ NumberToTime</li> <li>▪ TextToNumber</li> <li>▪ TextToTime</li> <li>▪ TimeToNumber</li> <li>▪ TimeToText</li> </ul>  |
|  | <b>Text:</b> <ul style="list-style-type: none"> <li>▪ TextPosition</li> <li>▪ SubText</li> <li>▪ Trim</li> </ul>  |
|  | <b>Miscellaneous:</b> <ul style="list-style-type: none"> <li>▪ Error</li> <li>▪ Case</li> </ul>   |

#### 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 operands 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   |
|---|----------|--------|--|--|
| <b>both operands of the same type:</b>  |          |        |  |  |
| Number  | Number   | Number | <b>1.2 + 3 = 4.2</b>   | -  |
| Text  | Text     | Text   | <b>"Metrohm" + "AG" = "Metrohm AG"</b>                             | 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 | <b>Time(1998;04;06) + Time(1964;02;03) = 59300.875</b> (for UTC+1) | Result: Number of days calculated from December 1899, dependent on the system time   |
| <b>Operand of different type:</b> The operand which does not correspond to the result type is converted to the relevant result type before the operation. |          |        |  |  |
| Number  | Text     | Text   | <b>1.2 + "Metrohm" = "1.2Metrohm"</b>                              | -  |
| Text  | Number   | Text   | <b>"Metrohm" + 1.2 = "Metrohm1.2"</b>                              | -  |
| Number  | Time     | Number | <b>2.0 + Time(1999;11;7) = 36472.96</b> (for UTC+1)                | Result: Number of days calculated from December 1899, dependent on the system time   |
| Time  | Number   | Number | <b>Time(1999;10;7) + 2.0 = 36441.92</b> (for UTC+2)                | Result: Number of days calculated from December 1899, dependent on the system time   |



| Operand1 | Operand2 | Result | Example   | Remark   |
|----------|----------|--------|---|--|
| Text     | Time     | Text   | "Metrohm" + Time(1999;10;7) = "Metrohm1999-10-07 00:00:00 UTC+2"  | Before the operation, the operand of the type <b>Date/Time</b> is converted to <b>Text</b> . |
| 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   |
|---|----------|--------|---|--|
| <b>both operands of the same type:</b>  |          |        |   |  |
| 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 |
| <b>Operand of different type:</b> 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   |
|---|----------|--------|--|--|
| <b>Operands of the same type:</b>   |          |        |  |  |
| Number  | Number   | Number | <b>1.2 * 3 = 3.6</b>   | -  |
| Text  | Text     | Text   | <b>"Metrohm" * "AG" = invalid</b>  | This operation is not allowed.   |
| Time  | Time     | Number | <b>Time(1998;05;06) *<br/>Time(1902;02;03) = 27'478'004.545</b><br>(for UTC+1 or +2 for summer time) | Result: Number of days calculated from December 1899, dependent on the system time |
| <b>Operand of different type:</b> The operand which does not correspond to the result type is converted to the relevant result type before the operation. |          |        |  |  |
| Number  | Text     | Text   | <b>2 * "Metrohm" = "MetrohmMetrohm"</b>  | -  |
| Text  | Number   | Text   | <b>"Metrohm" * 2 = "MetrohmMetrohm"</b>  | -  |
| Number  | Time     | Number | <b>2.0 * Time(1999;10;7) = 72'879.833</b><br>(for UTC+2)   | Result: Number of days calculated from December 1899, dependent on the system time |
| Time  | Number   | Number | <b>Time(1999;10;7) * 2.0 = 72'879.833</b><br>(for UTC+2)   | Result: Number of days calculated from December 1899, dependent on the system time |
| Text  | Time     | Text   | <b>"Metrohm" * Time(1999;10;7) = invalid</b>   | This operation is not allowed.   |
| Time  | Text     | Text   | <b>Time(1999;10;7) * "Metrohm" = invalid</b>   | 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   |
|---|----------|--------|---|--|
| <b>Operands of the same type:</b>   |          |        |   |  |
| Number  | Number   | Number | <b>1.2 / 3 = 0.4</b>  | Operand2 must not be zero!   |
| Text  | Text     | Text   | <b>"Metrohm" / "AG" = invalid</b>   | This operation is not allowed.   |
| Time  | Time     | Number | <b>Time(1998;04;06) / Time(1964;02;03) = 1.533</b> (for UTC +1 or +2 for summer time) | Result: Number of days calculated from December 1899, dependent on the system time |
| <b>Operand of different type:</b> The operand which does not correspond to the result type is converted to the relevant result type before the operation. |          |        |   |  |
| Number  | Text     | Text   | <b>1.2 / "Metrohm" = invalid</b>  | This operation is not allowed.   |
| Text  | Number   | Text   | <b>"Metrohm" / 1.2 = invalid</b>  | This operation is not allowed.   |
| Number  | Time     | Number | <b>10'000 / Time(1999;10;7) = 274</b> (for UTC+2)                                     | Result: Number of days calculated from December 1899, dependent on the system time |
| Time  | Number   | Number | <b>Time(1999;02;17) / 10'000 = 3.621</b> (for UTC+1)                                  | Result: Number of days calculated from December 1899, dependent on the system time |
| Text  | Time     | Text   | <b>"Metrohm" / Time(1999;10;7) = invalid</b>  | This operation is not allowed.   |
| Time  | Text     | Text   | <b>Time(1999;10;7) / "Metrohm" = invalid</b>  | 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  |
|-----------------------------------|----------|--------|-----------------------------------|---|
| <b>Operands of the same type:</b> |          |        |                                   |   |
| Number                            | Number   | Number | <b>1.2 ^ 3 = 1.728</b>            | Complex results (which comprise +bi, i.e. a real and an imaginary component) are displayed as an error. |
| Text                              | Text     | Text   | <b>"Metrohm" ^ "AG" = invalid</b> | This operation is not allowed.  |

| Operand1  | Operand2 | Result | Example   | Remark   |
|---|----------|--------|---|--|
| Time  | Time     | Number | <b>Time(1900;01;05) ^ Time(1900;01;02) = 196.371</b> (for UTC +1) | Result: Number of days calculated from December 1899, dependent on the system time |
| <b>Operand of different type:</b> The operand which does not correspond to the result type is converted to the relevant result type before the operation. |          |        |   |  |
| Number  | Text     | Text   | <b>1.2 ^ "Metrohm" = invalid</b>                                  | This operation is not allowed.   |
| Text  | Number   | Text   | <b>"Metrohm" ^ 1.2 = invalid</b>                                  | This operation is not allowed.   |
| Number  | Time     | Number | <b>1.2 ^ Time(1900;02;03) = 586.198</b> (for UTC+1)               | -  |
| Time  | Number   | Number | <b>Time(1999;10;7) ^ 2.5 = 253479847878.04</b> (for UTC+2)        | -  |
| Text  | Time     | Text   | <b>"Metrohm" ^ Time(1999;10;7) = invalid</b>                      | This operation is not allowed.   |
| Time  | Text     | Text   | <b>Time(1999;10;7) ^ "Metrohm" = invalid</b>                      | 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

| Operand1                          | Operand2 | Result | Example  | Remark   |
|-----------------------------------|----------|--------|--|--|
| <b>Operands of the same type:</b> |          |        |  |  |
| Number                            | Number   | Number | <b>5 AND 4 --&gt; 1</b><br><b>4 AND 0 --&gt; 0</b> | Numbers greater than 0 are interpreted as <b>1</b> (true). |



| Oper-<br>and1                        | Oper-<br>and2 | Result | Example   | Remark   |
|--------------------------------------|---------------|--------|---|--|
| Text                                 | Text          | Number | "Metrohm" AND "AG" --> 1<br>"" 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)   |
| <b>Operands of a different type:</b> |               |        |   |  |
| Number                               | Text          | Number | 1.2 AND "1.2" --> 1<br>0 AND "1" --> 1<br>0 AND "0" --> 1<br>0 AND "" --> 0 | Before the operation, the operand of the type <b>Number</b> is converted to the type <b>Text</b> , as a conversion from <b>Text</b> to <b>Number</b> 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<br>0 AND Time(1999;10;07) --> 0               | Before the operation, the operand of the type <b>Date/Time</b> is converted to <b>Number</b> 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<br>"" AND Time(1999;10;07) --> 0        | Before execution of the operation, the operand of the type <b>Date/Time</b> is converted to the type <b>Text</b> 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      |

| Operand1 | Operand2 | Result |
|----------|----------|--------|
| 1        | 0        | 1      |
| 0        | 0        | 0      |

### Examples

| Operand1  | Operand2 | Result | Example  | Remark   |
|---|----------|--------|--|--|
| <b>Operands of the same type:</b>   |          |        |  |  |
| Number  | Number   | Number | <b>5 OR 4 --&gt; 1</b><br><b>4 OR 0 --&gt; 1</b>   | Numbers greater than 1 are automatically interpreted as 1 (true)   |
| Text  | Text     | Number | <b>"Metrohm" OR "AG" --&gt; 1</b><br><b>"" OR "Metrohm" --&gt; 1</b><br><b>"" OR "" --&gt; 0</b> | 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 | <b>Time(1999;10;07) OR</b><br><b>Time(1964;02;03) --&gt; 1</b>                                   | <b>Time()</b> : see <i>Time(Date)</i>  |
| <b>Operand of different type:</b> The operand which does not correspond to the result type is converted to the relevant result type before the operation. |          |        |  |  |
| Number  | Text     | Number | <b>1.2 OR "1.2" --&gt; 1</b><br><b>0 OR "" --&gt; 1</b>  | Before the operation, the operand of the type <b>Number</b> is converted to the type <b>Text</b> , as a conversion from <b>Text</b> to <b>Number</b> 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 | <b>"Metrohm" OR 1.2 --&gt; 1</b>   | The same rules apply here as for the previous operation.   |
| Number  | Time     | Number | <b>2.0 OR Time(1999;10;7) --&gt; 1</b><br><b>0 OR Time(1964;02;03) --&gt; 1</b>                  | Before the operation, the operand of the type <b>Date/Time</b> is converted to <b>Number</b> and all data from December 30, 1899 are interpreted as 1 (true).  |
| Time  | Number   | Number | <b>Time(1999;10;7) OR 2.5 --&gt; 1</b>   | The same rules apply here as for the previous operation.   |
| Text  | Time     | Number | <b>"Metrohm" OR</b><br><b>Time(1999;10;7) --&gt; 1</b>   | Before execution of the operation, the operand of the type <b>Date/Time</b> is converted to the type <b>Text</b> and every character string that is not empty is interpreted as 1 (true).  |
| Time  | Text     | Number | <b>Time(1999;10;7) OR</b><br><b>"Metrohm" --&gt; 1</b>   | 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-<br>and1                        | Oper-<br>and2 | Result | Example   | Remark  |
|--------------------------------------|---------------|--------|---|---|
| <b>Operands of the same type:</b>    |               |        |   |   |
| Number                               | Number        | Number | <b>5 = 5 --&gt; 1</b><br><b>4 = 5 --&gt; 0</b>                  | -   |
| Text                                 | Text          | Number | <b>"Metrohm" = "AG" --&gt; 0</b><br><b>"aG" = "AG" --&gt; 0</b> | When making a comparison between two texts the <b>ASCII value</b> of the character sequence is compared (see Chapter 2.4.4.10, page 70). <b>Attention:</b> Uppercase and lowercase letters have different values!   |
| Time                                 | Time          | Number | <b>Time(1998;04;06) =</b><br><b>Time(1964;02;03) --&gt; 0</b>   | (see Chapter 2.4.4.6.2, page 58)  |
| <b>Operands of a different type:</b> |               |        |   |   |
| Number                               | Text          | Number | <b>1.2 = "1.2" --&gt; 1</b><br><b>1.2 = "Metrohm" --&gt; 0</b>  | Before the relational operation, the <b>Number</b> is converted to <b>Text</b> , afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70).   |
| Text                                 | Number        | Number | <b>"Metrohm" = 1.2 --&gt; 0</b>                                 | The same rules apply here as for the previous operation.  |
| Number                               | Time          | Number | <b>2.0 = Time(1999;10;07) --&gt;</b><br><b>0</b>                | Before the operation, the operand of the type <b>Date/Time</b> is converted to <b>Number</b> . 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 63). |
| Time                                 | Number        | Number | <b>Time(1999;10;7) = 2.0 --&gt; 0</b>                           | The same rules apply here as for the previous operation.  |

| Oper-<br>and1 | Oper-<br>and2 | Result | Example                               | Remark   |
|---------------|---------------|--------|---------------------------------------|--|
| Text          | Time          | Number | "Metrohm" =<br>Time(1999;10;07) --> 0 | Before the operation, the operand is converted from the type <b>Date/Time</b> to <b>Text</b> (here thus: "1999-10-07 00:00:00 UTC +2"), afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70). |
| Time          | Text          | Number | Time(1999;10;07) =<br>"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

| Oper-<br>and1                        | Oper-<br>and2 | Result | Example   | Remark  |
|--------------------------------------|---------------|--------|---|---|
| <b>Operands of the same type:</b>    |               |        |   |   |
| Number                               | Number        | Number | 5 > 4 --> 1<br>4 > 5 --> 0                      | -   |
| Text                                 | Text          | Number | "Metrohm" > "AG" --> 1<br>"Aarau" > "Zug" --> 0 | When making a comparison between two texts the <b>ASCII value</b> of the character sequence is compared (see Chapter 2.4.4.10, page 70). <b>Attention:</b> Uppercase and lowercase letters have different values! |
| Time                                 | Time          | Number | Time(1998;04;06) ><br>Time(1964;02;03) --> 1    | (see Chapter 2.4.4.6.2, page 58)  |
| <b>Operands of a different type:</b> |               |        |   |   |
| Number                               | Text          | Number | 1.2 > "Metrohm" --> 0<br>1.23 > "1.2" --> 1     | Before the relational operation, the <b>Number</b> is converted to <b>Text</b> , afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70).                               |
| 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 <b>Date/Time</b> to a <b>Number</b> .   |



| Oper-<br>and1 | Oper-<br>and2 | Result | Example   | Remark   |
|---------------|---------------|--------|---|--|
| Time          | Number        | Number | <b>Time(1999;10;07) &gt; 2.0 --&gt; 1</b>       | The same rules apply here as for the previous operation.   |
| Text          | Time          | Number | <b>"Metrohm" &gt; Time(1999;10;07) --&gt; 1</b> | Before the operation, the operand is converted from the type <b>Date/Time</b> to <b>Text</b> (here thus: <b>"1999-10-07 00:00:00 UTC +2"</b> ), afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70). |
| Time          | Text          | Number | <b>Time(1999;10;7) &gt; "Metrohm" --&gt; 0</b>  | 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

| Oper-<br>and1                        | Oper-<br>and2 | Result | Example   | Remark  |
|--------------------------------------|---------------|--------|---|---|
| <b>Operands of the same type:</b>    |               |        |   |   |
| Number                               | Number        | Number | <b>5 &gt;= 4 --&gt; 1</b><br><b>4 &gt;= 5 --&gt; 0</b>      | -   |
| Text                                 | Text          | Number | <b>"Metrohm" &gt;= "AG" --&gt; 1</b>                        | When making a comparison between two texts the <b>ASCII value</b> of the character sequence is compared (see Chapter 2.4.4.10, page 70). <b>Attention:</b> Uppercase and lowercase letters have different values! |
| Time                                 | Time          | Number | <b>Time(1998;04;06) &gt;= Time(1964;02;03) --&gt; 1</b>     | (see Chapter 2.4.4.6.2, page 58)  |
| <b>Operands of a different type:</b> |               |        |   |   |
| Number                               | Text          | Number | <b>1.2 &gt;= "1.2" --&gt; 11.2 &gt;= "Metrohm" --&gt; 0</b> | Before the relational operation, the <b>Number</b> is converted to <b>Text</b> , afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70).                               |
| Text                                 | Number        | Number | <b>"Metrohm" &gt;= 1.2 --&gt; 1</b>                         | The same rules apply here as for the previous operation.  |

| Oper-<br>and1 | Oper-<br>and2 | Result | Example  | Remark   |
|---------------|---------------|--------|--|--|
| Number        | Time          | Number | <b>2.0 &gt;= Time(1999;10;07) --&gt; 0</b>       | Before the comparison, the operand is converted from the type <b>Date/Time</b> to a <b>Number</b> .  |
| Time          | Number        | Number | <b>Time(1999;10;07) &gt;= 2.0 --&gt; 1</b>       | The same rules apply here as for the previous operation.   |
| Text          | Time          | Number | <b>"Metrohm" &gt;= Time(1999;10;07) --&gt; 1</b> | Before the operation, the operand is converted from the type <b>Date/Time</b> to <b>Text</b> (here thus: <b>"1999-10-07 00:00:00 UTC +2"</b> ), afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70). |
| Time          | Text          | Number | <b>Time(1999;10;7) &gt;= "Metrohm" --&gt; 0</b>  | 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

| Oper-<br>and1                        | Oper-<br>and2 | Result | Example   | Remark  |
|--------------------------------------|---------------|--------|---|---|
| <b>Operands of the same type:</b>    |               |        |   |   |
| Number                               | Number        | Number | <b>5 &lt; 4 --&gt; 0</b><br><b>4 &lt; 5 --&gt; 1</b>    | -   |
| Text                                 | Text          | Number | <b>"Metrohm" &lt; "AG" --&gt; 0</b>                     | When making a comparison between two texts the <b>ASCII value</b> of the character sequence is compared (see Chapter 2.4.4.10, page 70). <b>Attention:</b> Uppercase and lowercase letters have different values! |
| Time                                 | Time          | Number | <b>Time(1998;04;06) &lt; Time(1964;02;03) --&gt; 0</b>  | (see Chapter 2.4.4.6.2, page 58)  |
| <b>Operands of a different type:</b> |               |        |   |   |
| Number                               | Text          | Number | <b>1.2 &lt; "Metrohm" --&gt; 11.2 &lt; "1" --&gt; 0</b> | Before the relational operation, the <b>Number</b> is converted to <b>Text</b> , afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70).                               |



| Oper-<br>and1 | Oper-<br>and2 | Result | Example                            | Remark  |
|---------------|---------------|--------|------------------------------------|---|
| 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 <b>Date/Time</b> to a <b>Number</b> .   |
| 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 <b>Date/Time</b> to <b>Text</b> (here thus: " <b>1999-10-07 00:00:00 UTC +2</b> "), afterwards the texts are compared according to <b>ASCII value</b> (see <i>Chapter 2.4.4.10, page 70</i> ). |
| 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**

| Oper-<br>and1                        | Oper-<br>and2 | Result | Example                                    | Remark  |
|--------------------------------------|---------------|--------|--|---|
| <b>Operands of the same type:</b>    |               |        |  |   |
| Number                               | Number        | Number | 5 <= 4 --> 0<br>4 <= 5 --> 1               | -   |
| Text                                 | Text          | Number | "Metrohm" <= "AG" --> 0                    | When making a comparison between two texts the <b>ASCII value</b> of the character sequence is compared (see <i>Chapter 2.4.4.10, page 70</i> ). <b>Attention:</b> Uppercase and lowercase letters have different values! |
| Time                                 | Time          | Number | Time(1998;04;06) <= Time(1964;02;03) --> 0 | (see <i>Chapter 2.4.4.6.2, page 58</i> )  |
| <b>Operands of a different type:</b> |               |        |  |   |

| Oper-<br>and1 | Oper-<br>and2 | Result | Example  | Remark  |
|---------------|---------------|--------|--|---|
| Number        | Text          | Number | <b>2</b> <= "1.2" --> <b>0</b><br><b>1.2</b> <= "Metrohm" --> <b>1</b> | Before the relational operation, the <b>Number</b> is converted to <b>Text</b> , afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70).   |
| Text          | Number        | Number | "Metrohm" <= <b>1.2</b> --> <b>0</b>                                   | The same rules apply here as for the previous operation.  |
| Number        | Time          | Number | <b>2.0</b> <= <b>Time(1999;10;07)</b> --> <b>1</b>                     | Before the comparison, the operand is converted from the type <b>Date/Time</b> to a <b>Number</b> .   |
| Time          | Number        | Number | <b>Time(1999;10;07)</b> <= <b>2.0</b> --> <b>0</b>                     | The same rules apply here as for the previous operation.  |
| Text          | Time          | Number | "Metrohm" <= <b>Time(1999;10;07)</b> --> <b>0</b>                      | Before the operation, the operand is converted from the type <b>Date/Time</b> to <b>Text</b> (here thus: " <b>1999.10.07</b> "), afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70). |
| Time          | Text          | Number | <b>Time(1999;10;7)</b> <= "Metrohm" --> <b>1</b>                       | 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

| Oper-<br>and1                     | Oper-<br>and2 | Result | Example  | Remark  |
|-----------------------------------|---------------|--------|--|---|
| <b>Operands of the same type:</b> |               |        |  |   |
| Number                            | Number        | Number | <b>5</b> <> <b>4</b> --> <b>1</b><br><b>5</b> <> <b>5</b> --> <b>0</b> | -   |
| Text                              | Text          | Number | "Metrohm" <> "AG" --> <b>1</b>   | When making a comparison between two texts the <b>ASCII value</b> of the character sequence is compared (see Chapter 2.4.4.10, page 70). <b>Attention:</b> Uppercase and lowercase letters have different values! |
| Time                              | Time          | Number | <b>Time(1998;04;06)</b> <> <b>Time(1964;02;03)</b> --> <b>1</b>        | (see Chapter 2.4.4.6.2, page 58)  |



| Oper-<br>and1                        | Oper-<br>and2 | Result | Example                                  | Remark   |
|--------------------------------------|---------------|--------|--|--|
| <b>Operands of a different type:</b> |               |        |  |  |
| Number                               | Text          | Number | 1.2 <> "1.2" --> 01.2 <> "Metrohm" --> 1 | Before the relational operation, the <b>Number</b> is converted to <b>Text</b> , afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70).  |
| 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 <b>Date/Time</b> to a <b>Number</b> .  |
| 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 <b>Date/Time</b> to <b>Text</b> (here thus: "1999-10-07 00:00:00 UTC +2"), afterwards the texts are compared according to <b>ASCII value</b> (see Chapter 2.4.4.10, page 70). |
| 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

$$y = \text{Exp}(\text{number})$$

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

##### 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

$$\text{Exp}(1.5) = 4.48169$$

$\text{Exp}(\text{'CV.AverageTemp'}) = \text{Power of the exponent (common variable CV.AverageTemp) for base } e$

### 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  $y = \log_e(\text{number})$ , whereby  $e$  is the Euler number ( $e = 2.71828\dots$ ).

#### 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  $y = \sqrt{\text{number}}$  or  $y = \sqrt[2]{\text{number}}$ .

##### Parameters

**Number**  $\geq 0$

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

$t_s = \text{Tinv}(\text{Probability}; \text{Degrees of freedom})$

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  $\mu$  has the mean value  $x_m$ , the standard deviation  $s$  and the freedom degrees  $\nu = n - 1$ . 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  $\mu$  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 (Test-Date) 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**

### 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         |

| Characters | Significance  |
|------------|---------------|
| <b>M</b>   | Month         |
| <b>d</b>   | Day           |
| <b>H</b>   | Hour 0...23   |
| <b>h</b>   | Hour AM/PM    |
| <b>m</b>   | Minute        |
| <b>s</b>   | Second        |
| <b>a</b>   | 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                |
|-------------|--|------------------------|
| <b>y</b>    | two-digit year number  | <b>03</b>              |
| <b>yyyy</b> | four-digit year number   | <b>1999</b>            |
| <b>M</b>    | one or two-digit month number  | <b>4, 12</b>           |
| <b>MM</b>   | two-digit month number   | <b>04, 12</b>          |
| <b>MMM</b>  | Month name short form  | <b>Jul, Aug</b>        |
| <b>MMMM</b> | Month name   | <b>July, August</b>    |
| <b>d</b>    | one or two-digit day number  | <b>2, 25</b>           |
| <b>dd</b>   | two-digit day number   | <b>02, 25</b>          |
| <b>h</b>    | one-digit or two-digit hour number<br>(1...12 AM/PM)                                   | <b>5, 11</b>           |
| <b>hh</b>   | two-digit hour number (1...12 AM/<br>PM)   | <b>05, 11</b>          |
| <b>H</b>    | one-digit or two-digit hour number<br>(0...23)   | <b>8, 17</b>           |
| <b>HH</b>   | two-digit hour number (0...23)   | <b>08, 17</b>          |
| <b>m</b>    | one or two-digit minute number   | <b>2, 25</b>           |
| <b>mm</b>   | two-digit minute number  | <b>02, 25</b>          |
| <b>s</b>    | one or two-digit second number   | <b>3, 55</b>           |
| <b>ss</b>   | two-digit second number  | <b>03, 55</b>          |
| <b>E</b>    | Weekday short form   | <b>Mon, Tue, Wed</b>   |
| <b>EEEE</b> | Weekday  | <b>Monday, Tuesday</b> |
| <b>D</b>    | one, two or three-digit number of<br>the day in the year                               | <b>2, 35, 142</b>      |
| <b>DD</b>   | two or three-digit number of the day<br>in the year                                    | <b>02, 35, 142</b>     |
| <b>DDD</b>  | three-digit number of the day in the<br>year   | <b>002, 035, 142</b>   |
| <b>F</b>    | one-digit number of the weekday in<br>the month, e.g. the <b>2</b> nd Monday in<br>May | <b>2</b>               |
| <b>w</b>    | one or two-digit number of the<br>week in the year                                     | <b>5, 25</b>           |
| <b>ww</b>   | two-digit number of the week in the<br>year  | <b>05, 25</b>          |
| <b>W</b>    | one-digit number of the week in the<br>month   | <b>3</b>               |
| <b>a</b>    | Format AM/PM   | <b>AM, PM</b>          |



| Characters | Significance                               | Example |
|------------|--|---------|
| '          | 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: **TextPosition("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. If 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 characters 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**  $\neq 0$ , 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 **value 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**

To generate the ASCII code, press and hold the [ALT] key and enter the three-digit code for the required symbol using the numeric keypad.

Only printable characters are listed in the table below:

| ASCII value<br>(dec) | Character                | ASCII value<br>(dec) | Character   | ASCII value<br>(dec) | Character        |
|----------------------|--------------------------|----------------------|-------------|----------------------|------------------|
| 32                   | Space                    | 64                   | At sign (@) | 96                   | Grave accent (`) |
| 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                   | Ampersand (&)            | 70                   | F           | 102                  | f                |
| 39                   | Apostrophe (')           | 71                   | G           | 103                  | g                |
| 40                   | Opening parentheses (()) | 72                   | H           | 104                  | h                |

| ASCII value<br>(dec) | Character               | ASCII value<br>(dec) | Character          | ASCII value<br>(dec) | Character           |
|----------------------|-------------------------|----------------------|--------------------|----------------------|---------------------|
| 41                   | Closing parentheses ()) | 73                   | I                  | 105                  | i                   |
| 42                   | Multiplication sign (*) | 74                   | J                  | 106                  | j                   |
| 43                   | Addition sign (+)       | 75                   | K                  | 107                  | k                   |
| 44                   | Comma (,)               | 76                   | L                  | 108                  | l                   |
| 45                   | Minus 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                   |
| 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                   | Semicolon (;)           | 91                   | Square bracket (]) | 123                  | Curly bracket (})   |
| 60                   | Less than (<)           | 92                   | Backslash (\)      | 124                  | Vertical stroke ( ) |
| 61                   | Equals (=)              | 93                   | Square bracket ([) | 125                  | Curly bracket ({)   |
| 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





## 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 .

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 74).



Open formula editor for entering calculation formulas (see Chapter 2.4, page 21)



### 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 64).



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.

## 3 Configuration

### 3.1 Configuration - General

#### 3.1.1 Configuration - Definition

Program part: **Configuration**

##### Definition

In **tiBase**, **configuration** is to be understood as settings for data import, security settings, user administration, program administration and templates.

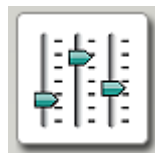
##### Organization

All configuration data is saved in the **configuration database**. In the local server systems (**tiBase full**) these are stored in the program directory of the computer on which the program has been installed. In client/server systems (**tiBase 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.

#### 3.1.2 Configuration - User interface

Program part: **Configuration**

##### Configuration symbol



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

##### Elements

The user interface of the **Configuration** program part comprises the following elements:

- Configuration-specific menu bar.
- Configuration-specific toolbar.
- Main window in which 2 subwindows are displayed.



### 3.1.3 Configuration - Menu bar

#### 3.1.3.1 Configuration - Main menus




Program part: **Configuration**

The menu bar in the **Configuration** program part includes the following main menu items:

- *File*  
Export, import, back up, restore configuration data.
- *View*  
Activate/deactivate the toolbar.
- *Tools*  
User administration, Security settings, Program administration, Options.
- *Help*  
Open program help, display program information.

#### 3.1.3.2 Configuration - File menu

Program part: **Configuration**

|  |  |
|--|--|
| <b>Export...</b>   | Export configuration data ( <i>see Chapter 3.3.1.1, page 102</i> ).                  |
| <b>Import...</b>   | Import configuration data ( <i>see Chapter 3.3.1.2, page 103</i> ).                  |
| <b>Backup ▶</b>  |  |
| <b>Automatic</b>   | Back up configuration data automatically ( <i>see Chapter 3.3.2.1, page 104</i> ).   |
| <b>Manual</b>  | Back up configuration data manually ( <i>see Chapter 3.3.2.2, page 105</i> ).        |
| <b>Print (PDF)... ▶</b>  |  |
|  <b>User administration</b> | Output user administration data as PDF file ( <i>see Chapter 3.2.1.1, page 79</i> ). |
|  <b>Security settings</b>   | Output security settings as PDF file ( <i>see Chapter 3.2.2.1, page 87</i> ).        |
|  <b>Logout...</b>           | Log out user ( <i>see Chapter 2.2.3, page 14</i> )                                   |
| <b>Exit</b>  | Exit the program.  |



#### 3.1.3.3 Configuration - View menu

Program part: **Configuration**

|  |  |
|--|--|
| <input checked="" type="checkbox"/> <b>Toolbar</b> | Activate/deactivate the toolbar display. |
|--|--|


### 3.1.3.4 Configuration - Tools menu

Program part: **Configuration**

|   |   |
|---|---|
|  <b>User administration...</b> | Manage users and groups of users with access permissions, signature permissions and options (see Chapter 3.2.1.1, page 79). |
|  <b>Security settings...</b>   | Options for login, password protection and electronic signature (see Chapter 3.2.2.1, page 87).                             |
| <b>Program administration...</b>  | General settings for local server and client/server settings (see Chapter 3.2.3.1, page 97).                                |
| <b>Options...</b>   | Set program options (see Chapter 3.3.3.1, page 106).  |





### 3.1.3.5 Help Menu

Program part: **Configuration / Database**

|  |  |
|--|--|
|  <b>tiBase Help</b> | Open tiBase help.  |
| <b>About</b>   | Displays information about the program and the installation. |

### 3.1.4 Configuration - Toolbar

Program part: **Configuration**

|   |   |
|---|---|
|  <b>User administration...</b> | Manage users and groups of users with access permissions, signature permissions and options (see Chapter 3.2.1.1, page 79). |
|  <b>Security settings...</b>   | Options for login, password protection, Audit Trail and electronic signature (see Chapter 3.2.2.1, page 87).                |
|  <b>Logout...</b>              | Log out user (see Chapter 2.2.3, page 14).  |
|  <b>tiBase Help</b>            | Open tiBase Help.   |

### 3.1.5 Configuration - Subwindows

Program part: **Configuration**

#### Selection

The following subwindows are displayed in the main window:

- *Import processes*  
Shows the details for reading-in PC/LIMS reports of different analysis instruments in tabular form.



- *Import protocol*  
Shows the log entries since the last program start.

### **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.

## **3.1.6 Configuration - Functions**

Program part: **Configuration**

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

### **Views**

- *Toolbar*

### **User administration**

- *Manage user groups*
- *Access permissions*
- *Signatures*
- *Options*
- *Users*

### **Security settings**

- *Login/password protection*
- *Electronic signature*
- *Default reasons*

### **Program administration**

- *Backup directories*
- *Clients*
- *Licenses*

### **Export/import of configuration data**

- *Export configuration data*
- *Import configuration data*

### **Back up/restore configuration data**

- *Back up configuration data automatically*
- *Back up configuration data manually*
- *Restore configuration data*

### Options

- *General program properties*

## 3.1.7 View

### 3.1.7.1 Views - General

Program part: **Configuration**

#### Definition

The term **View** is used to designate the contents and design of the main window in the **Configuration** and **Database** program parts. In contrast to the **Database** program part, the **Configuration** program part has only one view.

#### Function

- *Toolbar*  
Activate/deactivate the toolbar.

#### Load automatically

At the program start the view with the following subwindows is opened:

**Import processes, Import protocols**

#### 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 Toolbar

Menu item: **Configuration ▶ View ▶ Toolbar**

The toolbar can be enabled or disabled with the **Configuration ▶ View ▶ Toolbar** menu item.

## 3.2 Administration

### 3.2.1 User administration

#### 3.2.1.1 User administration

Dialog window: **Configuration ▶ Tools ▶ User administration**

#### Overview

User groups and their users can be managed in the **User administration** dialog window. Access rights for menu items and functions, signature permissions and default views can be defined for the individual program parts for each user group. In the case of 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.

The user administration data can be output as PDF file with the **File ► Print (PDF) ► User administration** menu item.

### Structure

The **User administration** dialog window is divided into two parts, the size of which can be modified with the mouse. The user groups with their assigned users are listed in a tree in the left-hand part; 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 permissions*  
Assignment of access permissions to the four program parts and their menu bars.
- *Signatures*  
Assignment of signature permissions for methods and determinations.
- *Options*  
Definition of the view for the individual program parts.
- *Users*  
Details regarding the user.

### Functions

The following functions can be carried out in the **User administration** dialog window:

- *Add user groups*
- *Copy user groups*
- *Rename user groups*
- *Delete user groups*
- *Define access permissions for user groups*
- *Define signature permissions for user groups*
- *Define options for user groups*
- *Add users*
- *Set start password for new user*
- *Deactivate users*
- *Activate users*
- *Remove users*

### 3.2.1.2 User groups

#### 3.2.1.2.1 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 of its members.

#### Group data

##### Group name

Display of the name of the user group.

##### Description

Description of the user group.

|       |                       |
|-------|-----------------------|
| Entry | <b>256 characters</b> |
|-------|-----------------------|

##### [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.

#### 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 | <b>enabled   disabled</b> |
|-----------|---------------------------|

##### **enabled**

The user can log in as usual.



**disabled**

The user can no longer log in. The administrator must first assign him or her the status **enabled** and provide him or her with a new start password.

**[Add user]**

Add a new user to the user group.

**3.2.1.2.2 User administration - Access permissions**

Dialog window: **Configuration ▶ Tools ▶ User administration**

If the **Access permissions** item is highlighted for a user group in the left-hand part of the **User administration** dialog window, then the access permissions of this group for program parts, menu items and functions will be shown as a tree 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 **Tools** menu, is deactivated in the configuration, then the box for the configuration is colored gray. Blocked functions are deactivated for the particular users, i.e. shown in gray.

**Meaning of the symbols:**

|                                     |                               |   |              |
|-------------------------------------|-------------------------------|---|--------------|
|                                     | Expand view                   | P | Program part |
|                                     | Collapse view                 | M | Menu item    |
| <input checked="" type="checkbox"/> | Full access to function(s)    | F | Function     |
| <input checked="" type="checkbox"/> | Limited access to function(s) |   |              |
| <input type="checkbox"/>            | No access to function(s)      |   |              |



**NOTE**

All access permissions are switched on by default in the **Administrators** group and cannot be modified.

**3.2.1.2.3 User administration - Signatures**

Dialog window: **Configuration ▶ Tools ▶ User administration**

If the **Signatures** item is highlighted for a user group in the left-hand part of the **User administration** dialog window, then the permissions of this group will be shown in the right-hand part and can be modified there.

**Permissions for determinations**

**Signature Level 1**

If this check box is activated, then users in this user group can sign determinations electronically at level 1.

|               |                 |
|---------------|-----------------|
| Selection     | <b>off   on</b> |
| Default value | <b>off</b>      |

### Signature Level 2 (Lock)

If this check box is activated, then users in this user group can sign determinations electronically at level 2 and at the same time lock them against further modifications.

|               |                 |
|---------------|-----------------|
| Selection     | <b>off   on</b> |
| Default value | <b>off</b>      |

### Delete signatures Level 2

If this check box is activated, then users in this user group can delete all signatures at level 2. This enables the determination to be edited again.

|               |                 |
|---------------|-----------------|
| Selection     | <b>off   on</b> |
| Default value | <b>off</b>      |

### 3.2.1.2.4 User administration - Options

Dialog window: **Configuration ▶ Tools ▶ User administration**

If the **Options** item is highlighted for a user group in the left-hand part of the **User administration** dialog window, then options for this group will be shown in the right-hand part and can be modified there.

### Default database view

Selection of the view that will open in the **Database** program part as the default setting when the user logs in.

|           |  |
|-----------|--|
| Selection | <b>Selection of the defined database views</b> |
|-----------|--|

### Default configuration view

Selection of the view that will open in the **Configuration** program part as default setting when the user logs in.

|           |   |
|-----------|---|
| Selection | <b>Selection of the defined configuration views</b> |
|-----------|---|

### 3.2.1.2.5 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 **Add group** menu item or the **[Add group]** button must be pressed. The **Add group** dialog window then opens afterwards.

### Group name

Name of the new group.




---

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

---

A new group with default settings is created under this name with **[OK]**; it does not contain any users. The **Description** field and the table of group members are empty.

### 3.2.1.2.6 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 **Copy group** menu item or the **[Copy group]** button must be pressed. This opens the **Copy group** dialog window.

#### Group name

Name of the new group.

---

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

---

Pressing **[OK]** creates a new group under this name that has the same properties (access permissions, signature permissions, etc.) as the selected group; it does not contain any users. The **Description** field and the table of group members are empty.

### 3.2.1.2.7 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 **Rename group** menu item or the **[Rename group]** button must be pressed. This opens the **Rename group** dialog window.

#### Group name

Entry of the new group name.

---

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

---

### 3.2.1.2.8 Deleting a user group

Function: **Configuration ▶ Tools ▶ User administration ▶ [Delete group]**

In order to delete a selected user group, either the context-sensitive **Delete group** menu item 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.

**3.2.1.3 User****3.2.1.3.1 User - 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 the 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 in the **User** field at the time of log in. This name is defined when a new user is created and cannot be subsequently modified.

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

**Full name**

Full name of the user.

|       |                       |
|-------|-----------------------|
| Entry | <b>256 characters</b> |
|-------|-----------------------|

**Status**

Display of the current status of the user. Only users of the **Administrators** group can modify the status.

|           |                                     |
|-----------|-------------------------------------|
| Selection | <b>enabled   disabled   removed</b> |
|-----------|-------------------------------------|

**enabled**

Users with **enabled** status can log in as usual. 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 the user can log in again.

**disabled**

Users with **disabled** status 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 with the **removed** status 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 moved to the group **Removed users**. 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 shown with 6 \* characters and must be entered by a new user the first time that the new user logs in or after a change in status from **disabled** or **removed** to **enabled**. The administrator 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 then entered a new password afterwards, then the start password will be deleted once again.

---

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

---

### [Set start password]

Opens the **Start password** dialog window. This button is enabled only for users with **enabled** status. If a user has forgotten his or her 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 | <b>Selection of the defined user groups</b> |
|-----------|---|

---

### Remarks

Possibility of entering additional information for the user (e.g. function, address).

---

|       |                        |
|-------|------------------------|
| Entry | <b>1000 characters</b> |
|-------|------------------------|

---

#### 3.2.1.3.2 Adding a user

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Add user]** ▶ **Add user**

There are two possible ways to add a new user:

- Select a user group and then the context-sensitive **Add user** menu item.
- Select a user group and press the **[Add user]** button.

The **Add user** dialog window is then opened in both cases.

## 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 | <b>24 characters</b> |
|-------|----------------------|

---

### 3.2.1.3.3 Setting a start password

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Set start password]** ▶ **Set start password**

A start password can be assigned for the selected user with the **[Set start password]** button in the **User administration** dialog window. It is active only for newly added users or for those who once again have had their status set to **enabled**. The **Start password** dialog window opens.

## Start password

Entry of a new start password. Password options are not used for the start password.

---

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

---

## Confirm password

Confirmation of the start password.

---

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

---

## 3.2.2 Security settings

### 3.2.2.1 Security settings

Dialog window: **Configuration** ▶ **&Tools** ▶ **Security settings**

#### Overview

Parameters for login, password protection and electronic signatures can be configured in the **Security settings** dialog window.

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.

The security settings can be output as a PDF file with the **&File** ▶ **&Print (PDF)...** ▶ **Security settings** menu item.



## Recommended settings

### Recommended settings

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

If this check box is activated, then the recommended default settings will be activated on all tabs.

### Tabs

The security settings are configured on the following tabs:

- *Login/password protection*  
Settings for login and password protection
- *Modifications*  
Activation/deactivation of comments when determinations are modified
- *Signatures*  
Options for electronic signatures
- *Default reasons*  
Definition of reasons for signing and modifying methods, determinations and sample data.

### 3.2.2.2 Login/password protection

Tab: **Configuration** ▶ **&Tools** ▶ **Security settings** ▶ **Login/Password protection**

Definition is made on the **Login/Password protection** tab 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 each time the program starts the login window will appear in which the user must enter his or 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. If this is the case, then all subsequent parameters are deactivated.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b>   |
|               | Recommended setting: <b>on</b> (can no longer be edited) |

#### Enforce login with password

If this check box is **activated**, then each time the program starts 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 deactivated.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b>   |
|               | Recommended setting: <b>on</b> (can no longer be edited) |

### Password monitoring by tiBase

If this option is **switched on**, then the password will be monitored by **tiBase** in accordance with the subsequent parameters.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>on</b>  |
|               | Recommended setting: <b>on</b> (can no longer be edited) |

### 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 deactivated.

|               |   |
|---------------|---|
| Selection     | <b>on   off</b>   |
| Default value | <b>off</b>  |
|               | Recommended setting: <b>off</b> (can no longer be edited) |



#### CAUTION

In order to prevent an unwanted login by means of the **Guest** user category that is defined by default in Windows when performing password monitoring with Windows, it is imperative that this also be assigned a password or (even better) be deactivated.



#### CAUTION

If this option is switched on, then the user names in **Windows** and **tiBase** must necessarily match, because otherwise the user will no longer be able to log in to **tiBase**. In order to ensure this, once this selection has been made, the **Test login** dialog window (see *Chapter 3.2.2.3, page 92*) 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 will remain open.



|               |                                 |
|---------------|---------------------------------|
| Selection     | <b>on   off</b>                 |
| Default value | <b>off</b>                      |
|               | Recommended setting: <b>off</b> |

### 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     | <b>on   off</b>                 |
| Default value | <b>off</b>                      |
|               | Recommended setting: <b>off</b> |

|               |                                |
|---------------|--------------------------------|
| Input range   | <b>1 - 60 min</b>              |
| Default value | <b>10 min</b>                  |
|               | Recommended setting: <b>10</b> |

### Password policies



#### NOTE

If the **Password monitoring by Windows** option is switched on, then the parameters for password protection are deactivated. Compliance with the recommended settings must then be ensured by the administrator in Windows.

### Enforce unique password

**Activating** this check box ensures that a user can use a given password only once.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b>   |
|               | Recommended setting: <b>on</b> (can no longer be edited) |

### Enforce use of special characters

**Activating** this check box ensures that the password must contain at least one special character (@, #, ~, etc.).

|               |                                 |
|---------------|---------------------------------|
| Selection     | <b>on   off</b>                 |
| Default value | <b>off</b>                      |
|               | Recommended setting: <b>off</b> |



### Minimum password length

**Activating** this check box ensures that the password must contain at least the indicated number of characters.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b><br>Recommended setting: <b>on</b> (can no longer be edited) |
| Input range   | <b>1 - 10 characters</b>   |
| Default value | <b>6 characters</b><br>Recommended setting: <b>6</b>                   |

### Passwords expire every

**Activating** this check box 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 or she changes the password.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b><br>Recommended setting: <b>on</b> (can no longer be edited) |
| Input range   | <b>1 - 999 days</b>  |
| Default value | <b>365 days</b><br>Recommended setting: <b>365</b>                     |

#### 3.2.2.3 Test login for password monitoring by Windows

Tab: **Configuration** ▶ **&Tools** ▶ **Security settings** ▶ **Login/Password protection** ▶ **Test login**

If the **Password monitoring by Windows** option (see Chapter 3.2.2.2, page 88) is activated, then the Windows password of the user must be entered in this dialog 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.

### 3.2.2.4 Changes

Tab: **Configuration** ▶ **&Tools** ▶ **Security settings** ▶ **Modifications**

Definition can also be set up on the **Modifications** tab as to whether or not, in the event of changes to determinations, a reason for the change and a change comment are required.

#### Comment on modification of determinations

If this check box is **activated**, then each time that a determination is modified a modification reason and a modification comment must be entered that will then be saved in the determination and displayed in the database in the **Information** subwindow on the **Determination** tab.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b>   |
|               | Recommended setting: <b>on</b> (can no longer be edited) |

### 3.2.2.5 Signatures

Tab: **Configuration** ▶ **&Tools** ▶ **Security settings** ▶ **Signatures**

The parameters for the electronic signature can be configured on the **Signatures** tab.

#### 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     | <b>on   off</b>                 |
| Default value | <b>off</b>                      |
|               | Recommended setting: <b>off</b> |
| Input range   | <b>1 - 60 min</b>               |
| Default value | <b>10 min</b>                   |
|               | Recommended setting: <b>10</b>  |



### Remove password after signature

If this check box is **activated**, then the password must be entered again after each signature.

|               |  |
|---------------|--|
| Selection     | <b>on   off</b>  |
| Default value | <b>off</b>   |
|               | Recommended setting: <b>on</b> (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     | <b>on   off</b>  |
| Default value | <b>off</b>   |
|               | Recommended setting: <b>on</b> (can no longer be edited) |

#### 3.2.2.6 Default reasons

Tab: **Configuration** ▶ **&Tools** ▶ **Security settings** ▶ **Default reasons**

The reasons which must be entered when signing determinations or changing determinations are defined on the **Default reasons** tab.

#### Category

Selection of the category for which the reasons are to be defined.

|               |   |
|---------------|---|
| Selection     | <b>Signature level 1   Signature level 2   Modification of determinations</b> |
| Default value | <b>Signature level 1</b>  |

#### Reasons

Display of the reasons defined for the selected category.

|       |                      |
|-------|----------------------|
| Entry | <b>64 characters</b> |
|-------|----------------------|



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.

**Preset reasons****Signature Level 1**

|           |   |
|-----------|---|
| Selection | <b>Review   Approval   Authorship   Responsibility   Release   Determination modified   Results checked</b> |
|-----------|---|

**Signature Level 2**

|           |   |
|-----------|---|
| Selection | <b>Review   Approval   Authorship   Responsibility   Release   Determination modified   Results checked   Signature 2 deleted</b> |
|-----------|---|

**Modifying determinations**

|           |   |
|-----------|---|
| Selection | <b>Variable modified   Calculation modified   Statistics modified   Curve evaluation modified</b> |
|-----------|---|

**3.2.2.7 Sending e-mail**

Dialog window: **Configuration ▶ &Tools ▶ Security settings ▶ Login/Password protection ▶ [E-mail...]**

**Mail to**

E-mail address of the recipient.

|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|


**Subject**

Title for describing the message.

|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|

**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 on the text field.

|           |                         |
|-----------|-------------------------|
| Selection | <b>Text (unlimited)</b> |
|-----------|-------------------------|

**Sender****Mail from**

E-mail address of the sender.



|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|

**SMTP Server**

Address of the SMTP mail server.

|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|

**Port**

Port number of the SMTP mail server.

|               |                  |
|---------------|------------------|
| Input range   | <b>1 - 65536</b> |
| Default value | <b>25</b>        |

**Authentication**

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

Check box for activating the authentication of the sender when sending the e-mail and for selecting the authentication method.

|               |                              |
|---------------|------------------------------|
| Selection     | <b>SMTP   SMTP after POP</b> |
| Default value | <b>SMTP</b>                  |

**POP server**

Address of the POP mail server.

|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|

**Port**

Port number of the POP mail server.

|               |                  |
|---------------|------------------|
| Input range   | <b>1 - 65536</b> |
| Default value | <b>110</b>       |

**User**

Name of the user for access to mail server. The name need not match the Windows user name.

|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|

**Password**

Password for accessing the mail server. This password need not match the Windows password.

|       |                       |
|-------|-----------------------|
| Entry | <b>200 characters</b> |
|-------|-----------------------|

### 3.2.3 Program administration

#### 3.2.3.1 Program administration

Dialog window: **Configuration** ▶ **&Tools** ▶ **Program administration**

##### Overview

Backup directories and licenses can be managed in the **Program administration** dialog window.

##### 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 **tiBase** is installed.
- *Licenses*  
List of installed licenses with number of clients. This tab is only shown on the server of a client/server installation.

#### 3.2.3.2 Backup directories

##### 3.2.3.2.1 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 **tiBase** is running on the server, they are inactive for the individual clients.

##### [New]

Add a new backup directory (see Chapter 3.2.3.2.2, page 98).

##### [Edit]

Edit the selected backup directory (see Chapter 3.2.3.2.3, page 98).

##### [Delete]

Delete the selected backup directory.

**NOTE**

The **Default backup directory** cannot be deleted.

### 3.2.3.2.2 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.

### 3.2.3.2.3 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 | <b>1000 characters</b> |
|-------|------------------------|

**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.

**3.2.3.3 Clients**

Tab: **Configuration ▶ &Tools ▶ Program administration ▶ Clients**

Table with information about the computers on which **tiBase** 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 **tiBase** has been started on the client (**active**) or not (**inactive**).

**NOTE**

The content of the tab **Clients** can also be displayed via the shortcut  **Clients** in the directory `..\Metrohm\TiBase\bin` (available only on the server) if **tiBase** is not running.

**3.2.3.4 Licenses**

Tab: **Configuration** ▶ **&Tools** ▶ **Program administration** ▶ **Licenses**

Table with the licenses that are installed on the server (for **tiBase multi**) or on the local server (for **tiBase full**). The table cannot be edited.

**NOTE**

In client/server systems, this tab is visible only 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 3.2.3.5, page 101*).

**NOTE**

Starting with Windows Vista, Microsoft has introduced the UAC (User Account Control), which permits running tasks either as a non-administrator or as an administrator (without changes of user, deactivation or similar). This function can, however, cause difficulties with client/server installations of **tiBase** on computers with Windows Vista or Windows 7. Therefore, to add additional licenses, proceed as follows:

- **For new installations**

To enter additional licenses, the program must be started as administrator (position the mouse on the Program icon and click the right mouse button – select **Run as administrator** there). If one then adds the license code for additional licenses in the usual way, then the **license.mlic** file in the **C:\Program Files\Metrohm\Program name\bin** directory will contain both license codes.

- **For existing installations**

First of all, the **license.mlic** file in the **C:\Users\User\AppData\Local\VirtualStore\Program Files\Metrohm\Program name\bin** directory 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** there). If one then adds the license code for additional licenses in the usual way, then the **license.mlic** file in the **C:\Program Files\Metrohm\Program name\bin** directory will contain both license codes.

Additional information on this topic can be found in the installation manual, which is saved in the **C:\Program Files\Metrohm\tiBase\doc** directory.

### 3.2.3.5 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.



## 3.3 Configuration data

### 3.3.1 Export/import

#### 3.3.1.1 Exporting configuration data

Dialog window: **Configuration** ▶ **File** ▶ **Export...** ▶ **Export configuration data**

**File** ▶ **Export...** opens the **Export configuration data** dialog window in which the following parts of the configuration database can be selected for export:

#### Configuration views

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

Export saved configuration views (*see Chapter 4.1.7, page 123*).

#### Database views

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

Export saved database views (*see Chapter 4.1.7, page 123*).

#### Control chart templates

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

Export saved control chart templates (*see Chapter 4.4.3.1, page 178*).

#### Curve overlay templates

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

Export saved curve overlay templates (*see Chapter 4.4.2.1, page 173*).

#### Export template

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

Export the saved export template.

#### Security settings

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

Export security settings (*see Chapter 3.2.2.1, page 87*).

#### User administration

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

Export user administration (*see Chapter 3.2.1.1, page 79*).

[OK]

The **Save** dialog window for saving data, in which the name and directory for the export file must be entered, opens. The selected configuration data is then saved in a file with the extension **.mcfg**.

### 3.3.1.2 Importing configuration data

Dialog window: **Configuration ▶ File ▶ Import... ▶ Import configuration data**

With **File ▶ Import...** and after selection of the **\*.tcfg** file to be imported, the **Import configuration data** dialog window 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.

#### Configuration views

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

Import saved configuration views (see Chapter 4.1.7, page 123).

#### Database views

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

Import saved database views (see Chapter 4.1.7, page 123).

#### Control chart templates

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

Import saved control chart templates (see Chapter 4.4.3.1, page 178).

#### Curve overlay templates

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

Import saved curve overlay templates (see Chapter 4.4.2.1, page 173).

#### Export template

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

Export the saved export template.



## Security settings

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

Import security settings (see Chapter 3.2.2.1, page 87).

## User administration

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

Import user administration (see Chapter 3.2.1.1, page 79).

[OK]

The selected data is imported.

## 3.3.2 Back up/restore

### 3.3.2.1 Backing up configuration data automatically

Dialog window: **Configuration** ▶ **File** ▶ **Save** ▶ **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 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.  opens the **Next backup** window to select the date (see Chapter 2.5.1, page 72).

---

|               |                              |
|---------------|------------------------------|
| Default value | <b>Last backup + 1 month</b> |
|---------------|------------------------------|

---

#### Interval

Entry of the time interval after which an automatic backup will take place. With each automatic or manual backup, the interval entered here will be added to the date of the **Last backup** and shown in the **Next backup** field.

---

|               |                |
|---------------|----------------|
| Input range   | <b>1 - 999</b> |
| Default value | <b>1</b>       |

---

|               |  |
|---------------|--|
| Selection     | <b>Day(s)   Week(s)   Month(s)   Year(s)</b> |
| Default value | <b>Month(s)</b>                              |

**Backup directory**

Selection of a predefined backup directory (see Chapter 3.2.3.2.1, page 97).



**NOTE**

Make sure that you have read and write permission for the selected directory.

**3.3.2.2 Backing up configuration data manually**

Dialog window: **Configuration ▶ File ▶ Save ▶ Manually ▶ Backup configuration data manually**

**Backup target**

**Backup directory**

Selection of a predefined backup directory (see Chapter 3.2.3.2.1, page 97).



**NOTE**

Make sure that you have read and write permission for the selected directory.

**Backup name**

Selection of an already existing name or entry of a new name for the backup file. If an existing backup file is selected, it will be overwritten.

|           |                      |
|-----------|----------------------|
| Entry     | <b>50 characters</b> |
| Selection | <b>Backup names</b>  |



**NOTE**

If the backup directory is located on a network drive, then the backup date should be added to the **Backup name**, because the backup date information is not available when the directory is restored.

**[Start]**

Start the manual backup of the complete configuration database.



### 3.3.2.3 Restoring configuration data

Dialog window: **Restore configuration data**

#### "Restore configuration data" dialog window

##### Backup directory

Selection of a directory predefined in the program administration that contains the backed-up configuration database.

|           |                           |
|-----------|---------------------------|
| Selection | <b>Backup directories</b> |
|-----------|---------------------------|

##### Backup name

Selection of a backup file.

|           |                     |
|-----------|---------------------|
| Selection | <b>Backup files</b> |
|-----------|---------------------|

##### Backup date

Display of the time 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. This information is not available if the backup file is located on a network drive.

##### 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 restoration of the configuration database. After the start, a progress bar appears in the window. The dialog window closes automatically when the backup has been completed.

### 3.3.3 Options

#### 3.3.3.1 Options - Overview

Dialog window: **Configuration ▶ Tools ▶ Options ▶ Options**

Under **Tools ▶ Options**, general program properties can be set on the following tabs:

- *General*  
Selects dialog language.

- *Save*  
Saves settings on exiting the program.
- *PDF*  
Settings for PDF files.

### 3.3.3.2 Options - General

Tab: **Configuration** ▶ **Tools** ▶ **Options** ▶ **Options** ▶ **General**

#### Dialog language

#### Dialog language

Selection of the dialog language.

|               |  |
|---------------|--|
| Selection     | <b>German   English   additional languages<br/>(dependent on installed language patches)</b> |
| Default value | <b>English</b>   |



#### NOTE

For the altered setting to become effective the program must be restarted.

### 3.3.3.3 Options - Save

Tab: **Configuration** ▶ **Tools** ▶ **Options** ▶ **Options** ▶ **Save**

#### Save on exiting

Here you can define the settings to be saved when the program is exited. If the corresponding check box is **activated**, the current view with its settings will be saved automatically when the program is exited. If the corresponding check box 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.

#### Configuration settings

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

Switches Save configuration view on/off when exiting the program.

#### Database settings

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

Switches Save database view on/off when exiting the program.



### 3.3.3.4 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 option is **switched off** none of the PDF file contents can be copied or extracted.

##### Printing allowed

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

If this option is **switched off** the PDF file cannot be printed out.

##### Adding or changing comments allowed

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

If this option is **switched off** comments and form fields can neither be added nor altered.

##### Modifying the document allowed

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

If this option is **switched off** no changes can be made to the PDF file.

## 3.4 Subwindow Import processes

### 3.4.1 Import processes - General

Subwindow: **Configuration** ▶ **Import processes**

The subwindow **Import processes** shows the details for reading-in PC/LIMS reports of different analysis instruments in tabular form. It is always shown in the program part **Configuration**, and cannot be removed from the Configuration view.

The subwindow 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 subwindow can be maximized so that only one subwindow is displayed in the main window. The original view of two subwindows is restored when the  button is pressed in the maximized subwindow again.

### 3.4.2 Import processes - Table

Subwindow: **Configuration** ▶ **Import processes**

#### Table view

The 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.

#### Contents

The table shows the following information about reading-in PC/LIMS reports as standard:

#### Name

Name for the data import process (e.g. user group, user, devices, methods, etc.)

#### Data source

Source directory with PC/LIMS reports to be read-in automatically from this directory into a database. With the symbol  the dialog window **Search** opens, in which the source directory is selected and then can be entered into the field **Directory**.

#### Database

Name of the tiBase 1.1 Patch 1 database, in which the read-in reports are saved.

#### Comment

Optional comment.

#### Status

Status of the import process.

---

Selection                      **started** | **stopped** | **inactive**

---

**started**

The import process has been started manually or automatically. The status is displayed in green lettering.

**stopped**

The import process has been stopped manually or automatically by an error. The status is displayed in red lettering. Additionally the background of the line number is also shown in red.

**inactive**

The option **Start automatically** is disabled for this import process. The import process has to be started manually. The status as well as all line entries are displayed in gray lettering.

**Functions**

The menu **Edit** beneath the table contains the following menu items:

|                      |  |
|----------------------|--|
| <b>Start import</b>  | Start import for selected data source. |
| <b>Stop import</b>   | Stop import for selected data source.  |
| <b>New...</b>        | Define new import process.             |
| <b>Delete</b>        | Delete selected import process.        |
| <b>Properties...</b> | Edit selected import process.          |

**3.4.3 Import processes - Properties**


Dialog window: **Configuration ▶ Import processes ▶ [Edit] ▶ New / Properties... ▶ Properties Import process**

In this dialog window the details for the import of PC/LIMS reports are defined.

**Name**

Name for the data import process (e.g. user group, user, devices, methods, etc.)

**Data source**

Source directory with PC/LIMS reports to be read-in automatically from this directory into a database. With the symbol  the dialog window **Search** opens, in which the source directory is selected and then can be entered into the field **Directory**.

**Database**

Name of the tiBase 1.1 Patch 1 database, in which the read-in reports are saved.

**Comment**

Optional comment.

**Start automatically**

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

If this check box is activated, the data import is started automatically at the start of the program.

**File options****Delete file**

If this option is enabled, the reports are deleted after the data import.

**Move file**

If this option is enabled, the reports are saved in a selected directory after the data import.

**Directory**

Directory, in which the PC/LIMS reports are saved after having been imported to the database. With the symbol  the dialog window **Search** opens, in which the directory is selected and then can be entered into the field **Directory**.

## 3.5 Subwindow Import protocol

### 3.5.1 Import protocol - General

Subwindow: **Configuration** ▶ **Import protocol**

The subwindow **Import protocol** shows information about the data import, error messages and warnings recorded since the last program start. It is always shown in the program part **Configuration**, and cannot be removed from the Configuration view.

The subwindow 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 subwindow can be maximized so that only one subwindow is displayed in the main window. The original view of two subwindows is restored when the  button is pressed in the maximized subwindow again.



| Selection     | OK   Import   Delete   Move  |
|---------------|--|
| <b>OK</b>     | The PC/LIMS report has successfully been imported, moved or deleted. |
| <b>Import</b> | tiBase cannot import the selected PC/LIMS reports.                   |
| <b>Delete</b> | tiBase cannot delete the selected PC/LIMS reports.                   |
| <b>Move</b>   | tiBase cannot move the selected PC/LIMS reports.                     |

## Details

Detailed information on the log entry.

## Functions

The menu **Edit** beneath the table contains the following menu items:

|                     |  |
|---------------------|--|
| Delete all messages | Delete all messages in the window <b>Import protocol</b> . |
| Options...          | Open the dialog window <b>Properties Import protocol</b> . |

### 3.5.3 Import protocol - Properties

Dialog window: **Configuration** ▶ **Import protocol** ▶ **[Edit]** ▶ **Options...**

#### Filter options

##### Show information

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

If this check box is activated, information on the import process is shown in the table.

##### Show warnings

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

If this check box is activated, warnings are shown in the table.

##### Show errors

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

If this check box is activated, errors during the import are shown in the table.

##### Maximum number of log entries

In this field the maximum number of log entries to be listed in the table **Import protocol** is entered.



If the number of entries exceeds the value entered, rolling recording takes place. This means, that the oldest entry is deleted when a new log saying is incoming.

---

|               |                  |
|---------------|------------------|
| Input range   | <b>20 - 1000</b> |
| Default value | <b>100</b>       |

---



**NOTE**

---

If during a rolling recording an error or warning not remedied yet has been deleted, the warning or error will be newly logged as soon as the corresponding import process is started again.

## 4 Database

### 4.1 Database - General

#### 4.1.1 Database - Definition

Program part: **Database**

##### Definition

The term **Database** is used in **tiBase** 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 are the method data used for the determination, the measuring data generated during the determination and the results calculated from it.

##### Organization

In the case of **local server systems (tiBase 1.1 Patch 1 full)**, the databases are stored on the drives managed by the computer and are only available to those users registered on that computer who have the appropriate access rights.

In **client/server systems (tiBase 1.1 Patch 1 multi)** the databases are stored on drives managed centrally by the server and are globally available throughout the entire client/server system, i.e. all users with the appropriate access rights can use these databases.

#### 4.1.2 Database - User interface

Program part: **Database**

##### Database symbol



Clicking on the database symbol in the vertical bar on the left opens the **Database** program part, 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 127*).



## Elements

The user interface of the **Database** program part is comprised of 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 **Database** program part includes the following main menu items:

- *File*  
Open and close databases, database manager, print.
- *Edit*  
Copy selected lines in the determination overview to the clipboard, mark all lines.
- *View*  
Change the layout, load a view, save the view, modify 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 - File menu


Program part: **Database**

|   |  |
|---|--|
|  Open...             | Opens a database ( <i>see Chapter 4.2.1, page 126</i> ).                                 |
| Close all   | Closes all open databases ( <i>see Chapter 4.2.6, page 128</i> ).                        |
|  Close               | Closes the database ( <i>see Chapter 4.2.6, page 128</i> ).                              |
|  Database manager... | Management of the determination databases ( <i>see Chapter 4.3.1, page 129</i> ).        |
| Print ►   |  |
| Determination overview...   | PDF file output of the determination overview ( <i>see Chapter 4.5.2.11, page 255</i> ). |

|   |  |
|---|--|
|  Report... | PDF file output of the report ( <i>see Chapter 4.5.2.12, page 255</i> ). |
|  Logout... | Logs out user ( <i>see Chapter 2.2.3, page 14</i> ).                     |
| Exit  | Exits the program.   |









### 4.1.3.3 Database - Edit menu

Program part: **Database**






|  |   |
|--|---|
|  Copy | Copies the selected lines in the determination overview to the clipboard.             |
| Select all   | Selects all lines in the current set of determinations in the determination overview. |

### 4.1.3.4 Database - View menu

Program part: **Database**


|  |   |
|--|---|
|  Update               | Updates the determination overview.   |
|  Change layout...     | Modifies the layout of the loaded database view ( <i>see Chapter 4.1.7.2, page 124</i> ).                                       |
|  Load view...       | Loads a saved database view ( <i>see Chapter 4.1.7.3, page 125</i> ).   |
|  Save view...       | Saves the loaded database view ( <i>see Chapter 4.1.7.4, page 125</i> ).  |
|  Split vertically   | Splits the database window vertically and displays two databases side by side ( <i>see Chapter 4.2.4, page 128</i> ).           |
|  Split horizontally | Splits the database window horizontally and displays two databases, one above the other ( <i>see Chapter 4.2.5, page 128</i> ). |
|  Unsplit            | Undoes the splitting of the database window ( <i>see Chapter 4.2.3, page 128</i> ).   |
|  Properties ▶       |   |
| Column display   | Sets the column display for the <b>Determination overview</b> subwindow ( <i>see Chapter 4.5.1.3, page 212</i> ).               |
| Properties<br>Results  | Set properties for the subwindow <b>Results</b> ( <i>see Chapter 4.7, page 270</i> ).   |
| <input checked="" type="checkbox"/> Toolbar  | Activates/deactivates the toolbar display.  |



|  |   |
|--|---|
|  <b>Make current</b>      | Makes the old version selected in the history view the current version once again (see Chapter 4.5.2.14, page 257). |
|  <b>Control chart...</b>  | Displays control chart and statistical evaluation of the selected determination (see Chapter 4.5.2.16, page 258).   |
|  <b>Overlay curves...</b> | Overlays the curves of the selected determinations (see Chapter 4.5.2.17, page 259).                                |
|  <b>Reprocess...</b>      | Reprocesses the selected determinations (see Chapter 4.5.2.6, page 230).  |
|  <b>Delete</b>            | Deletes the selected determinations (see Chapter 4.5.2.10, page 254).   |


### 4.1.3.6 Database - Tools menu

Program part: **Database**

|  |   |
|--|---|
| <b>Report templates ▶</b>  |   |
| <b>New ▶</b>   |   |
| <b>Form report</b>   | Opens the <b>Report template</b> window with an empty form report (see Chapter 4.4.1.3, page 139). This menu item is disabled as long as the database is empty. |
|  <b>Open...</b> | Opens a report template for editing (see Chapter 4.4.1.3, page 139). This menu item is disabled as long as the database is empty.                               |
| <b>Manager...</b>  | Manage report templates (see Chapter 4.4.1.1.1, page 137).  |
| <b>Templates ▶</b>   |   |
| <b>Control chart templates...</b>  | Manage templates for control charts (see Chapter 4.4.3, page 178).  |
| <b>Curve overlay templates...</b>  | Manage curve overlay templates (see Chapter 4.4.2.1, page 173).   |
| <b>Export templates...</b>   | Manage export templates (see Chapter 4.4.4.1, page 182).  |

### 4.1.3.7 Help Menu

















Program part: **Configuration / Database**














|  |  |
|--|--|
|  <b>tiBase Help</b> | Open tiBase help.  |
| <b>About</b>   | Displays information about the program and the installation. |



## 4.1.4 Database - Toolbar

Program part: **Database**

|  |   |
|--|---|
|  <b>Open...</b>               | Opens a database ( <i>see Chapter 4.2.1, page 126</i> ).  |
|  <b>Close</b>                 | Closes the database ( <i>see Chapter 4.3.1, page 129</i> ).   |
|  <b>Database manager...</b>   | Management of the determination databases ( <i>see Chapter 4.3.1, page 129</i> ).   |
|  <b>Logout...</b>             | Logs out user ( <i>see Chapter 2.2.3, page 14</i> ).  |
|  <b>Copy</b>                  | Copies the selected lines in the determination overview to the clipboard.   |
|  <b>Update</b>                | Updates the determination overview.   |
|  <b>Change layout...</b>      | Modifies the layout of the loaded database view ( <i>see Chapter 4.1.7.2, page 124</i> ).                                       |
|  <b>Load view...</b>          | Loads a saved database view ( <i>see Chapter 4.1.7.3, page 125</i> ).   |
|  <b>Save view...</b>        | Saves the loaded database view ( <i>see Chapter 4.1.7.4, page 125</i> ).  |
|  <b>Split vertically</b>    | Splits the database window vertically and displays two databases side by side ( <i>see Chapter 4.2.4, page 128</i> ).           |
|  <b>Split horizontally</b>  | Splits the database window horizontally and displays two databases, one above the other ( <i>see Chapter 4.2.5, page 128</i> ). |
|  <b>Unsplit</b>             | Undoes the splitting of the database window ( <i>see Chapter 4.2.3, page 128</i> ).   |
|  <b>Comment</b>             | Enter a comment on the selected determination ( <i>see Chapter 4.5.2.2, page 217</i> ).   |
|  <b>Search</b>              | Opens the <b>Search</b> window for searching for determinations ( <i>see Chapter 4.5.2.3, page 217</i> ).                       |
|  <b>Filter/Last filter</b>  | Applies the most recently used quick or special filter ( <i>see Chapter 4.5.2.4.2, page 220</i> ).                              |
|  <b>Filter/Quick filter</b> | Quick filtering of the database with the content of the selected table cell ( <i>see Chapter 4.5.2.4.3, page 220</i> ).         |

|  |   |
|--|---|
|  Filter/Special filter...       | Opens the <b>Special filter</b> window for the definition of user-specific filters (see Chapter 4.5.2.4.4, page 221). |
|  Filter/Remove filter           | Removes the current filter (see Chapter 4.5.2.4.6, page 222).   |
|  Import...                      | Imports selected determinations (*.txt or *.tdet).  |
|  Sign/Signature 1...            | Sign the selected determinations on level 1 (see Chapter 2.3.3, page 17).   |
|  Sign/Signature 2...            | Sign the selected determinations on level 2 (see Chapter 2.3.4, page 18).   |
|  Show history                   | Shows all versions of the focused determination in the determination table (see Chapter 4.5.2.13, page 257).          |
|  Make current                   | Makes the old version selected in the history view the current version once again (see Chapter 4.5.2.14, page 257).   |
|  Control chart...               | Displays control chart and statistical evaluation of the selected determination (see Chapter 4.5.2.16, page 258).     |
|  Overlay curves...            | Overlays the curves of the selected determinations (see Chapter 4.5.2.17, page 259).                                  |
|  Reprocess...                 | Reprocesses the selected determinations (see Chapter 4.5.2.6, page 230).  |
|  Delete                       | Deletes the selected determinations (see Chapter 4.5.2.10, page 254).   |
|  Report templates/<br>Open... | Opens a report template for editing (see Chapter 4.4.1.3, page 139).  |
|  tiBase Help                  | Opens tiBase Help.  |

### 4.1.5 Database - Subwindow

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 of the focused determination.
- *Curves 1 - 5*  
Display of curves for the focused determination.

### **Display**

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 by clicking on the  button in the maximized subwindow once again.

If you change the view of the subwindows, these changes will remain in effect when the database is closed and reopened.

## **4.1.6 Database - Functions**

Program part: **Database**

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

### **Views**

- *Modifying the layout of the database view*
- *Loading a database view*
- *Saving a database view*
- *Renaming a database view*
- *Deleting a database view*

### **Database manager**

- *Creating a new database*
- *Renaming a database*
- *Editing database properties*
- *Backing up a database*
- *Restoring a database*
- *Deleting a database*

### **Determinations**

- *Overview of functions*

### **Templates**

- *Editing report templates*
- *Editing templates for control charts*
- *Editing curve overlay templates*
- *Editing export templates*

## 4.1.7 Views

### 4.1.7.1 Views - General

Program part: **Database**

#### Definition

The term **View** defines the content and design of the main window in the **Database** program part (the **Configuration** program part has only one view). 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:

- *Changing the layout*  
Define the number, arrangement and sequence of the subwindows for the current view.
- *Saving a view*  
Save current view.
- *Loading a view*  
Load a saved view.
- *Renaming a view*  
Rename a saved view.
- *Deleting a view*  
Delete a saved view.
- *Toolbar*  
Enable or disable the toolbar.

#### Save automatically

The current view will be saved automatically when the program is closed if the corresponding **Save on closing** item is activated under **Tools ▶ Options** on the **Save** tab in the Configuration program part.

#### Load automatically

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 default view that is loaded automatically the first time that the program part is opened can be defined for each user group.

The standard procedure is that views are opened with the following subwindows with the very first program start:

- **Configuration**  
**Import processes, Import protocols**




- **Database**  
**Determination overview, Curve #, Information, Results**

**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 Changing the layout**

Dialog window: **Database ▶ View ▶ Change layout... ▶ Change layout**

The **Change layout** dialog window is opened with the  symbol or the **View ▶ Change Layout...** menu item.

**Select layout**

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

|           |   |
|-----------|---|
| Selection | <b>Selection of the possible combinations</b> |
|-----------|---|

**Available subwindows**

Display of the subwindows that are still available for displaying the view.

|           |                                    |
|-----------|------------------------------------|
| Selection | <b>Selection of the subwindows</b> |
|-----------|------------------------------------|

**Displayed subwindows**

Display of the subwindows that are shown in the view.

|           |                   |
|-----------|-------------------|
| Selection | <b>Subwindows</b> |
|-----------|-------------------|



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: **Database ▶ View ▶ Load view... ▶ Load view**

The **Load view** dialog window is opened with the  symbol or the **View ▶ Load view...** menu item.

**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: **Database ▶ View ▶ Save view... ▶ Save view**

The **Save view** dialog window is opened with the  symbol or the **View ▶ Save view...** menu item.

**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: **Database ▶ View ▶ Rename view... ▶ Rename view**

To be able to rename a view, open either the **Load View** or the **Save View** dialog window and press the **[Rename]** button. The **Rename View** window is then opened.

**Rename view to**

Entry of a new name for the view.

---

Entry **50 characters**

---



### 4.1.7.6 Deleting a view


Function: **Database ▶ View ▶ Load/Save view... ▶ [Delete]**

To be able to delete a view, open either the **Load view** or **Save view** dialog window and press the **[Delete]** button. The delete procedure must then be confirmed.

## 4.2 Database display

### 4.2.1 Opening a database

Dialog window: **Database ▶ File ▶ Open... ▶ Open database**

The  symbol or the **File ▶ Open...** menu item opens 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.

#### Database table

The database table contains information concerning all determination databases. The table cannot be edited. The table can be sorted according to the selected column (**Name, Number of records, Size, Last backup, Next backup, Comment**) in ascending or descending order by clicking on the column title.

#### Name

Name of the database.

#### Number of records

Shows the number of records in the database.

#### Size

Shows the size of the database in KB.

#### Editable

Shows whether or not the database can be edited by the user currently logged in.

#### Comment

Shows comments about the database.

#### Opening a database

#### Database name

Name of the database 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 records 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 exited will be opened automatically the next time the program is started.

**4.2.2 Selecting a database**

Program part: **Database**

The number of currently opened databases is displayed in the upper left 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 above the other in the main window, can be selected with the aid of the database symbol.



No database is opened. **No database loaded** is displayed in the main window.



A 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 one another or one above the other.



A menu with the names of all the currently opened databases is displayed by clicking on the database symbol with either the left or right mouse button. The databases displayed in the main window are then 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 Displaying a single database

Menu item: **Database ▶ View ▶ Unsplit**

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


### 4.2.4 Displaying databases next to one another

Menu item: **Database ▶ View ▶ Split vertically**

Two databases are displayed next to one another in the main window with the  symbol or the **View ▶ Split vertically** menu item.

### 4.2.5 Displaying databases one above the other

Menu item: **Database ▶ View ▶ Split horizontally**

Two databases can be displayed one below the other in the main window with the  symbol or the **View ▶ Split horizontally** menu item.

### 4.2.6 Closing a database

Menu items: **Database ▶ File ▶ Close / Close all**

#### Closing a single database

The  symbol or the **File ▶ Close** menu item can be used to close the focused database.


#### Closing all databases

All the opened databases are closed with the **File ▶ Close all** menu item.

## 4.3 Managing databases

### 4.3.1 Managing databases

Dialog window: **Database ▶ File ▶ Database manager... ▶ Database manager**

The  symbol or the **File ▶ Database manager...** menu item is used to open the **Database manager** window, in which a user with corresponding access permission can administer databases.

#### Database table

The database table contains information concerning all determination databases. The table cannot be edited. The table can be sorted according to the selected column (**Name, Number of records, Size, Last backup, Next backup, Comment**) in ascending or descending order by clicking on the column title.

#### Name

Name of the database.

#### Number of records

Shows the number of records 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 comments about the database.

#### Window menus and functions

The **[Edit]** menu beneath the database table contains the following menu items:

|                  |   |
|------------------|---|
| <b>New...</b>    | Creates a new database ( <i>see Chapter 5.3.4, page 317</i> ).        |
| <b>Delete</b>    | Deletes the selected database ( <i>see Chapter 4.3.4, page 131</i> ). |
| <b>Rename...</b> | Rename the selected database ( <i>see Chapter 4.3.3, page 130</i> ).  |

**[Properties]**

Opens the **Database manager** window for editing the database selected in the table (see Chapter 4.3.5.1, page 131).

**[Backup]**

Opens the **Back up database** window for backing up the database selected in the table (see Chapter 4.3.6, page 134).

**[Restore]**

Opens the **Restore databases** window for restoring backed-up databases (see Chapter 4.3.7, page 135).

**[Close]**

Closes the **Database manager** window.

### 4.3.2 Creating a new database

Dialog window: **Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Edit] ▶ New... ▶ New database**

The **[Edit] ▶ New...** menu item can be used to open the **New database** window, in which a name for the new database must be entered.

**Name**

Name of the new database.

|               |                       |
|---------------|-----------------------|
| Entry         | <b>50 characters</b>  |
| Default value | <b>New database #</b> |

**NOTE**

The database name must be unique in the entire client/server system.

Clicking on **[OK]** opens the **Database properties** window for editing the database properties.

### 4.3.3 Renaming a database

Dialog window: **Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Edit] ▶ Rename... ▶ Rename database**

The **[Edit] ▶ Rename...** menu item is used to open the **Rename database** window for renaming the selected database.

**Rename database 'Name' to**

Entry of the new database name.

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

**NOTE**

The database name must be unique in the entire client/server system.

### 4.3.4 Deleting a database

Menu item: **Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Edit] ▶ Delete**

The **[Edit] ▶ Delete** menu item 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 permissions*  
Database access permissions for user groups.
- *Backup*  
Definition of backup monitoring and automatic backups.
- *Monitoring*  
Definition of 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 comments about the database.

---

Entry **250 characters**

---

#### Number of records

Shows the number of records 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**

Shows the user (short name) who created the database.

**Modified**

Shows date and time of the last modification of the database properties.

**Modified by**

Shows the name of the user (short name) who carried out the modifications.

**4.3.5.3 Database properties - Access rights**

Tab: **Database** ▶ **File** ▶ **Database manager...** ▶ **Database manager** ▶ **[Properties]** ▶ **Properties - Database - 'Database name'** ▶ **Access rights**

Database access permissions for user groups.

**User group**

Shows the user groups defined in the user administration.

**Read**

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

Activates/deactivates the permission 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**)

Activates/deactivates the permission to edit the database. Records can be modified or deleted.

**NOTE**

If access for editing is activated, then access rights for reading will also automatically be activated. If access for reading is deactivated, then access rights for editing will also automatically be deactivated.

#### 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**)

Activates/deactivates the backup monitoring for the selected database. If the **Backup monitoring** check box is enabled, then the **Next backup** field in the database table will be highlighted in **red** when the interval time elapses.

##### Last backup

Shows the date and time of the last database backup.

##### Next backup

Date on which the next backup must take place. The date can be selected by pressing  in the **Select date** dialog window.

|               |                              |
|---------------|------------------------------|
| Entry         | <b>Date selection</b>        |
| Default value | <b>Last backup + 1 month</b> |

##### 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 **Next backup** field will be automatically adjusted accordingly.

|               |                                      |
|---------------|--------------------------------------|
| Input range   | <b>1 - 999</b>                       |
| Default value | <b>1</b>                             |
| Selection     | <b>Days   Weeks   Months   Years</b> |
| Default value | <b>Months</b>                        |

##### Starting 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 directory predefined in the **Program administration** for the automatic backup.

|               |   |
|---------------|---|
| Selection     | <b>Selection of the backup directory   Default backup directory</b> |
| Default value | <b>Default backup directory</b>                                     |

**NOTE**

Make sure that you have read and write permission for the selected directory.

**4.3.5.5 Database properties - Monitoring**

Tab: **Database** ▶ **File** ▶ **Database manager...** ▶ **Database manager** ▶ **[Properties]** ▶ **Properties - Database - 'Database name'** ▶ **Monitoring**

Definition of database monitoring.

**Monitoring size**

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

Activates/deactivates size monitoring for the selected database. If this check box is activated, then the **Size** field in the database table will be shown in **red** when the limit value has been exceeded. At the same time, a corresponding message appears when the database is opened.

**Maximum size**

Maximum permitted database size in MB.

|               |                          |
|---------------|--------------------------|
| Input range   | <b>1 - 2147483647 MB</b> |
| Default value | <b>500 MB</b>            |

**Monitoring number of records**

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

Activates/deactivates the monitoring of the number of records for the selected database. If this check box is activated then the **Number** field in the database table will be shown in **red** when the limit value has been exceeded. At the same time, a corresponding message also appears when the database is opened.

**Maximum number**

Maximum permitted number of records for database.

|               |                       |
|---------------|-----------------------|
| Input range   | <b>1 - 2147483647</b> |
| Default value | <b>1,000</b>          |

**4.3.6 Backing up database manually**

Dialog window: **Database** ▶ **File** ▶ **Database manager...** ▶ **Database manager** ▶ **[Backup]** ▶ **Database backup**

**[Backup]** is used to open the **Backup database** dialog window:

## Backup target

### Backup directory

Selection of a directory predefined in the **Program administration** for the backup.

|               |   |
|---------------|---|
| Selection     | <b>Selection of the backup directory   Default backup directory</b> |
| Default value | <b>Default backup directory</b>                                     |



#### NOTE

Make sure that you have read and write permission for the selected directory.

### Backup name

Selection of an already existing name or entry of a new name for the backup file. If an existing backup file is selected, it will be overwritten.

|               |                      |
|---------------|----------------------|
| Entry         | <b>50 characters</b> |
| Default value | <b>Backup-##</b>     |



#### 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 data is restored.

### [Start]

Starts manual database backup.

## 4.3.7 Restoring the 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 that is predefined in the **Program administration** and in which the backed-up databases are located.

|               |   |
|---------------|---|
| Selection     | <b>Selection of the backup directory   Default backup directory</b> |
| Default value | <b>Default backup directory</b>                                     |



**Backup name**

Selection of a backup file.

|           |                                  |
|-----------|----------------------------------|
| Selection | <b>Selection of backup files</b> |
|-----------|----------------------------------|

**Backup date**

Shows the time at which the database was backed up. This information is not available if the backup file is located on a network drive.

**Database name**

Shows the name of the database. This information is not available if the backup file is located on a network drive.

**Number of records**

Shows the number of records in the database. This information is not available if the backup file is located on a network drive.

**Size**

Shows the size of the database in KB.

**Save As**

Name under which the database is to be restored.

|               |                        |
|---------------|------------------------|
| Entry         | <b>50 characters</b>   |
| Default value | <b>New database ##</b> |

**[Start]**

Starts database restoring. After the start, a progress bar appears in the window. The dialog window closes automatically once the backup has been completed.



**NOTE**

Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be restored under its old name.

## 4.4 Templates

### 4.4.1 Report templates

#### 4.4.1.1 Manage report templates

##### 4.4.1.1.1 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:

|                  |  |
|------------------|--|
| <b>Rename...</b> | Rename the selected report template ( <i>see Chapter 4.4.1.1.2, page 138</i> ).    |
| <b>Copy</b>      | Copy the selected report template(s) ( <i>see Chapter 4.4.1.1.3, page 138</i> ).   |
| <b>Delete...</b> | Delete the selected report template(s) ( <i>see Chapter 4.4.1.1.4, page 138</i> ). |
| <b>Export...</b> | Export the selected report template(s) ( <i>see Chapter 4.4.1.1.5, page 138</i> ). |
| <b>Import...</b> | Import report templates ( <i>see Chapter 4.4.1.1.6, page 138</i> ).                |



report templates to be imported must be selected. The report templates are then imported.

#### 4.4.1.2 Create new report template


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** opens with an empty report template, which can then be edited.

#### 4.4.1.3 Open report template

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** opens 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.

##### **Open 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 | <b>50 characters</b> |
|-------|----------------------|

---

**[Open]**

Opens the program window **Report template**, in which the selected report template is shown and can be edited.

**4.4.1.4 Edit report template****4.4.1.4.1 Report template - General****4.4.1.4.1.1 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.

There are two basically different types of report template:

- **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.

**4.4.1.4.1.2 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*

#### 4.4.1.4.1.3 Report template - Menu bar

##### 4.4.1.4.1.3.1 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.





##### 4.4.1.4.1.3.2 Report template - Menu File

Program window: **Database ▶ Report template**




|  |   |
|--|---|
|  Save         | Save an opened report template (see Chapter 4.4.1.4.2.11, page 153).                  |
| Save as  | Save an opened report template under a new name (see Chapter 4.4.1.4.2.11, page 153). |
| Page setup...  | Set up the layout for the report template (see Chapter 4.4.1.4.2.2, page 145).        |
|  Page preview | Set up the layout for the report template (see Chapter 4.4.1.4.2.8, page 151).        |
| Exit   | Close the program window <b>Report template</b> .                                     |

##### 4.4.1.4.1.3.3 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 4.4.1.4.2.6, page 149). |
|  Copy     | Copy the selected items to the clipboard (see Chapter 4.4.1.4.2.6, page 149).          |



|  |   |
|--|---|
|  <b>Insert</b>  | Insert marked items from the clipboard (see Chapter 4.4.1.4.2.6, page 149). |
|  <b>Delete</b>  | Delete the marked items (see Chapter 4.4.1.4.2.6, page 149).                |
|  <b>Comment</b> | Enter comments on the report template (see Chapter 4.4.1.4.2.9, page 152).  |

#### 4.4.1.4.1.3.4 Report template - Menu View

Program window: **Database ▶ Report template**

|                      |  |
|----------------------|--|
| <b>Update</b>        | Update the view.   |
| <b>First page</b>    | Show the first page of the report template (see Chapter 4.4.1.4.2.4, page 148).    |
| <b>Previous page</b> | Show the previous page of the report template (see Chapter 4.4.1.4.2.4, page 148). |
| <b>Next page</b>     | Show the next page of the report template (see Chapter 4.4.1.4.2.4, page 148).     |
| <b>Last page</b>     | Shows the last page of the report template (see Chapter 4.4.1.4.2.4, page 148).    |

#### 4.4.1.4.1.3.5 Report template - Menu Insert

Program window: **Database ▶ Report template**

|                    |   |
|--------------------|---|
| <b>Page before</b> | Insert a new page in front of the shown page (see Chapter 4.4.1.4.2.4, page 148). |
| <b>Page after</b>  | Inserts a new page after the shown page (see Chapter 4.4.1.4.2.4, page 148).      |

#### 4.4.1.4.1.3.6 Report template - Menu Tools

Program window: **Database ▶ Report template**

|                   |   |
|-------------------|---|
| <b>Options...</b> | Set options for the report template (see Chapter 4.4.1.4.2.10, page 152). |
|-------------------|---|













#### 4.4.1.4.1.3.7 Report template - Menu Help

Program window: **Database ▶ Report template**

|  |                   |
|--|-------------------|
|  <b>tiBase Help</b> | Open tiBase help. |
|--|-------------------|

#### 4.4.1.4.1.4 Report template - General toolbar

Program window: **Database ▶ Report template**

|  |  |
|--|--|
|  Save           | Save an opened report template (see Chapter 4.4.1.4.2.11, page 153).                   |
|  Page preview   | Set up the layout for the report template (see Chapter 4.4.1.4.2.8, page 151).         |
|  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 4.4.1.4.2.6, page 149). |
|  Copy           | Copy the selected items to the clipboard (see Chapter 4.4.1.4.2.6, page 149).          |
|  Insert         | Insert marked items from the clipboard (see Chapter 4.4.1.4.2.6, page 149).            |
|  Delete       | Delete the marked items (see Chapter 4.4.1.4.2.6, page 149).                           |
|  100 %        | Select zoom level (see Chapter 4.4.1.4.2.7, page 150).                                 |
|  Grid         | Switch the grid display on and off (see Chapter 4.4.1.4.2.10, page 152).               |
|  Snap to grid | Switch snap at grid on and off (see Chapter 4.4.1.4.2.10, page 152).                   |


#### 4.4.1.4.1.5 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 4.4.1.4.1.6, page 143).

#### 4.4.1.4.1.6 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 4.4.1.4.2.6, page 149). |
|--|--|



|  |  |
|--|--|
|  <b>Text field</b>          | <p>If this option is enabled then <b>text fields</b> can be inserted in the report template (see Chapter 4.4.1.4.3.1, page 154).</p>                                     |
|  <b>Data field</b>          | <p>If this option is enabled then <b>data fields</b> can be inserted in the report template (see Chapter 4.4.1.4.3.2, page 156).</p>                                     |
|  <b>Date field</b>          | <p>If this option is enabled then <b>date fields</b> can be inserted in the report template in which the actual date is entered (see Chapter 4.4.1.4.3.3, page 158).</p> |
|  <b>Time field</b>          | <p>If this option is enabled then <b>time fields</b> can be inserted in the report template in which the actual time is entered (see Chapter 4.4.1.4.3.4, page 159).</p> |
|  <b>Page number</b>         | <p>If this option is enabled then fields can be inserted in the report template in which the <b>page number</b> is entered (see Chapter 4.4.1.4.3.5, page 161).</p>      |
|  <b>Number of pages</b>     | <p>If this option is enabled then fields can be inserted in the report template in which the <b>number of pages</b> is entered (see Chapter 4.4.1.4.3.6, page 163).</p>  |
|  <b>Fixed report</b>      | <p>If this option is enabled then <b>fixed reports</b> can be inserted in the report template (see Chapter 4.4.1.4.3.7, page 164).</p>                                   |
|  <b>Group field</b>       | <p>If this option is enabled then <b>group fields</b> can be inserted in the report template (see Chapter 4.4.1.4.3.8, page 166).</p>                                    |
|  <b>Image</b>             | <p>If this option is enabled then <b>images</b> can be inserted in the report template (see Chapter 4.4.1.4.3.9, page 167).</p>  |
|  <b>Line</b>              | <p>If this option is enabled then <b>lines</b> can be inserted in the report template (see Chapter 4.4.1.4.3.10, page 168).</p>  |
|  <b>Rectangle</b>         | <p>If this option is enabled then <b>rectangles</b> can be inserted in the report template (see Chapter 4.4.1.4.3.11, page 169).</p>                                     |
|  <b>Curve</b>             | <p>If this option is enabled then <b>curves</b> can be inserted in the report template (see Chapter 4.4.1.4.3.12, page 170).</p>   |
|  <b>Calibration curve</b> | <p>If this option is enabled then <b>calibration curves</b> can be inserted in the report template (see Chapter 4.4.1.4.3.13, page 172).</p>                             |

#### 4.4.1.4.2 Report template - Functions

##### 4.4.1.4.2.1 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*

##### 4.4.1.4.2.2 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

*only for form report*

#### Settings

|               |  |
|---------------|--|
| Selection     | <b>Apply to current page</b>   <b>Apply to all pages</b> |
| Default value | <b>Apply to current page</b>                             |

#### **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.

#### **Page format**

#### Page format

Selection of the page format. The width and height of the paper can be defined with **User-defined**.

|               |  |
|---------------|--|
| Selection     | <b>A4</b>   <b>Letter</b>   <b>Legal</b>   <b>User-defined</b> |
| Default value | <b>A4</b>  |



## Width

Width of the page format. This parameter can only be edited for **Page format= User-defined**

|               |                       |
|---------------|-----------------------|
| Input range   | <b>0.0 - 499.0 mm</b> |
| Default value | <b>210.0 mm</b>       |

## Height

Height of the page format. This parameter can only be edited for **Page format= User-defined**

|               |                       |
|---------------|-----------------------|
| Input range   | <b>0.0 - 499.0 mm</b> |
| Default value | <b>297.0 mm</b>       |

## Orientation

Selection of the page format.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>Portrait   Landscape</b> |
| Default value | <b>Portrait</b>             |

## Page margins

### Top

Upper page margin.

|               |                       |
|---------------|-----------------------|
| Input range   | <b>0.0 - 499.0 mm</b> |
| Default value | <b>15.0 mm</b>        |

### Bottom

Lower page margin.

|               |                       |
|---------------|-----------------------|
| Input range   | <b>0.0 - 499.0 mm</b> |
| Default value | <b>15.0 mm</b>        |

### Left

Left-hand page margin.

|               |                       |
|---------------|-----------------------|
| Input range   | <b>0.0 - 499.0 mm</b> |
| Default value | <b>20.0 mm</b>        |

### Right

Right-hand page margin.

|               |                       |
|---------------|-----------------------|
| Input range   | <b>0.0 - 499.0 mm</b> |
| Default value | <b>20.0 mm</b>        |

## Layout

### Header

Height of header.

---

|             |                       |
|-------------|-----------------------|
| Input range | <b>0.0 - 499.0 mm</b> |
|-------------|-----------------------|

|               |                |
|---------------|----------------|
| Default value | <b>15.0 mm</b> |
|---------------|----------------|

---

### Footer

Height of footer.

---

|             |                       |
|-------------|-----------------------|
| Input range | <b>0.0 - 499.0 mm</b> |
|-------------|-----------------------|

|               |                |
|---------------|----------------|
| Default value | <b>15.0 mm</b> |
|---------------|----------------|

---

### Determination height

Height of the section for a single determination on a tabular report.

*only for tabular report*

---

|             |                       |
|-------------|-----------------------|
| Input range | <b>0.0 - 499.0 mm</b> |
|-------------|-----------------------|

|               |                |
|---------------|----------------|
| Default value | <b>25.0 mm</b> |
|---------------|----------------|

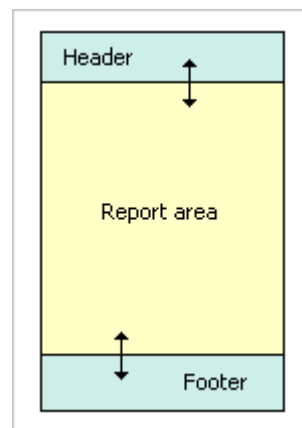
---

#### 4.4.1.4.2.3 Report template - Define sections

Program window: **Database ▶ Report template**

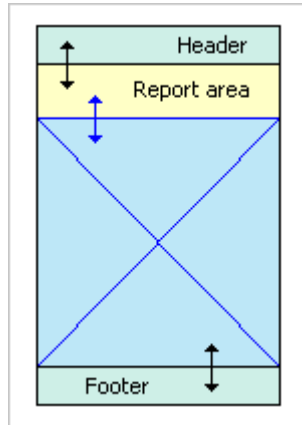
##### Define sections for form report

The header, footer and report sections can be enlarged and reduced with the left mouse button.



##### Defining sections for tabular report

The header, footer and report sections can be enlarged and reduced with the left mouse button.



#### 4.4.1.4.2.4 Report template - Insert pages

Menu item: **Report template** ▶ **Insert** ▶ **Page before / Page after**



#### NOTE

It is not possible to insert pages in templates for tabular reports.

#### 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.

#### Insert 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.

#### 4.4.1.4.2.5 Report template - Insert 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, Curve, 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*

#### 4.4.1.4.2.6 Report template - Edit 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.



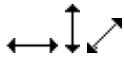
### Select several modules

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.



Delete 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.

#### 4.4.1.4.2.7 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%**.

#### 4.4.1.4.2.8 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.



**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     | <b>Arial   Windows fonts</b> |
| Default value | <b>Arial</b>                 |

**4.4.1.4.2.11****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.

**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 | <b>50 characters</b> |
|-------|----------------------|



**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.

#### 4.4.1.4.3 Report template - Modules

##### 4.4.1.4.3.1 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

**Y pos.**

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

**Width**

Width of image field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

**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.



### 4.4.1.4.3.2 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Width

Width of data field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Height

Height of data field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|



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.



### 4.4.1.4.3.3 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Width

Width of date field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Height

Height of date field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|



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 | <b>50 characters</b> |
|-------|----------------------|

#### Suffix

Text placed after the date field contents.

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

#### Sample

Shows the formatted date.

#### 4.4.1.4.3.4 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

#### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

#### Width

Width of time field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

#### Height

Height of time field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|



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 | <b>50 characters</b> |
|-------|----------------------|

### Suffix

Text to be placed after the contents of the time field.

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

### Preview

Shows the formatted time.

#### 4.4.1.4.3.5 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

#### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

#### Width

Width of the page number field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|



### Height

Height of the page number field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|



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 | <b>50 characters</b> |
|-------|----------------------|

### Suffix

Text placed after the page number field.

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

**Preview**

Shows the formatted page number.

**4.4.1.4.3.6 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

**Y pos.**

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

**Width**

Width of the field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

**Height**

Height of the field.

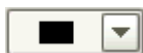
|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|



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.

#### 4.4.1.4.3.7 Report template - Fixed report

Program window: **Database ▶ Report template**

Fixed reports are used for producing predefined part-reports of the determination in the report.

#### Insert



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 section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

### Width

Shows the predefined width of the fixed report.

### Height

Height of fixed report.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

### Fixed report

Selection of a predefined fixed report.

|               |   |
|---------------|---|
| Selection     | <b>Calculations   Calibration data   Curves   Messages   List of meas. points   Result list   Raw data (endpoints)   Standard addition   Statistics data (brief)   Statistics data (full)   Signature list Determination   Signature list Method   Variables   Devices used   Common variables used   Solutions used   Sensors used</b> |
| Default value | <b>Calculations</b>   |

### Command name

Name of the command for which a curve, a calibration curve or a measuring point list is to be produced. With **not defined**, the lists for all curves present in the determination will be produced as default.

This parameter appears only as editable field when **Fixed report = Curve, Calibration curve or Measuring point list**.

|               |                      |
|---------------|----------------------|
| Entry         | <b>50 characters</b> |
| Selection     | <b>not defined</b>   |
| Default value | <b>not defined</b>   |



### 4.4.1.4.3.8 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
- 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 | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

---

##### Width

Shows the predefined width of the fixed report.

##### Height

Height of the field

---

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

---

#### 4.4.1.4.3.9 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Width

Width of image field.


|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Height

Height of image field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### 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     | <b>original   proportional   non-proportional</b> |
| Default value | <b>original</b>                                   |

##### **original**

Original size.

**proportional**

Proportional enlargement or diminishment.

**non-proportional**

Non-proportional enlargement or diminishment.

**4.4.1.4.3.10 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

**Y pos.**

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

**Length**

Length of the line.

|             |                                   |
|-------------|-----------------------------------|
| Input range | <b>0.0 - (max. page width) mm</b> |
|-------------|-----------------------------------|

**Angle**

Angle of the line.

|             |                      |
|-------------|----------------------|
| Input range | <b>0 - 360.000 °</b> |
|-------------|----------------------|

**Thickness**

Thickness of the line.

|               |                      |
|---------------|----------------------|
| Input range   | <b>0.1 - 10.0 mm</b> |
| Default value | <b>0.5 mm</b>        |



Selection of the line color.



Selection of the type of line.

#### 4.4.1.4.3.11 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 | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Width

Width of the rectangle.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Height

Height of the rectangle.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Thickness

Thickness of the line for the rectangle.

|               |                      |
|---------------|----------------------|
| Input range   | <b>0.1 - 10.0 mm</b> |
| Default value | <b>0.5 mm</b>        |



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.

#### 4.4.1.4.3.12 Report template - Curve field

Program window: **Database ▶ Report template**

Curve fields are used for showing determination curves in the report.

##### 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 mouse button.

##### Properties



##### NOTE

The properties are saved individually for each curve field. This means that it is possible, e.g., to show several different curves for the same measuring command beside one another in several curve fields.

##### X pos.

x-position within the permitted section.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Width

Width of curve field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Height

Height of curve field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

### Command type

Shows the command type for which a curve is to be produced.

|               |  |
|---------------|--|
| Selection     | <b>DET   MET   SET   MEAS   KFT   KFC   BRC  <br/>STAT   DOS</b> |
| Default value | <b>DET</b>   |

### Command name

Name of the command for which the curve is to be produced. With **not defined** all curves present in the determination with the selected **Command type** will be produced as default.



#### NOTE

In the command name, the index in the format **.#** must be specified additionally (e.g. **Chloride.1**).

|               |                                    |
|---------------|------------------------------------|
| Selection     | <b>not defined   50 characters</b> |
| Default value | <b>not defined</b>                 |

### Autoscaling

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

If this check box is activated, all axes in the curve window are scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

### Tabs

Additional properties for the curve field can be set on the following 4 tabs:

- *x axis*  
Parameters for the graphical display of the curve on the x axis.
- *y1 axis*  
Parameters for the graphical display of the curve on the y1 axis (left-hand y axis).
- *y2 axis*  
Parameters for the graphical display of the curve on the y2 axis (right-hand y axis).
- *Options*  
Options for graphical display of curves.



#### 4.4.1.4.3.13 Report template - Calibration curve field

Program window: **Database ▶ Report template**

Calibration curve fields are used for showing calibration or standard addition curves in the report.

##### 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.

##### Properties

##### X pos.

x-position within the permitted section.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Y pos.

y-position within the permitted section.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Width

Width of calibration curve field.

|             |                                      |
|-------------|--------------------------------------|
| Input range | <b>0.0000 - (max. page width) mm</b> |
|-------------|--------------------------------------|

##### Height

Height of calibration curve field.

|             |                                       |
|-------------|---------------------------------------|
| Input range | <b>0.0000 - (max. page height) mm</b> |
|-------------|---------------------------------------|

##### Command name

Entry of the name of the command for which the calibration curve is to be produced. With **not defined** the first calibration curve present in the determination with the selected **Command type** will be produced as default.

|               |                                    |
|---------------|------------------------------------|
| Selection     | <b>not defined   50 characters</b> |
| Default value | <b>not defined</b>                 |

## 4.4.2 Curve overlay templates

### 4.4.2.1 Manage curve overlay templates

Menu item: **Database ▶ Tools ▶ Templates ▶ Curve overlay templates**

With the menu item **Tools, Templates, Curve overlay templates** the dialog window **Curve overlay templates** opens in which the globally available templates for curve overlay 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.

#### Command type

Shows the command type for which the template can be used.

#### Comment

Shows the comments about the template.

#### Functions

##### [New]

Generates a new template. The dialog window **Properties - Overlay curves** opens in which the properties for the new template can be defined.

##### [Properties]

Open the dialog window **Properties - Overlay curves** in which the properties of the template selected in the table can be edited.

##### [Delete]

Delete the template selected in the table.

##### [Copy]

Copy the template selected in the table and save it under the name **Copy of...**



## 4.4.2.2 Edit curve overlay templates

### 4.4.2.2.1 Curve overlay - Properties

Dialog window: **Database** ▶ **Tools** ▶ **Templates** ▶ **Curve overlay templates...** ▶ **Curve overlay templates** ▶ **[Properties]** ▶ **Properties - Overlay curves - 'Name'**

#### Template name

Name for the curve overlay template which is saved in the configuration database per client.

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

#### Command type

Selection of the command type from which curves are to be overlaid.

|               |  |
|---------------|--|
| Selection     | <b>DET pH   DET U   DET Ipol   DET Upol   MET pH   MET U   MET Ipol   MET Upol   SET pH   SET U   SET Ipol   SET Upol   STAT pH   STAT U   DOS pH   DOS U   KFT Ipol   KFT Upol   KFC   BRC   MEAS pH   MEAS U   MEAS Ipol   MEAS Upol   MEAS T   MEAS Conc   MEAS Cond   CAL MEAS pH   CAL MEAS Conc   CAL Cond</b> |
| Default value | <b>DET pH</b>  |

#### Autoscaling

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

If this check box is activated, then the. In this case the fields **Start value** and **End value** cannot be edited.

#### Tabs

Further properties of a template for the overlaying of curves can be set on the following 4 tabs:

- *x axis*  
Parameters for the graphical display of the overlaid curves on the x axis.
- *y axis*  
Parameters for the graphical display of the overlaid curves on the y axis.
- *Options*  
Options for the graphical display of the overlaid curves.
- *Comment*  
Enter comment on the template.

#### 4.4.2.2.2 Curve overlay - x axis

Dialog window: **Database ▶ Tools ▶ Templates ▶ Curve overlay templates... ▶ Curve overlay templates ▶ [Properties] ▶ Properties - Overlay curves - 'Name'**

Parameters for the graphical display of the overlaid curves on the x axis.

##### x axis

##### Size

Selection of the quantity to be shown on the x axis.

|           |                                    |
|-----------|------------------------------------|
| Selection | <b>Command-dependent selection</b> |
|-----------|------------------------------------|

##### Label

Freely definable axis label for the x axis. With **auto** the designation from the field **Size** will be used.

|               |                      |
|---------------|----------------------|
| Entry         | <b>25 characters</b> |
| Default value | <b>auto</b>          |

##### Scaling

##### Start value

Initial value for scaling the x axis.

|               |                           |
|---------------|---------------------------|
| Input range   | <b>-1.0 E12 - 1.0 E12</b> |
| Default value | <b>0.0</b>                |

##### End value

End value for scaling the x axis.

|               |                           |
|---------------|---------------------------|
| Input range   | <b>-1.0 E12 - 1.0 E12</b> |
| Default value | <b>1000.0</b>             |

#### 4.4.2.2.3 Curve overlay - y axis

Dialog window: **Database ▶ Tools ▶ Templates ▶ Curve overlay templates... ▶ Curve overlay templates ▶ [Properties] ▶ Properties - Overlay curves - 'Name'**

Parameters for the graphical display of the overlaid curves on the y axis.

##### y axis

##### Size

Selection of the quantity to be shown on the y axis.

|           |                                    |
|-----------|------------------------------------|
| Selection | <b>Command-dependent selection</b> |
|-----------|------------------------------------|



## Label

Freely definable axis label for the y axis. With **auto** the designation from the field **Size** will be used.

|               |                      |
|---------------|----------------------|
| Entry         | <b>25 characters</b> |
| Default value | <b>auto</b>          |

## Display measuring points

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

If this check box is activated then the individual measuring points will be shown on the curve.



### NOTE

With curves, for which the distance between to measuring points is smaller than 5 pixels, the separate measuring points are not displayed anymore, even if a symbol has been selected. In this case, the graphics window can eventually be enlarged in order to display the symbols again.

## Scaling

### Start value

Initial value for scaling the y-axis.

|               |                           |
|---------------|---------------------------|
| Input range   | <b>-1.0 E12 - 1.0 E12</b> |
| Default value | <b>0.0</b>                |

### End value

End value for scaling the y-axis.

|               |                           |
|---------------|---------------------------|
| Input range   | <b>-1.0 E12 - 1.0 E12</b> |
| Default value | <b>1000.0</b>             |

### 4.4.2.2.4 Curve overlay - Options

Dialog window: **Database ▶ Tools ▶ Templates ▶ Curve overlay templates... ▶ Curve overlay templates ▶ [Properties] ▶ Properties - Overlay curves - 'Name'**

Options for the graphical display of the overlaid curves.

#### Display grid

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

If this check box is activated then a grid will be shown against the background.

**Grid type**

Selection of the type of grid line.

|           |                         |
|-----------|-------------------------|
| Selection | <b>Select line type</b> |
|-----------|-------------------------|

**Grid color**

Selection of the grid line color.

|               |                               |
|---------------|-------------------------------|
| Selection     | <b>Color selection   gray</b> |
| Default value | <b>gray</b>                   |

**Show endpoints**

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

If this check box is activated then the endpoints found will be indicated on the curve by the symbol **◆** and labeled with **EP#** (potentiometric endpoints), **BP#** (break point) or **FP#** (fixed endpoint).

**Automatic EPs**

Selection of the color for automatically set endpoints.

|               |                                |
|---------------|--------------------------------|
| Selection     | <b>Color selection   black</b> |
| Default value | <b>black</b>                   |

**Manual EPs**

Selects the color for manually set endpoints.

|               |                               |
|---------------|-------------------------------|
| Selection     | <b>Color selection   pink</b> |
| Default value | <b>pink</b>                   |

**Background****Background color**

Selection of the color for the curve background.

|               |                                |
|---------------|--------------------------------|
| Selection     | <b>Color selection   white</b> |
| Default value | <b>white</b>                   |

**Legend**

Display of the data field, which is shown in the legend to identify the curves.



Open the dialog window **Legend - Field selection** for selecting the data field.



### Multiple curves of the same command

Setting, which curves are displayed when the command has been run several times, e.g. because of a **LOOP** command or a multiple call of a **Track**.

|               |   |
|---------------|---|
| Selection     | <b>Show only last curve   Show all curves</b> |
| Default value | <b>Show only last curve</b>                   |

#### Show only last curve

Only the curve generated during the last run of the command is displayed.

#### Show all curves

The curves of all runs of the command are displayed.

#### 4.4.2.2.5 Curve overlay - Comment

Dialog window: **Database ▶ Tools ▶ Templates ▶ Curve overlay templates... ▶ Curve overlay templates ▶ [Properties] ▶ Properties - Overlay curves - 'Name'**

Entry of comment on the curve overlay template.

#### Comment

Comment on control chart.

|       |                        |
|-------|------------------------|
| Entry | <b>1000 characters</b> |
|-------|------------------------|

### 4.4.3 Templates for control chart

#### 4.4.3.1 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...**

## 4.4.3.2 Editing control chart templates

### 4.4.3.2.1 Control chart template - Properties

Dialog window: **Database ▶ Tools ▶ Templates ▶ Control chart templates... ▶ Control chart templates ▶ [Properties] ▶ Properties - Control chart - 'Name'**

#### Template name

Name for the control chart template which is saved in the configuration database per client.

---

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

---

#### Tabs

The properties of a control chart template can be set on the following 4 tabs:

- *Graphical parameters*  
Parameters for the graphical display of the control chart.
- *Limits*  
Definition of warning and intervention limits for the control chart.
- *Statistics*  
Display of statistics data on the control chart.
- *Comment*  
Enter comment on the template.

### 4.4.3.2.2 Control chart template - Graphical parameters

Dialog window: **Database ▶ Tools ▶ Templates ▶ Control chart templates... ▶ Control chart templates ▶ [Properties] ▶ Properties - Control chart - 'Name'**

Parameters for the graphical display of the control chart.



## y axis

### Result

Selection of the result column whose value is to be shown on the y axis.

|               |   |
|---------------|---|
| Selection     | <b>RS01   RS02   RS03   RS04   RS05   RS06  <br/>RS07   RS08   RS09   RS10   RS11   RS12  <br/>RS13   RS14   RS15   RS16   RS17   RS18  <br/>RS19   RS20   RS21   RS22   RS23   RS24   RS25</b> |
| Default value | <b>RS01</b>   |

### Label

Freely definable axis label for the y axis.

|               |                      |
|---------------|----------------------|
| Entry         | <b>25 characters</b> |
| Default value | <b>Result</b>        |

## Background

### Background color

Selection of the background color for the control chart.

|               |                                |
|---------------|--------------------------------|
| Selection     | <b>Color selection   white</b> |
| Default value | <b>white</b>                   |

## Measured values

### Shape

Selection of the symbol for the display of the measured values.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>Symbol selection   •</b> |
| Default value | <b>•</b>                    |

### Color

Selection of the color for the measuring point symbol.

|               |                               |
|---------------|-------------------------------|
| Selection     | <b>Color selection   blue</b> |
| Default value | <b>blue</b>                   |

### Link measured values

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

If this check box is activated, then the measured value points will be joined by a line.

#### 4.4.3.2.3 Control chart template - Limit values

Dialog window: **Database** ▶ **Tools** ▶ **Templates** ▶ **Control chart templates...** ▶ **Control chart templates** ▶ **[Properties]** ▶ **Properties - Control chart - 'Name'**

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.

##### Lower limit

Lower warning limit.

|             |  |
|-------------|--|
| Entry       | <b>10 digits</b>                       |
| Input range | <b>-1.0E8 - 1.0E8 (max. 10 digits)</b> |

##### Upper limit

Upper warning limit.

|             |  |
|-------------|--|
| Entry       | <b>10 digits</b>                       |
| Input range | <b>-1.0E8 - 1.0E8 (max. 10 digits)</b> |

##### Intervention limits

Intervention limits are displayed in **red** on the control chart.

##### Lower limit

Lower intervention limit.

|             |  |
|-------------|--|
| Entry       | <b>10 digits</b>                       |
| Input range | <b>-1.0E8 - 1.0E8 (max. 10 digits)</b> |

##### Upper limit

Upper intervention limit.

|             |  |
|-------------|--|
| Entry       | <b>10 digits</b>                       |
| Input range | <b>-1.0E8 - 1.0E8 (max. 10 digits)</b> |

#### 4.4.3.2.4 Control chart template - Statistics

Dialog window: **Database** ▶ **Tools** ▶ **Templates** ▶ **Control chart templates...** ▶ **Control chart templates** ▶ **[Properties]** ▶ **Properties - Control chart - 'Name'**

Definition of the display of statistics data on the control chart.

##### Show the statistics data

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

If this check box is activated, then below the graph the statistics 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 check box activated, 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 check box is activated, 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.

#### 4.4.3.2.5 Control chart template - Comment

Dialog window: **Database ▶ Tools ▶ Templates ▶ Control chart templates... ▶ Control chart templates ▶ [Properties] ▶ Properties - Control chart - 'Name'**

Entry of comment on the control chart template.

#### Comment

Comment on control chart.

---

Entry **1000 characters**

---

### 4.4.4 Export templates

#### 4.4.4.1 Export templates manager

Dialog window: **Database ▶ Tools ▶ Templates ▶ Export templates... ▶ Export templates**

With the menu item **Tools ▶ Templates ▶ Export templates**, the dialog window **Export templates** opens 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 sequence 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]**

Creates a new export template. The dialog window **Export template** opens in which the properties for the new template can be defined.

**[Properties]**

The dialog window **Export template** opens, in which the properties of the template selected in the table can be edited.

**[Delete]**

Delete the selected export template.

**[Copy]**

Copies the selected export template and saves under the name **Copy of...**

**4.4.4.2 Edit export templates****4.4.4.2.1 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 export template.

---

|       |                      |
|-------|----------------------|
| Entry | <b>50 characters</b> |
|-------|----------------------|

---

**Comment**


Freely definable comment on the export template.

---

|       |                       |
|-------|-----------------------|
| Entry | <b>250 characters</b> |
|-------|-----------------------|

---

**Target directory**

Entry or selection (with ) of the path for the folder in which the export file is to be saved.

---

|       |                        |
|-------|------------------------|
| Entry | <b>1000 characters</b> |
|-------|------------------------|

---

**File type**

Selection of the file format for data export:



|               |  |
|---------------|--|
| Selection     | <b>*.tdet (tiBase format)   *.csv (comma-separated)   *.slk (SLK format)   *.xml (XML format)   *.csv (measuring point list)</b> |
| Default value | <b>*.tdet (tiBase format)</b>  |

**\*.tdet (tiBase format)**

Program-specific data exchange format that can only be imported into other tiBase 1.1 Patch 1 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.

**\*.csv (measuring point list)**

Data exchange format for the measuring point list with unformatted text, which can be imported into corresponding PC programs. The text file contains a document header with date/time of the determination and the determination ID, then the measuring point lists of the separate commands are listed one after the other. The command name is listed first for each measuring point list, followed by a header with the designations and the units of the measured values of the command. This is followed by the list of the measuring points, each measuring point is listed in a separate line and consists of a time indication and all measured values generated by the command.

**[Select fields]**

Opens the dialog window **Select fields** in which the required fields for 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 **\*.tdet** and **\*.xml** all fields will always 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 (comma separated)** and **\*.csv (measuring point list)**.

**File name**

One of the following options can be selected for the definition of the name of the export file:

|               |  |
|---------------|--|
| Selection     | <b>Determination ID   Sample identification   Request on each export   Fixed file name (append data)</b> |
| Default value | <b>Determination ID</b>  |

**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 **ID1 or ID2**, the **Computer name**, the date stamp **-YYYYMMDD-HHMMSS** and the suffix for the format. If the generated name already exists in the folder 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 folder 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)**.



#### 4.4.4.2.2 Export template - Select fields

Dialog window: **Database** ▶ **Tools** ▶ **Templates** ▶ **Export templates...** ▶ **Export templates** ▶ **[Properties]** ▶ **Export templates** ▶ **[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**

Shows all the fields that can be exported.

##### **Selected fields**

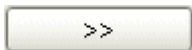
Shows all the fields that will be exported.

##### **Default name**

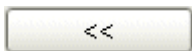
Non-editable name of the field to be exported.

##### **Displayed name**

Field name that can be edited 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 selected field.



Remove selected field.



Modifies the sequence of the exported fields by moving the selected field up.



Modifies the sequence of the exported fields by moving the selected field down.

#### 4.4.4.2.3 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.

**4.4.4.2.4 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 measurement point list** opens in which the separators can be defined.

**Field separator**

Selection of the field separator.

|               |             |
|---------------|-------------|
| Selection     | ;   ,   Tab |
| Default value | ;           |

**4.4.4.2.5 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 4.4.4.2.1, page 183*), then before the export of a determination the dialog **File export** is displayed.

**Target directory**

Shows the target directory for the export file, which has been defined in the properties of the export templates (*see Chapter 4.4.4.2.1, page 183*) used.

**File name**

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.

**4.4.4.3 XML export**

XML export

**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" ?>
```

|  |                      |
|--|----------------------|
| <code>-&lt;DeterminationReport&gt;</code>      | Determination report |
| <code>&lt;xmlCreator val=""/&gt;</code>        | Program name         |
| <code>&lt;xmlCreatorVersion val=""/&gt;</code> | Program version      |
| <code>&lt;xmlCreatorBuildNo val=""/&gt;</code> | Build number         |
| <code>&lt;subtype val=""/&gt;</code>           |                      |

|                             |                                |
|-----------------------------|--------------------------------|
| + <Determination>           | Determination data             |
| + <Method>                  | Method data                    |
| + <Sample>                  | Sample data                    |
| + <Results dynamic="">      | Results overview               |
| + <ResultaSingle="">        | Single results                 |
| + <Command Data dynamic=""> | Command variables              |
| + <Comvars dynamic="">      | Common variables               |
| + <usedDevices dynamic="">  | Device data                    |
| + <usedSensors dynamic="">  | Sensor data                    |
| + <Statistics>              | Statistical 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                   |
| </Sytem>                    |                                |
| </DeterminationReport>      |                                |

**NOTE**

**dynamic=** means that the following nodes can appear more than once.

The actual data is situated between " ".

#### 4.4.4.3.1 XML export - Determination data

XML export

|                           |  |
|---------------------------|--|
| - <Determination>         | Determination data   |
| - <Identification>        | Information about the identification of the determination.   |
| <statisticLinkID val=""/> | Statistics ID:<br><br>Unambiguous and unmistakable identification for the statistically linked determinations. |



|  |  |
|--|--|
| <code>&lt;determinationID val=""/&gt;</code>       | Determination ID:<br>Unambiguous and unmistakable identification for the determination.                      |
| <code>&lt;serverName val=""/&gt;</code>            | Name of the server to which the client was connected when the determination was recorded.                    |
| <code>&lt;clientName val=""/&gt;</code>            | Name of the client with which the determination was recorded.  |
| <code>&lt;detCounter val=""/&gt;</code>            | <b>Sample number</b> which was entered in the run window.  |
| <code>&lt;startCounter val=""/&gt;</code>          | Start counter  |
| <code>&lt;/Identification&gt;</code>               |  |
| <code>- &lt;Acquisition&gt;</code>                 | Information about recording the determination.   |
| <code>&lt;determinationStart val=""/&gt;</code>    | Date and time at start of determination.   |
| <code>&lt;determinationDuration val=""/&gt;</code> | Duration of the determination from its start to its end or termination in s.                                 |
| <code>&lt;determinationEndState val=""/&gt;</code> | Determination run (way in which the determination was ended):  |
| <code>&gt;</code>                                  |  |
|  | <b>regular without errors</b>  |
|  | The determination was finished automatically after the method was processed normally and without any errors. |
|  | <b>manual stop</b>   |
|  | The determination has been ended with the <b>[Stop]</b> fixed key.   |
|  | <b>error</b>   |
|  | The determination has been ended because an error occurred.  |
| <code>&lt;userName val=""/&gt;</code>              | Short name of user logged in at start of determination.  |
| <code>&lt;userNameFull val=""/&gt;</code>          | Full name of user logged in at start of determination.   |
| <code>&lt;determinationNote val=""/&gt;</code>     | <b>Remark</b> on determination   |
| <code>&lt;progVersion val=""/&gt;</code>           | Program version and build number of the program at recording the determination.                              |
| <code>&lt;licenseRoot val=""/&gt;</code>           | License start number of the program at recording the determination.  |

**</Acquisition>**

– **<Version>**

Information about the determination version.

**<signOffState val=""/>**

Signature status

**no**

Determination not signed.

**Level 1**

Determination signed on level 1.

**Level 2**

Determination signed on level 2.

**<version val=""/>**

Version of the determination.

**<status val="original"/>**

Determination status:

**original**

Determination data unaltered.

**modified**

Determination data modified.

**<recalcDate val=""/>**

Date and time when the reprocessed determination version was saved.

**<recalcedBy val=""/>**

Short name of user logged in when determination was reprocessed.

**<recalcedByuserFull val=""/>**

Full name of user logged in when determination was reprocessed.

**<recalcReason val=""/>**

Reason for the determination modification.

**<changeComment val=""/>**

User comment on the determination modification.

**</Version>**

– **<Miscellaneous>**

Different determination data.

**<deterComment val=""/>**

Comment, which has been entered on the determination.

– **<runMessages dynamic="">**

Messages

– **<data>**

Message

**<subtype val=""/>**



**<msgSource val=""/>**

Message source:

Shows from where the message comes:

**Program**

Message that cannot be assigned to a particular command.

**Track 'Track name' - Command 'Command name'**

Message produced by a command during the run.

**<msgText val=""/>**

Message text.

**<msgTime val=""/>**

Time at which the message was created in the run (date, time, UTC in the format **JJJ-MM-TT hh:mm:ss UTC....**

**<msgTitle val=""/>**

Message title and number.

**</data>**

**</runMessages>**

**- <DetermVars dynamic="">**

**Determination variables**

**- <data>**

Determination variable

**<vt val=""/>**

Variable type:

**TX** = Text

**NR** = Number

**DT** = Date/Time

**NA** = Unknown

*Variable identification*

**<vn val=""/>**

Variable value.

**<vr val=""/>**

**</data>**

**</DetermVars>**

**- <SystemVars dynamic="">**

**System variables**

**- <data>**

System variable

**<vt val=""/>**

Variable type:

**TX** = Text

**NR** = Number

**DT** = Date/Time

**NA** = Unknown

**<vn val=""/>**

*Variable identification*

|   |  |
|---|--|
| <code>&lt;vr val=""/&gt;</code>                             | Variable value.  |
| <code>&lt;/data&gt;</code>                                  |  |
| <code>&lt;/SystemVars&gt;</code>                            |  |
| <code>&lt;/Miscellaneous&gt;</code>                         |  |
| <code>- &lt;signOff dynamic=""&gt;</code>                   | Signatures   |
| <code>- &lt;data&gt;</code>                                 | Signature  |
| <code>&lt;subtype val=""/&gt;</code>                        |  |
| <code>- &lt;signature&gt;</code>                            |  |
| <code>&lt;vr val=""/&gt;</code>                             | Shows at which level the determination has been signed ( <b>Level 1</b> or <b>Level 2</b> ). |
| <code>&lt;/signature&gt;</code>                             |  |
| <code>- &lt;signDate&gt;...&lt;/signDate&gt;</code>         | Date and time at which the determination was signed.   |
| <code>- &lt;userName&gt;...&lt;/userName&gt;</code>         | Short name of the user who signed the determination.   |
| <code>- &lt;userNameFull&gt;...&lt;/userNameFull&gt;</code> | Full name of the user who signed the determination.  |
| <code>- &lt;reason&gt;...&lt;/reason&gt;</code>             | Reason for signature.  |
| <code>- &lt;comment&gt;...&lt;/comment&gt;</code>           | Comment on the signature.  |
| <code>&lt;/data&gt;</code>                                  |  |
| <code>&lt;/signOff&gt;</code>                               |  |
| <code>&lt;/Determination&gt;</code>                         |  |

#### 4.4.4.3.2 XML export - Method data

XML export

|  |   |
|--|---|
| <code>- &lt;Method&gt;</code>              | Method data   |
| <code>- &lt;Identification&gt;</code>      | Information about the identification of the method.                       |
| <code>&lt;methodName val=""/&gt;</code>    | Name of the method.   |
| <code>&lt;methodID val=""/&gt;&gt;</code>  | Method ID:<br>Unambiguous and unmistakable identification for the method. |
| <code>&lt;methodComment val=""/&gt;</code> | Method comment ( <b>Command comment</b> on <b>START</b> command).         |



**</Identification>**

– **<Version>**

**<signOffState val=""/>**

Information about method version.

Signature status

**no**

Method not signed.

**Level 1**

Method signed at level 1.

**Level 2**

Method signed at level 2.

**<version val=""/>**

Version of the method.

**<status val="original"/>**

Method status:

**new**

The method has been newly created and not yet saved.

**modified**

The method has been reprocessed but not saved.

**saved**

The method has been saved.

**reviewed**

The method has been signed at stage 1.

**released**

The method has been signed at stage 2.

**<savingTime val=""/>**

Date and time when the modified method version was saved.

**<savingUser val=""/>**

Short name of user logged in when modified method was saved.

**<savingUserFull val=""/>**

Full name of user logged in when modified method was saved.

**<changeReason val=""/>**

Reason for the method modification.

**<changeComment val=""/>**

User comment on the method modification.

**</Version>**

– **<signOff dynamic="">**

Signatures

– **<data>**

Signature

**<subtype val=""/>**

|                                    |   |
|------------------------------------|---|
| - <signature>                      |   |
| <vr val=""/>                       | Shows at which level the method has been signed ( <b>Level 1</b> or <b>Level 2</b> ). |
| </signature>                       |   |
| - <signDate>...</signDate>         | Date and time at which the method was signed.   |
| - <userName>...</userName>         | Short name of the user who signed the method.   |
| - <userNameFull>...</userNameFull> | Full name of the user who signed the method.  |
| - <reason>...</reason>             | Reason for signature.   |
| - <comment>...</comment>           | Comment on the signature.   |
| </data>                            |   |
| </signOff>                         |   |
| </Method>                          |   |

#### 4.4.4.3.3 XML export - Sample data

XML export

|                    |                            |
|--------------------|----------------------------|
| - <Sample>         | Sample data                |
| - <Smpl.Data>      | Sample data                |
| - <SmplSize>       | Sample size.               |
| - <data>...</data> | <i>see above</i>           |
| </SmplSize>        |                            |
| - <SmplUnit>       | Sample size unit.          |
| - <data>...</data> | <i>see above</i>           |
| </SmplUnit>        |                            |
| </SmplData>        |                            |
| - <Identification> | Sample identifications.    |
| - <ID__01>         | Sample identification ID1. |
| - <data>...</data> | <i>see above</i>           |
| </ID__01>          |                            |
| - <ID__02>         | <i>see above</i>           |
| </Identification>  |                            |
| </Sample>          |                            |



#### 4.4.4.3.4 XML export - Results overview

XML export

|                        |  |
|------------------------|--|
| - <Results dynamic=""> | Results overview   |
| - <data>               |  |
| <subtype val="" />     |  |
| <vr val="" />          | Result value with the number of decimal places defined in the CALC command.  |
| <vf val="" />          | Result value with full precision.  |
| <vs val="" />          | Result status:<br><b>OK</b> = The value is ok and has not been monitored.<br><b>OKL</b> = The value is ok and has been monitored.<br><b>LE</b> = The value exceeded the limit and has not been monitored.<br><b>LEL</b> = The value exceeded the limit and has been monitored..<br><b>NV</b> = The value is invalid and has not been monitored.<br><b>NVL</b> = The value is invalid and has been monitored. |
| <vt val="" />          | Result type:<br><b>TX</b> = Text<br><b>NR</b> = Number<br><b>DT</b> = Date/Time<br><b>NA</b> = Unknown   |
| <vn val="" />          | Result name.<br>Name of the CALC command the result has been generated with.   |
| <un val="" />          | Unit of the result.  |
| <fo val="" />          | Formula used for the calculation of the result.  |
| - <fv dynamic="">      | Variables used for the calculation of the result.  |
| - <data>               |  |
| <vr val="" />          | Variable value.  |
| <vs val="" />          | Variable status ( <i>see above</i> ).  |
| <vt val="" />          | Variable type ( <i>see above</i> ).  |
| <vn val="" />          | Variable name.   |

|                                  |  |
|----------------------------------|--|
| <code>&lt;/data&gt;</code>       |  |
| <code>&lt;/fv&gt;</code>         |  |
| <code>- &lt;sme&gt;</code>       | Mean value of the result.  |
| <code>- &lt;data&gt;</code>      |  |
| <code>&lt;vr val="" /&gt;</code> | Mean value with the number of decimal places defined in the CALC command.                  |
| <code>&lt;vf val="" /&gt;</code> | Mean value with full precision.  |
| <code>&lt;vs val="" /&gt;</code> | Variable status ( <i>see above</i> ).  |
| <code>&lt;/data&gt;</code>       |  |
| <code>&lt;sme&gt;</code>         |  |
| <code>- &lt;abs&gt;</code>       | Absolute standard deviation of the result.   |
| <code>- &lt;data&gt;</code>      |  |
| <code>&lt;vr val="" /&gt;</code> | Absolute standard deviation with the number of decimal places defined in the CALC command. |
| <code>&lt;vf val="" /&gt;</code> | Absolute standard deviation with full precision.   |
| <code>&lt;vs val="" /&gt;</code> | Variable status ( <i>see above</i> ).  |
| <code>&lt;/data&gt;</code>       |  |
| <code>&lt;abs&gt;</code>         |  |
| <code>- &lt;rel&gt;</code>       | Relative standard deviation of the result.   |
| <code>- &lt;data&gt;</code>      |  |
| <code>&lt;vr val="" /&gt;</code> | Absolute standard deviation with the number of decimal places defined in the CALC command. |
| <code>&lt;vf val="" /&gt;</code> | Relative standard deviation with full precision.   |
| <code>&lt;vs val="" /&gt;</code> | Variable status ( <i>see above</i> ).  |
| <code>&lt;/data&gt;</code>       |  |



**<rel>**

**-<max>**

**- <data>**

**<vr val="" />**

**<vf val="" />**

**<vs val="" />**

**</data>**

**</max>**

**-<min>**

**- <data>**

**<vr val="" />**

**<vf val="" />**

**<vs val="" />**

**</data>**

**</min>**

**<n val="" />**

Number of the result among the statistically evaluated results.

**<nmax val="" />**

Maximum number of statistically evaluated results.

**</data>**

**</Results>**

#### 4.4.4.3.5 XML export - Single results

XML export

**- <ResultsSingle>**

Single results

**- <RS01>**

1. single result

**- <data>**

**<vr val="" />**

Result value with the number of decimal places defined in the CALC command.

**<vf val="" />**

Result value with full precision.

**<vs val=""/>**

Result status:

**OK** = The value is ok and has not been monitored.

**OKL** = The value is ok and has been monitored.

**LE** = The value exceeded the limit and has not been monitored.

**LEL** = The value exceeded the limit and has been monitored..

**NV** = The value is invalid and has not been monitored.

**NVL** = The value is invalid and has been monitored.

**<vt val=""/>**

Result type:

**TX** = Text

**NR** = Number

**DT** = Date/Time

**NA** = Unknown

**<vn val=""/>**

Result name.

**<un val=""/>**

Unit of the result.

**<fo val=""/>**

Formula used for the calculation of the result.

**- <fv dynamic="">**

Variables used for the calculation of the result.

**- <data>**

**<vr val="" />**

**<vs val="" />**

**<vt val=""/>**

**<vn val=""/>**

**</data>**

**- <sme>**

Mean value of the result.

**- <data>**

**<vr val="" />**

Mean value with the number of decimal places defined in the CALC command.

**<vf val="" />**

Mean value with full precision.

**<vs val=""/>**

Variable status (*see above*).

**</data>**



|                              |  |
|------------------------------|--|
| <b>&lt;sme&gt;</b>           |  |
| – <b>&lt;abs&gt;</b>         | Absolute standard deviation of the result.   |
| – <b>&lt;data&gt;</b>        |  |
| <b>&lt;vr val="" /&gt;</b>   | Absolute standard deviation with the number of decimal places defined in the CALC command. |
| <b>&lt;vf val="" /&gt;</b>   | Absolute standard deviation with full precision.   |
| <b>&lt;vs val="" /&gt;</b>   | Variable status ( <i>see above</i> ).  |
| <b>&lt;/data&gt;</b>         |  |
| <b>&lt;abs&gt;</b>           |  |
| – <b>&lt;rel&gt;</b>         | Relative standard deviation of the result.   |
| – <b>&lt;data&gt;</b>        |  |
| <b>&lt;vr val="" /&gt;</b>   | Absolute standard deviation with the number of decimal places defined in the CALC command. |
| <b>&lt;vf val="" /&gt;</b>   | Relative standard deviation with full precision.   |
| <b>&lt;vs val="" /&gt;</b>   | Variable status ( <i>see above</i> ).  |
| <b>&lt;/data&gt;</b>         |  |
| <b>&lt;rel&gt;</b>           |  |
| – <b>&lt;max&gt;</b>         |  |
| – <b>&lt;data&gt;</b>        |  |
| <b>&lt;vr val="" /&gt;</b>   |  |
| <b>&lt;vf val="" /&gt;</b>   |  |
| <b>&lt;vs val="" /&gt;</b>   |  |
| <b>&lt;/data&gt;</b>         |  |
| <b>&lt;/max&gt;</b>          |  |
| – <b>&lt;min&gt;</b>         |  |
| – <b>&lt;data&gt;</b>        |  |
| <b>&lt;vr val="" /&gt;</b>   |  |
| <b>&lt;vf val="" /&gt;</b>   |  |
| <b>&lt;/data&gt;</b>         |  |
| <b>&lt;/min&gt;</b>          |  |
| <b>&lt;n val="" /&gt;</b>    | Number of the result among the statistically evaluated results.                            |
| <b>&lt;nmax val="" /&gt;</b> | Maximum number of statistically evaluated results.   |

```

</data>
<RS01>
<RS02> ... <RS25>           Further single results (see above)
</ResultsSingle>

```

#### 4.4.4.3.6 XML export - Command data

XML export

```

- <CommandData dynamic="">   Command data
- <Command>                   Data on command
<subtype val="" />
<data val="" />               Command name.Index
<commandType val="" />       Command type.
- <CommandVars dynamic="">   Command variables
- <data>
<vt val="" />                 Variable type:
                               TX = Text
                               NR = Number
                               DT = Date/Time
                               NA = Unknown
<vn val="" />                 Variable identification
<vr val="" />                 Variable value.
</data>
</CommandVars>
- <Sensor>                     Data on sensor.
<subtype val="" />           Type of sensor:
                               XML_SENSOR_OTHER = Other sensor
                               XML_SENSOR_PH = pH sensor
                               XML_SENSOR_ION = ISE sensor
                               XML_SENSOR_METAL = Metal sensor
                               XML_SENSOR_TEMP = Temperature sensor
                               XML_SENSOR_COND = Conductivity sensor
- <sensorData>                Data on sensor.
<sensorName val="" />       Sensor name.

```



|   |   |
|---|---|
| <code>&lt;sensorType val="" /&gt;</code>        | Sensor type.  |
| <code>&lt;sensorOrderNo val="" /&gt;</code>     | Order number of sensor.                               |
| <code>&lt;sensorSerialNo val="" /&gt;</code>    | Serial number of sensor.                              |
| <code>&lt;sensorInitDate val="" /&gt;</code>    | Date on which the sensor was used for the first time. |
| <code>&lt;sensorCellConst val="" /&gt;</code>   | Cell constant of the conductivity sensor.             |
| <code>&lt;sensorSlope val="" /&gt;</code>       | Slope of the sensor.                                  |
| <code>&lt;sensorPh0 val="" /&gt;</code>         | Electrode zero point of the pH sensor.                |
| <code>&lt;sensorIonVa val="" /&gt;</code>       | Ion (valency) of the ISE sensor.                      |
| <code>&lt;sensorE0 val="" /&gt;</code>          | Electrode zero point of the sensor.                   |
| <code>&lt;sensorC val="" /&gt;</code>           | Blank value of the ISE sensor.                        |
| <code>&lt;sensorCalTemp val="" /&gt;</code>     | Calibration temperature.                              |
| <code>&lt;sensorCalDate val="" /&gt;</code>     | Calibration date.                                     |
| <code>&lt;sensorCalMethod val="" /&gt;</code>   | Calibration method.                                   |
| <code>&lt;/sensorData&gt;</code>                |   |
| <code>&lt;/Sensor&gt;</code>                    |   |
| <code>&lt;/Device&gt;</code>                    |   |
| <code>- &lt;CalibData&gt;</code>                | <b>Calibration data</b>                               |
| <code>&lt;sensorName val="" /&gt;</code>        | Sensor name.  |
| <code>&lt;sensorType val="" /&gt;</code>        | Sensor type.  |
| <code>&lt;sensorSlope val="" /&gt;</code>       | Slope of the sensor.                                  |
| <code>&lt;sensorPh0 val="" /&gt;</code>         | Electrode zero point of the pH sensor.                |
| <code>&lt;sensorIonVa val="" /&gt;</code>       | Ion (valency) of the ISE sensor.                      |
| <code>&lt;sensorE0 val="" /&gt;</code>          | Electrode zero point of the sensor.                   |
| <code>&lt;sensorC val="" /&gt;</code>           | Blank value of the ISE sensor.                        |
| <code>&lt;resultUnit val="" /&gt;</code>        | Concentration unit of calibration.                    |
| <code>&lt;variance val="" /&gt;</code>          | Variance of calibration.                              |
| <code>&lt;sensorCalTemp val="" /&gt;</code>     | Calibration temperature.                              |
| <code>&lt;sensorCalTempType val="" /&gt;</code> | Calibration mode.                                     |
| <code>&lt;sensorCalDate val="" /&gt;</code>     | Calibration date.                                     |
| <code>&lt;sensorCalMethod val="" /&gt;</code>   | Calibration method.                                   |
| <code>- &lt;CalibrationTable&gt;</code>         | <b>Calibration solutions.</b>                         |
| <code>- &lt;header&gt;</code>                   | Column headers.                                       |

|   |   |
|---|---|
| <code>&lt;&lt;RowDesc val="" /&gt;</code>               | Column header for buffers/standards.                      |
| <code>&lt;NominalVal val="" /&gt;</code>                | Column header for nominal value.                          |
| <code>&lt;MeasVal val="" /&gt;</code>                   | Column header for measured value.                         |
| <code>&lt;CalTemp val="" /&gt;</code>                   | Column header for calibration temperature.                |
| <code>&lt;CalDur val="" /&gt;</code>                    | Column header for duration of measurement.                |
| <code>&lt;header&gt;</code>                             |   |
| <code>- &lt;body dynamic=""&gt;</code>                  |   |
| <code>- &lt;data&gt;</code>                             |   |
| <code>&lt;RowDesc&gt; ... &lt;/RowDesc&gt;</code>       | Buffer/Standard.  |
| <code>&lt;NominalVal&gt; ... &lt;/NominalVal&gt;</code> | Nominal value.  |
| <code>&lt;MeasVal&gt; ... &lt;/MeasVal&gt;</code>       | Measured value.   |
| <code>&lt;CalTemp&gt; ... &lt;/CalTemp&gt;</code>       | Calibration temperature.                                  |
| <code>&lt;CalDur&gt; ... &lt;/CalDur&gt;</code>         | Duration of measurement in s.                             |
| <code>&lt;/data&gt;</code>                              |   |
| <code>&lt;/body&gt;</code>                              |   |
| <code>&lt;/CalibrationTable&gt;</code>                  |   |
| <code>&lt;/CalibData&gt;</code>                         |   |
| <code>- &lt;StdAddData&gt;</code>                       | <b>Standard addition data</b>                             |
| <code>&lt;slope val="" /&gt;</code>                     | Calculated slope of the standard addition curve.          |
| <code>&lt;e0 val="" /&gt;</code>                        | Calculated axis intercept of the standard addition curve. |
| <code>&lt;ion val="" /&gt;</code>                       | Ion (Valency).  |
| <code>&lt;conc val="" /&gt;</code>                      | Calculated valency.                                       |
| <code>&lt;concUnit val="" /&gt;</code>                  | Concentration unit.                                       |
| <code>&lt;variance val="" /&gt;</code>                  | Variance.   |
| <code>- &lt;StdAddTable&gt;</code>                      | <b>Standard addition solutions.</b>                       |
| <code>- &lt;header&gt;</code>                           | Column headers.   |
| <code>&lt;RowDesc val="" /&gt;</code>                   | Column header for measuring solution.                     |
| <code>&lt;dV val="" /&gt;</code>                        | Column header for addition volume.                        |
| <code>&lt;MeasVal val="" /&gt;</code>                   | Column header for measured value.                         |
| <code>&lt;dU val="" /&gt;</code>                        | Column header for measured value differential.            |
| <code>&lt;Dur val="" /&gt;</code>                       | Column header for duration of measurement.                |
| <code>&lt;/header&gt;</code>                            |   |



|  |                                      |
|--|--------------------------------------|
| - <b>&lt;body dynamic=""&gt;</b>                 |                                      |
| - <b>&lt;data&gt;</b>                            |                                      |
| <b>&lt;RowDesc&gt; ... &lt;/RowDesc&gt;</b>      | Measuring solution.                  |
| <b>&lt;dV&gt; ... &lt;/dV&gt;</b>                | Addition volume in mL.               |
| <b>&lt;MeasVal&gt; ... &lt;/MeasVal&gt;</b>      | Measured value in mV.                |
| <b>&lt;dU&gt; ... &lt;/dU&gt;</b>                | Measured value differential in mV.   |
| <b>&lt;Dur&gt; ... &lt;/Dur&gt;</b>              | Duration of measurement in s.        |
| <b>&lt;/data&gt;</b>                             |                                      |
| <b>&lt;/body&gt;</b>                             |                                      |
| <b>&lt;/StdAddTable&gt;</b>                      |                                      |
| <b>&lt;/StdAddData&gt;</b>                       |                                      |
| - <b>&lt;MeasPoints content-Type="table"&gt;</b> | Measuring points                     |
| - <b>&lt;tableHeader&gt;</b>                     | Column headers.                      |
| - <b>&lt;th&gt;</b>                              |                                      |
| <b>&lt;vr val="" /&gt;</b>                       | Column header.                       |
| <b>&lt;/th&gt;</b>                               |                                      |
| <b>&lt;/tableHeader&gt;</b>                      |                                      |
| - <b>&lt;tableBody&gt;</b>                       | Measuring points.                    |
| - <b>&lt;td&gt;</b>                              |                                      |
| <b>&lt;vr val="" /&gt;</b>                       |                                      |
| <b>&lt;vf val="" /&gt;</b>                       |                                      |
| <b>&lt;/td&gt;</b>                               |                                      |
| <b>&lt;/tableBody&gt;</b>                        |                                      |
| <b>&lt;/MeasPoints&gt;</b>                       |                                      |
| - <b>&lt;EndPoints dynamic=""&gt;</b>            | Endpoints                            |
| - <b>&lt;data&gt;</b>                            |                                      |
| <b>&lt;ept val="" /&gt;</b>                      | Designation of the endpoint.         |
| <b>&lt;epvx val="12.1835" /&gt;</b>              | X value of the endpoint.             |
| <b>&lt;epux val="mL" /&gt;</b>                   | Unit of the x value of the endpoint. |
| <b>&lt;epvy val="518.5" /&gt;</b>                | Y value of the endpoint.             |
| <b>&lt;epuy val="mV" /&gt;</b>                   | Unit of the y value of the endpoint. |

```

</data>
</EndPoints>
</Command>
</CommandData>

```

#### 4.4.4.3.7 XML export - Common Variables

XML export

```

- <Comvars dynamic>           Common variables
- <data>
  <subtype val="" />
  <vr val="" />               Variable value.
  <vs val="" />               Variable status:
                              OK = The value is ok and has not been monitored.
                              OKL = The value is ok and has been monitored.
                              LE = The value exceeded the limit and has not been
                              monitored.
                              LEL = The value exceeded the limit and has been moni-
                              tored..
                              NV = The value is invalid and has not been monitored.
                              NVL = The value is invalid and has been monitored.
  <vt val="" />               Variable type:
                              TX = Text
                              NR = Number
                              DT = Date/Time
                              NA = Unknown
  <vn val="" />               Variable name.
  <un val="" />               Unit of the variable.
  <am val="" />               Assignment method.
  <at val="" />               Assignment date.
</data>
</Comvars dynamic>

```



#### 4.4.4.3.8 XML export - Device data

XML export

|  |   |
|--|---|
| - <usedDevices dynamic="">                       | Device data                                       |
| - <Device>                                       | Data on device.                                   |
| <subtype val="" />                               |   |
| - <deviceType>                                   | Device type.                                      |
| <vn val="" />                                    | Parameter name.                                   |
| <vr val="" />                                    | Parameter value.                                  |
| </deviceType>                                    |   |
| - <deviceName> ... </device-Name>                | Device name.                                      |
| - <instrNo> ... </instrNo>                       | Device serial number.                             |
| - <deviceProgNo> ... </device-ProgNo>            | Device program number.                            |
| - <rackName> ... </rackName>                     | Rack name.  |
| - <rackCode> ... </rackCode>                     | Rack code.  |
| - <towerNoOne> ... </tower-NoOne>                | Tower number.                                     |
| - <swingHeadOneType> ... </swingHeadOneType>     | Type of Swing Head on tower 1.                    |
| - <swingHeadOneSerial> ... </swingHeadOneSerial> | Serial number of the Swing Head on tower 1.       |
| - <towerNoTwo> ... </tower-NoTwo>                | Tower number.                                     |
| - <swingHeadTwoType> ... </swingHeadTwoType>     | Type of Swing Head on tower 2.                    |
| - <swingHeadTwoSerial> ... </swingHeadTwoSerial> | Serial number of the Swing Head on tower 2.       |
| - <devicePorts dynamic="">                       | Data on the peripheral devices connected.         |
| - <Port>   |   |
| <subtype val="" />                               | Type of the device connected to the port:         |
|  | <b>XML_PORT_DEVICE_DOS</b> = Dosing/Exchange unit |
|  | <b>XML_PORT_DEVICE_REMOTE</b> = Remote Box        |
|  | <b>XML_PORT_DEVICE_STIR</b> = Stirrer             |

|   |   |
|---|---|
| <b>- &lt;dosPortName&gt; ... &lt;/dosPortName&gt;</b>             | Number of the MSB connector the dosing device was connected to.             |
| <b>- &lt;dosType&gt; ... &lt;/dosType&gt;</b>                     | Dosing device type.   |
| <b>- &lt;dosSerial&gt; ... &lt;/dosSerial&gt;</b>                 | Dosing device serial number.  |
| <b>- &lt;exchDosUnit&gt;</b>                                      | Data on exchange/dosing unit.   |
| <b>- &lt;exdosTitle&gt; ... &lt;/exdosTitle&gt;</b>               | Designation of the exchange/dosing unit.                                    |
| <b>- &lt;exdosName&gt; ... &lt;/exdosName&gt;</b>                 | Name of the exchange/dosing unit.   |
| <b>- &lt;exdosType&gt; ... &lt;/exdosType&gt;</b>                 | Type of exchange/dosing unit.   |
| <b>- &lt;exdosOrder&gt; ... &lt;/exdosOrder&gt;</b>               | Order number of exchange/dosing unit.                                       |
| <b>- &lt;exdosSerial&gt; ... &lt;/exdosSerial&gt;</b>             | Serial number of exchange/dosing unit.                                      |
| <b>- &lt;cylVol&gt; ... &lt;/cylVol&gt;</b>                       | Cylinder volume of exchange/dosing unit.                                    |
| <b>- &lt;cylSerial&gt; ... &lt;/cylSerial&gt;</b>                 | Cylinder serial number of exchange/dosing unit.                             |
| <b>- &lt;Solution&gt;</b>   | Data on solution.   |
| <b>- &lt;solTitle&gt; ... &lt;/solTitle&gt;</b>                   | Solution title.   |
| <b>- &lt;solutionName&gt; ... &lt;/solutionName&gt;</b>           | Solution name.  |
| <b>- &lt;conc&gt; ... &lt;/conc&gt;</b>                           | Concentration.  |
| <b>- &lt;concUnit&gt; ... &lt;/concUnit&gt;</b>                   | Concentration unit.   |
| <b>- &lt;solCreationTime&gt; ... &lt;/solCreationTime&gt;</b>     | Production date.  |
| <b>- &lt;titer&gt; ... &lt;/titer&gt;</b>                         | Titer value.  |
| <b>- &lt;titerUnit&gt; ... &lt;/titerUnit&gt;</b>                 | Titer unit.   |
| <b>- &lt;titerCreationTime&gt; ... &lt;/titerCreationTime&gt;</b> | Date and time of the last titer determination.                              |
| <b>- &lt;titerMethod&gt; ... &lt;/titerMethod&gt;</b>             | Name of the method with which the last titer determination was carried out. |
| <b>&lt;/Solution&gt;</b>  |   |
| <b>&lt;/exchDosUnit&gt;</b>                                       |   |
| <b>- &lt;stirrerPortName&gt; ... &lt;/stirrerPortName&gt;</b>     | Number of the MSB connector the stirrer was connected to.                   |
| <b>- &lt;stirrerType&gt; ... &lt;/stirrerType&gt;</b>             | Type of stirrer.  |



|   |  |
|---|--|
| – <code>&lt;serialStirrer&gt; ... &lt;/serialStirrer&gt;</code>   | Serial number.   |
| – <code>&lt;remotePortName&gt; ... &lt;/remotePortName&gt;</code> | Number of the MSB connector the Remote Box was connected to. |
| – <code>&lt;remoteType&gt; ... &lt;/remoteType&gt;</code>         | Type of Remote Box.  |
| <code>&lt;/Port&gt;</code>  |  |
| <code>&lt;/devicePorts&gt;</code>                                 |  |
| <code>&lt;/Device&gt;</code>                                      |  |
| <code>&lt;/usedDevices&gt;</code>                                 |  |

#### 4.4.4.3.9 XML export - Sensor data

XML export

|   |  |
|---|--|
| – <code>&lt;usedSensors dynamic=""&gt;</code> | Sensor data  |
| – <code>&lt;Sensor&gt;</code>                 | Data on sensor.  |
| <code>&lt;subtype val="" /&gt;</code>         | Type of sensor:<br><b>XML_SENSOR_OTHER</b> = Other sensor<br><b>XML_SENSOR_PH</b> = pH sensor<br><b>XML_SENSOR_ION</b> = ISE sensor<br><b>XML_SENSOR_METAL</b> = Metal sensor<br><b>XML_SENSOR_TEMP</b> = Temperature sensor<br><b>XML_SENSOR_COND</b> = Conductivity sensor |
| – <code>&lt;sensorData&gt;</code>             | Data on sensor.  |
| <code>&lt;sensorName val="" /&gt;</code>      | Sensor name.   |
| <code>&lt;sensorType val="" /&gt;</code>      | Sensor type.   |
| <code>&lt;sensorOrderNo val="" /&gt;</code>   | Order number of sensor.  |
| <code>&lt;sensorSerialNo val="" /&gt;</code>  | Serial number of sensor.   |
| <code>&lt;sensorInitDate val="" /&gt;</code>  | Date on which the sensor was used for the first time.  |
| <code>&lt;sensorSlope val="" /&gt;</code>     | Slope of the sensor.   |
| <code>&lt;sensorPh0 val="" /&gt;</code>       | Electrode zero point of the pH sensor.   |
| <code>&lt;sensorIonVa val="" /&gt;</code>     | Ion (valency) of the ISE sensor.   |
| <code>&lt;sensorE0 val="" /&gt;</code>        | Electrode zero point of the sensor.  |
| <code>&lt;sensorC val="" /&gt;</code>         | Blank value of the ISE sensor.   |

|  |                                 |
|--|---------------------------------|
| <code>&lt;sensorCalTemp val="" /&gt;</code>      | Calibration temperature.        |
| <code>&lt;sensorCalDate val="" /&gt;</code>      | Calibration date.               |
| <code>&lt;sensorCalMethod val="" /&gt;</code>    | Calibration method.             |
| <code>&lt;sensorCalUser val="" /&gt;</code>      | User                            |
| <code>&lt;sensorCalMeasInput val="" /&gt;</code> | Measuring input at calibration. |
| <code>&lt;/sensorData&gt;</code>                 |                                 |
| <code>&lt;/Sensor&gt;</code>                     |                                 |
| <code>&lt;/usedSensors&gt;</code>                |                                 |

#### 4.4.4.3.10 XML export - Statistical data

XML export

|   |   |
|---|---|
| <code>- &lt;Statistics&gt;</code>                 | Statistical data  |
| <code>&lt;subtype val="" /&gt;</code>             |   |
| <code>&lt;nMax val="" /&gt;</code>                | Maximum number of statistically evaluated results.              |
| <code>- &lt;StatisticsShort dynamic=""&gt;</code> | Statistical data on the separate results.                       |
| <code>- &lt;data&gt;</code>                       |   |
| <code>&lt;subtype val="" /&gt;</code>             |   |
| <code>- &lt;resName&gt;</code>                    |   |
| <code>&lt;vr val="" /&gt;</code>                  | Result name.  |
| <code>&lt;vf val="" /&gt;</code>                  |   |
| <code>&lt;/resName&gt;</code>                     |   |
| <code>- &lt;n&gt; ... &lt;/n&gt;</code>           | Number of the result among the statistically evaluated results. |
| <code>- &lt;sme&gt; ... &lt;/sme&gt;</code>       | Mean value of the result.                                       |
| <code>- &lt;un&gt; ... &lt;/un&gt;</code>         | Result unit.  |
| <code>- &lt;abs&gt; ... &lt;/abs&gt;</code>       | Absolute standard deviation of the result.                      |
| <code>- &lt;rel&gt; ... &lt;/rel&gt; ...</code>   | Relative standard deviation of the result.                      |
| <code>- &lt;min&gt; ... &lt;/min&gt; ...</code>   | Minimum value of the result.                                    |
| <code>- &lt;max&gt; ... &lt;/max&gt; ...</code>   | Maximum value of the result.                                    |
| <code>&lt;/data&gt;</code>                        |   |



```

</StatisticsShort>
- <StatisticsOverview content-      Statistical data overview
  Type="table">
<subtype val="" />
- <tableHeader>                    Column headers (dynamic).
- <th>
<vr val="" />                      Column header.
</th>
</tableHeader>
- <tableBody>                      Table content (dynamic).
- <td>
<vr val="" />                      Field content.
</td>
</tableBody>
</StatisticsOverview>
</Statistics>

```

## 4.5 Determination overview

### 4.5.1 Determination overview - General

#### 4.5.1.1 Determination overview - Overview

Subwindow: **Database** ▶ **Determination overview**

##### General

The **Determination overview** subwindow shows selected data in tabular form for the determinations contained in the open database. It is always displayed in the **Database** program part, 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 **Determination overview** subwindow includes the following tools:

- *Determination table*
- *Filter selection*
- *Navigation bar*

### 4.5.1.2 Determination overview - Table

Subwindow: **Database ▶ Determination overview**

#### Data display

The information defined in the **Column display** regarding the determinations is displayed in the determination table. If the content of a field is larger than the column width, then the entire content will be shown as a **tooltip** if the mouse cursor is kept on the field.

If a result value is monitored and lies within the limits defined, then it will be shown in **green** text color. If it is outside these limits then the value will be shown in **red** text color.



#### NOTE

Lines that contain red entries will also show the line number highlighted with a red background.

#### Updating

As long as the **Database** program part remains open, changes in the determination table that are caused by ongoing determinations or by other users (adding, changing or deleting records) are not displayed automatically. The table must either be updated with **View ▶ Update** or newly sorted or filtered. The determination table is automatically updated every time a switch is made from an other program part to the **Database** program part.

#### Table view

Click on the column title to sort the table according to the selected column in either ascending or descending order. The table view can be adapted with the left 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.

#### Data record selection and table navigation

The determinations selected in the table are displayed in **turquoise**; the focused determination, the data of which is displayed in the other sub-windows, is marked with an arrow before the line number. There are various opportunities for record selection in the table.



In the determination table it is not possible to show more than 200 determinations at once. If more than 200 records are present in the database, then the Navigation bar must be used to switch to further sets of determinations.

### 4.5.1.3 Determination overview - Column display

Dialog window: **Database** ▶ **View** ▶ **Properties** ▶ **Column display...** ▶ **Column display**

**View** ▶ **Properties** ▶ **Column display...** opens the **Column display** dialog window. Here the columns that are to be shown in the determination table can be defined.

#### Available columns

Display of all the fields that can be shown as columns in the determination table.

#### Displayed columns

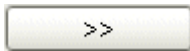
Display of all the fields that will be shown as columns in the determination table.

#### Default name

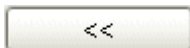
Non-editable name of the field that is displayed as a column.

#### 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.



Moves selected column upwards.



Moves selected column downwards.

#### 4.5.1.4 Determination overview - Filter selection

Subwindow: **Database ▶ Determination overview**

##### Filter

Selection of the filter with which the determination table is to be filtered:

|               |   |
|---------------|---|
| Selection     | <b>All determinations   All statistical records   Quick filter   Temporary filter   Filter name</b> |
| Default value | <b>All determinations</b>   |

##### All determinations

The table is shown unfiltered.

##### All statistical records

The table is filtered so that all determinations are shown that are statistically linked with the selected determination.

##### 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**.

##### Statistics

With the statistics filter selected here the determinations shown in the determination table can be additionally filtered according to the statistical data generated by the method independently of any other filters that may have been used.

|           |                   |
|-----------|-------------------|
| Selection | <b>All   Last</b> |
|-----------|-------------------|

##### All

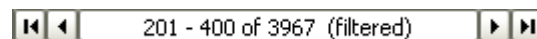
All determinations are shown for all statistics series.

##### Last

Only the last determination is shown for each statistics series.

#### 4.5.1.5 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 can no longer be displayed simultaneously. It contains the following elements:



Jump to the first set of determinations in the table.



Jump back to the previous set of determinations in the table.

201 - 400 of 3967 (filtered)

Display of the selected set ##### - ##### of determinations in the table. If the table is not filtered, then the total number of all determinations will also be shown. If the table is filtered, then the total number of filtered determinations will appear with the additional information **(filtered)**.



Jump further to the next set of determinations in the table.



Jump to the last set of determinations in the table.

#### 4.5.1.6 Determination overview - Table navigation

Subwindow: **Database ▶ Determination overview**

The vertical and the horizontal scroll bars can be used to navigate in the determination table with the mouse. In addition the following options are available with 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]

Scrolls backward within the current set.

[Page Down]

Scrolls 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 record of previous set.

**[Alt] [↓]**

Jumps to first record 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.

**4.5.1.7 Determination overview - Data record selection**

Subwindow: **Database ▶ Determination overview**

The determinations selected in the table are displayed in **turquoise**; the focused determination, the data of which is displayed in the other sub-windows, is marked with an arrow before the line number. The first determination is always selected and focused when a database is opened.

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 marked with 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 by left-clicking on them while holding down the **Ctrl key**. The last determination to be selected receives the focus.
- **All determinations**  
With **[Ctrl] [A]** or by clicking on the uppermost left-hand table cell, all the filtered determinations within the current set of determinations are selected. The focus is retained.



### 4.5.1.8 Determination overview - Functions

Subwindow: **Database ▶ Determination overview**

The following functions can be carried out with the determinations selected in the determination table:

#### Editing determinations

- *Updating the determination overview*
- *Entering a determination comment*
- *Signing determinations*
- *Exporting determinations*
- *Importing determinations*
- *Sending determinations to*
- *Reprocessing determinations*
- *Deleting determinations*

#### Searching and filtering determinations

- *Search determinations*
- *Filter determinations*


#### Other functions

- *Determination overview - Print*
- *Printing a report*
- *Displaying determination history*
- *Determinations - Control chart*
- *Determinations - Overlay curves*
- *Printing overlaid curves*
- *Printing a control chart*

## 4.5.2 Determination overview - Functions

### 4.5.2.1 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.

### 4.5.2.2 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 sub-window **Information**.

### 4.5.2.3 Searching for determinations

Dialog window: **Database ▶ Determinations ▶ Search... ▶ Search - Database**

The **Determinations ▶ Search...** menu item or the  symbol opens the **Search - Database** dialog window for the search for determinations.

#### Search in

Selection of the data field in which the search is to be carried out.

|           |                                  |
|-----------|----------------------------------|
| Selection | <b>All fields   'Field name'</b> |
|-----------|----------------------------------|

#### All fields

A search is made in all fields of the database.

#### 'Field name'

A search is made only in the selected field. The 10 most recently selected fields are always available for selection.

#### [Other...]

Open the **Search - Field selection** dialog window. All fields are listed in tree form. A field can be included in the search by highlighting it and closing the dialog window with **[OK]**.

#### Details

Depending on the data field, further list boxes are dynamically created under Details in order to be able to select the desired property.

#### Search options

#### Type

Selection of the type of format for fields in which several types are possible. Only this type will be shown for fields with a fixed type.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>Text   Date   Number</b> |
| Default value | <b>Text</b>                 |



## Operator

Selection of the comparison operator for the search criterion.

*for fields of the type = text*

|               |  |
|---------------|--|
| Selection     | =   <>   <b>empty</b>   <b>not empty</b> |
| Default value | =  |

*for fields of the type = date*

|               |   |
|---------------|---|
| Selection     | =   <>   <   <=   >   >=   <b>empty</b>   <b>not empty</b>   <b>invalid</b>   <b>out of limits</b>   <b>Today</b> |
| Default value | =   |

### **invalid**

Values with the entry **invalid** are searched for.

### **out of limits**

Values that are outside of the defined limit values for the selected fields will be searched for (values shown in red).

### **Today**

A search is made for the current date. A range in days can also be defined in the **Search term** field, according to which the search should be carried out, starting from the current date.

*for fields of the type = number*

|               |  |
|---------------|--|
| Selection     | =   <>   <   <=   >   >=   <b>empty</b>   <b>not empty</b>   <b>invalid</b>   <b>out of limits</b> |
| Default value | =  |

### **invalid**

Values with the entry **invalid** are searched for.

### **out of limits**

Values that are outside of the defined limit values for the selected fields will be searched for (values shown in red).

## Search term

Entry of the search term for the search in the selected data field. For fields where **Type = Date**, the date can be selected by pressing on [...] in the **Select date** dialog window.

*for fields of the type = text*

|           |  |
|-----------|--|
| Entry     | <b>256 characters</b><br>Definition of a text expression as a search term. The last 10 search terms are saved and can be selected. The following wildcards can be used in the search term: |
| Selection | ^?   ^#   ^\$   ^*   |

**^?**

Wildcard for any character.

**^#**

Wildcard for any digit.

**^\$**

Wildcard for any letter of the alphabet.

**^\***

Wildcard for any character string.

*for fields of the type = date*

|       |   |
|-------|---|
| Entry | <b>all possible date values</b><br>Definition of a date as search term. The last 10 search terms are saved and can be selected. |
|-------|---|

*for fields of the type = date and operator = today*

|               |   |
|---------------|---|
| Input range   | <b>-9,999 - 9,999</b>   |
| Default value | <b>0</b><br>Definition of a numerical value as a range in days in which, starting from the current date, the search is to be carried out. The last 10 search terms are saved and can be selected. |

*for fields of the type = number*

|       |   |
|-------|---|
| Entry | <b>all possible numerical values</b><br>Definition of a numerical value as search term. The last 10 search terms are saved and can be selected. |
|-------|---|

**Search direction**

Selection of the search direction.

|               |                        |
|---------------|------------------------|
| Selection     | <b>All   Down   Up</b> |
| Default value | <b>All</b>             |

**All**

A search is made down to the end of the database and then again from above down to the selected record.

**Down**

A search is made to the end of the database.

**Up**

A search will be made to the beginning of the database.

**Match case****on | off** (Default value: **off**)If this check box is activated, then the search in fields of the **Text** type is case-sensitive.



## Search for whole word only

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

If this check box is activated, then the field contents must be identical with the search term during searches in **Text** fields (no part-search).

### [Find next]

Search next occurrence of the search term.

## 4.5.2.4 Filtering determinations

### 4.5.2.4.1 Filtering determinations - Overview


Subwindow: **Database ▶ Determination overview**

The following possibilities exist for filtering determinations in the determination table:

- *Filter selection in the filter bar*
- *Quick filter*
- *Special filter*
- *Last filter*
- *Remove filter*


### 4.5.2.4.2 Determinations - Last filter

Menu item: **Database ▶ Determinations ▶ Filter ▶ Last filter**

The most recently used filter is reactivated with the **Determinations ▶ Filter ▶ Last filter** menu item or the  symbol.

### 4.5.2.4.3 Determinations - Quick filter

Menu item: **Database ▶ Determinations ▶ Filter ▶ Quick filter**

The **Determinations ▶ Filter ▶ Quick filter** menu item or the  symbol can be used to carry out a quick filtering for the content of the selected tabular field. After this function has been selected, the field in the determination table in which the cursor is located will have a colored background during navigation. At the same time, the following special filter symbol appears:



By double-clicking with the left mouse button you can set the content of the selected field as filter criterion and apply it directly to the table.



#### NOTE

The quick filter can be applied again within the filtered table, so that the number of entries can be limited step by step.

#### 4.5.2.4.4 Determinations - Special filter

Dialog window: **Database ▶ Determinations ▶ Filter ▶ Special filter... ▶ Special filter - Database "Database name"**

The **Determinations ▶ Filter ▶ Special filter...** menu item or the  symbol is used to open the **Special filter - Database** dialog window for defining user-specific filters.

#### Filter

Selection of the filter to be loaded for editing.

|               |                                   |
|---------------|-----------------------------------|
| Selection     | <b>'Filter name'   New filter</b> |
| Default value | <b>New filter</b>                 |

#### **'Filter name'**

The saved filter is loaded.

#### **New filter**

An empty table with the name **New filter** is loaded.

#### [Save filter]

Opens the **Save filter** dialog window in which the filter criteria entered in the table can be saved as a special filter under the required name.

#### [Delete filter]

The currently loaded special filter is deleted.

#### Table view

The overview table shows all the defined filter criteria and cannot be directly edited. The filter criteria will be numbered automatically in sequence. The table view can be adapted with the left 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 content of a field is larger than the column width, then the entire content 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 **[Edit]** menu beneath the filter table contains the following menu items:




|                        |   |
|------------------------|---|
| <b>Edit line</b>       | Opens the <b>Edit filter criterion</b> dialog window in which the filter criterion of the line selected in the table can be edited. |
| <b>Insert new line</b> | Inserts a new empty line above the line selected in the table. The <b>Edit filter criterion</b> dialog window opens automatically.  |
| <b>Cut lines</b>       | Transfers the selected lines to the clipboard.  |
| <b>Copy lines</b>      | Copies the selected lines to the clipboard.   |
| <b>Insert lines</b>    | Pastes lines from the clipboard above the selected line.  |
| <b>Delete lines</b>    | Deletes the selected lines.   |

**[Apply filter]**

Applies filter criteria to the determination table.

**4.5.2.4.5 Determinations - All statistical records**

Menu item: **Database ▶ Determinations ▶ Filter ▶ All statistical records**

With the **Determinations ▶ Filter ▶ All statistical records** menu item or the  symbol all determinations statistically linked with the selected determination are displayed.

**4.5.2.4.6 Determinations - Deleting a filter**

Menu item: **Database ▶ Determinations ▶ Filter ▶ Delete filter**

With the **Determinations ▶ Filter ▶ Delete filter** menu item or the  symbol the most recently used filter will be deleted and all determinations will be displayed.

**4.5.2.4.7 Determinations - Saving a filter**

Dialog window: **Database ▶ Determinations ▶ Filter ▶ Special filter... ▶ Special filter - Database "Database name" ▶ [Save filter] ▶ Save filter**

The **[Save filter]** button in the **Special filter - Database "Database name"** dialog window opens the **Save filter** dialog window 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 the filter under the given name.

**NOTE**

The filters are saved globally in the configuration database and are therefore available for all clients.

#### 4.5.2.4.8 Determinations - Editing the filter criterion

Dialog window: **Database ▶ Determinations ▶ Filter ▶ Special filter ▶ Special filter - Database "Database name" ▶ [Edit] ▶ Edit line ▶ Edit filter criterion 'Filter name'**

The **Edit ▶ Edit line** command in the **Special filter - Database "Database name"** dialog window opens the **Edit filter criterion #** dialog window, in which the filter criterion selected in the filter table can be edited.

##### Link

Selection of the type of link (logical operator) with the preceding filter criterion.

|               |                 |
|---------------|-----------------|
| Selection     | <b>AND   OR</b> |
| Default value | <b>AND</b>      |

##### AND

Logical "AND" link.

##### OR

Logical "OR" link.

##### Field

Selection of the data field for which a criterion is to be formulated.

|           |   |
|-----------|---|
| Selection | <b>'Field name'</b><br>Filtering is carried out only for the selected field. The 10 most recently selected fields are always available for selection. |
|-----------|---|

##### [Other...]

Open the **Filter - Field selection** dialog window. Herein all fields that can be used for filtering are listed in tree form. A field can be included by highlighting it and closing the dialog window with **[OK]**.

##### Details

Depending on the data field, further list boxes are dynamically created under Details in order to be able to select the desired property.



## Condition

### Type

Selection of the type of format for fields in which several types are possible. Only this type will be shown for fields with a fixed type.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>Text   Number   Date</b> |
| Default value | <b>Text</b>                 |

### Operator

Selection of the comparison operator for the filter criterion.

*For fields of the type = text*

|               |                     |
|---------------|---------------------|
| Selection     | <b>=   &lt;&gt;</b> |
| Default value | <b>=</b>            |

*For fields of the type = date*

|               |   |
|---------------|---|
| Selection     | <b>=   &lt;&gt;   &lt;   &lt;=   &gt;   &gt;=   Today</b> |
| Default value | <b>=</b>  |

#### Today

A search is made for the current date. In the **Comparative value** field, a range in days can also be defined, according to which filtration should be carried out, starting from the current date.

*For fields of the type = number*

|               |   |
|---------------|---|
| Selection     | <b>=   &lt;&gt;   &lt;   &lt;=   &gt;   &gt;=   empty   not empty   invalid   out of limits</b> |
| Default value | <b>=</b>  |

#### invalid

Values with the entry **invalid** are filtered for.

#### out of limits

Values that are outside of the defined limit values for the selected fields are 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 on [...] in the **Select date** dialog window.

*For fields of the type = text*

|       |  |
|-------|--|
| Entry | <b>256 characters</b><br>Definition of a text expression as comparative value.<br>* can be used as a wildcard for any string of characters if the option <b>Use asterisk (*) as wildcard</b> is enabled. |
|-------|--|

*For fields of the type = date*

|       |   |
|-------|---|
| Entry | <b>all possible date values</b><br>Definition of a date as comparative value. |
|-------|---|

*For fields of the type = date and operator = today*

|               |  |
|---------------|--|
| Input range   | <b>-9,999 - 9,999</b>  |
| Default value | <b>0</b><br>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 | <b>all possible numerical values</b><br>Definition of a numerical value as comparative value. |
|-------|---|

## Match case

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

If this check box is activated, then the filtering of fields of the **Text** type is case-sensitive.

## Use asterisk (\*) as wildcard

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

If this check box is activated then the asterisk \* can be used as a wildcard for any character strings when filtering **Text**-type fields.

### 4.5.2.5 Signing determinations

#### 4.5.2.5.1 Rules for electronic signatures

Program part: **Database**

In tiBase, determinations can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**  
Determinations can be signed at two levels (signature level 1 and signature level 2) by entering the user name and a password.
- **Multiple signing**  
Determinations can be signed several times at each level.
- **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 cannot be signed unless there are already signatures on level 1.
- **Different users**  
The same user may not sign on both level 1 and level 2.



- **Reason and comment**  
Each signature must be accompanied by a reason selected from predefined default reasons. An additional comment can also be entered.
- **Saved data**  
Signature date, user name, full name, reason and comment are saved for each signature.
- **Deleting signatures 1**  
Signatures at level 1 are automatically deleted when a new version is created.
- **Deleting signatures 2**  
Signatures at level 2 can be deleted by users who have the respective permission.
- **Signature options**  
The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

#### 4.5.2.5.2 Signature level 1

**Dialog window: Database ▶ Determinations ▶ Sign ▶ Signature 1... ▶ Signature level 1**

Determinations can be signed at level 1 in the **Signature level 1** window.



#### NOTE

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

#### Info

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

| Selection | <b>Signature possible   Signature 1 not possible (signature 2 exists)   Signature not possible (access by other client)   Signature not possible for multiple determinations</b> |
|-----------|--|
|-----------|--|

#### **Signature possible**

The selected determination can be signed.

#### **Signature 1 not possible (signature 2 exists)**

The selected determination can no longer be signed at level 1 as it has already been signed at level 2.

**Signature not possible (access by other client)**

The selected determination cannot be signed as it is already marked to be signed on a different client.

**Signature not possible for multiple determinations**

Several determinations have been selected; they may, however, only be signed individually.

**User**

Entry of the user name (short name).

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

**Password**

Entry of the password.

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

**Reason**

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

|           |   |
|-----------|---|
| Selection | <b>Selection from the default reasons</b> |
|-----------|---|

**Comment**

Entry of a comment on the signature.

|       |                         |
|-------|-------------------------|
| Entry | <b>1,000 characters</b> |
|-------|-------------------------|

**[Sign]**

Sign the determination. The window remains open.

**NOTE**

Determinations can only be signed at level 1 if the user belongs to a user group with the respective permission.

**4.5.2.5.3 Signature level 2**

**Dialog window: Database ▶ Determinations ▶ Sign ▶ Signature 2... ▶ Signature level 2**

Determinations can be signed at level 2 in the **Signature level 2** window.

**NOTE**

Determinations signed at level 2 are **locked**, i.e. they can be neither modified nor deleted. In order to be able to edit such 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 | <b>Signature possible   Signature 2 not possible (signature 1 missing)   Signature not possible (access by other client)</b> |
|-----------|--|

**Signature possible**

The selected determination can be signed.

**Signature 2 not possible (signature 1 missing)**

The selected determination cannot be signed at level 2, as it has not yet been signed at level 1.

**Signature not possible (access by other client)**

The selected 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 | <b>24 characters</b> |
|-------|----------------------|

**Password**

Entry of the password.

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

**Reason**

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

|           |   |
|-----------|---|
| Selection | <b>Selection from the default reasons</b> |
|-----------|---|

**Comment**

Entry of a comment on the signature.

|       |                         |
|-------|-------------------------|
| Entry | <b>1,000 characters</b> |
|-------|-------------------------|

**[Sign]**

Sign the determination. The window remains open.

**NOTE**

Determinations can only be signed at level 2 if the user belongs to a user group with the respective permission.

#### 4.5.2.5.4 Displaying determination signatures

Dialog window: **Database ▶ Determinations ▶ Sign ▶ Display signatures... ▶ Signatures - Determination 'Determination ID'**

The **Determinations ▶ Sign ▶ Show signatures...** menu item opens the **Signatures - Determination 'Determination ID'** window with a table in which the information for all of the signatures for the selected determinations is displayed.

##### 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.

#### 4.5.2.5.5 Deleting signatures Level 2

Dialog window: **Database ▶ Determinations ▶ Sign ▶ Delete signatures 2... ▶ Delete Signatures Level 2**

The **Delete Signatures Level 2** window allows you to delete all of the signatures on level 2 for the selected method or determination.

##### User

Entry of the user name (short name).

---

Entry **24 characters**

---

**Password**

Entry of the password.

|       |                      |
|-------|----------------------|
| Entry | <b>24 characters</b> |
|-------|----------------------|

**Reason**

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

|           |   |
|-----------|---|
| Selection | <b>Selection from the default reasons</b> |
|-----------|---|

**Comment**

Entry of a comment on the signature.

|       |                         |
|-------|-------------------------|
| Entry | <b>1,000 characters</b> |
|-------|-------------------------|

**[Delete]**

Delete signatures 2.

**NOTE**

Signatures 2 can only be deleted if the user belongs to a user group with the respective permission.

**4.5.2.6 Determinations - Reprocessing****4.5.2.6.1 Reprocessing - General**

Dialog window: **Reprocessing**


**Reprocessing determinations**

The determinations saved in the database can be reprocessed at any time. The variables, methods, statistics and curve evaluation can be modified and the results recalculated. The reprocessed determination can then be saved in the database as a new version.

**NOTE**

Determinations signed at level 2 can no longer be reprocessed.

**Opening the reprocessing window**

The reprocessing of determinations that have been selected in the **Determination overview** subwindow takes place in the independent **Reprocessing** dialog window, which is opened with **Determinations ► Reprocess...** or the  symbol. When the window is opened, the first of the selected determinations is always shown by default.

### Closing the reprocessing window

The **Reprocessing** dialog window is closed with **[OK]**, **[Cancel]** or with the Windows button for closing.



#### NOTE

The reprocessing window cannot be closed while the recalculation process is still running.

#### 4.5.2.6.2 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:

- *Modifications*  
Modification of variables, method, statistics, curve evaluation
- *Result view*  
Shows the current results

##### Functions

If determinations have been modified in the **Modifications** subwindow, then the following functions can be triggered:

#### [Recalculate]

Recalculates the selected determination(s) with the modifications on variables, method, statistics or curve evaluation made in the **Modifications** subwindow.

A progress bar is shown during recalculation. Recalculation can be aborted by clicking on next to the progress bar. The results of this recalculation are entered automatically in the **Result view** subwindow.

This button is disabled as long as no modifications have been made. After the recalculation further data can be modified and then recalculation triggered again.

#### [Reset]

Reset all modifications that were made but not yet saved during reprocessing to the original data and results.

This button is disabled for as long as no modifications have been made or when the recalculation has not yet been triggered.

**[OK]**

Close the **Reprocessing** dialog window. Each determination that has been modified by reprocessing will be saved as a new version with a version number increased by **+1**.

This button is disabled for as long as reprocessing has not yet been triggered and if not all of the selected determinations were able to have been recalculated.

**[Cancel] or **

Close the **Reprocessing** dialog window. The result of the reprocessing made since the last saving will not be saved.

**NOTE**

If the **Comment on modification of determinations** option is enabled under **Configuration ▶ Tools ▶ Security settings ▶ Audit Trail/Modifications**, the **Modification comment determination** dialog window is displayed before saving.

**4.5.2.6.3 Recalculation rules**

Dialog window: **Reprocessing**

The following rule applies for recalculating the selected and modified determinations:

With measuring commands (DET, MET, SET, KFT, KFC, BRC, MEAS, CAL MEAS) only the evaluations with existing data will be recalculated. All other parameters will be ignored.

**4.5.2.6.4 Modifications****4.5.2.6.4.1 Modifications - Overview**

Subwindow: **Database ▶ Determination overview ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Modifications**

In the subwindow **Modifications** of the dialog window **Reprocessing** modifications can be made on the following 4 tabs:

- *Variables*  
Modification of the variables used in the selected determination.
- *Calculations*  
Selected determinations will be recalculated.
- *Statistics*  
Modification of statistics data.  
The tab **Statistics** will only be shown when the last determination (and only this one) is selected from a set of determinations which, because of the statistics defined in the method, belong together.

- *Curve evaluation*  
Manual modification of the curve evaluation.  
The tab **Curve evaluation** is only shown when a single determination is selected that contains curves that can be evaluated.

#### 4.5.2.6.4.2 Modifications - Variables

Tab: **Database** ▶ **Determination overview** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Modifications** ▶ **Variables**

On the tab **Variables** the variables used in the determination can be modified.

##### Variable table

The variable table shows those variables used that are present in all the selected determinations and cannot be edited directly. With a click on the column title (columns **Variable**, **Value**) the table can be sorted according to the selected column in increasing or decreasing order.

##### Variable

Shows the name of the variable. Only the those variables are displayed which are available in all the selected determinations and can be edited. These include: the method variables **FCT** (factor) and **DIV** (divisor), the sample data variables **C00** (sample size), **ID1** and **ID2** (sample identification), the common variables CV01 to CV25 as well as the following command variables:

- **1M.TITER**  
Titer value of the solution used in the command.
- **1M.CONC**  
Concentration of the solution used in the command.

##### Value

Display of the variable value. If a fixed value is defined for a variable, the value will be presented *in italics*.

##### [Modify]

Open the dialog window **Modify variable** to modify the value of an existing variable.

**NOTE**

If a variable is modified, then with **[Recalculate]** all the selected determinations will be recalculated with the new value. If one variable is not modified then when several determinations are recalculated the original value of the variable will be used (i.e. variables with the same name but different values will not be overwritten until they are deliberately modified).

**4.5.2.6.4.3 Modifications - Calculations**

Tab: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Modifications ▶ Calculations**

**Table with calculations**

The table contains details on the calculations.


**Result variable**

Variable, which is automatically generated by the program during the evaluation or by the results defined by the user.

**Result name**

Name of the result. This name will be shown in the result view as well as in the report. The result name can be used in further calculations as variable **RS.Result name.VAL**.

**Formula**

Calculation formula which can be generated after pressing  in the formula editor.

Formula lines can be deleted according to normal rules (**[Delete]**), copied (**[Ctrl+C]**), cut (**[Ctrl+x]**) and be pasted (**[Ctrl+v]**)

|               |                        |
|---------------|------------------------|
| Entry         | <b>1000 characters</b> |
| Default value | <b>empty</b>           |

**Unit**

Unit of the result for the output (text only). The unit can be used in further calculations as variable **'RS.Result name.UNI'**.

|               |                      |
|---------------|----------------------|
| Entry         | <b>16 characters</b> |
| Default value | <b>empty</b>         |

**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   | <b>0 - 5</b> |
| Default value | <b>2</b>     |

### Assignment

Assign a result to a defined result column **RS01 ... RS25**. This order specifies in which of the 25 available result columns in the determination overview the result is being added to. Per calculation the result columns **RS01 ... RS25** are available. Only the columns still free are made available. With **none** the result will not be assigned to any column.

|               |                    |
|---------------|--------------------|
| Input range   | <b>RS01 - RS25</b> |
| Default value | <b>none</b>        |

### Statistics

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

If this check box is activated, the mean value and the absolute and relative standard deviation are calculated for the result. This field is only active when the statistics is enabled in the method of the imported determination (i.e. the statistics can only then be disabled and enabled again, if it has already been enabled in the method).

### Description

Freely selectable description of the result.

|               |                        |
|---------------|------------------------|
| Entry         | <b>1000 characters</b> |
| Default value | <b>empty</b>           |

### Functions

#### [New]

Opens the dialog window **Result 'Resultname' - RS#** (see Chapter 4.5.2.6.4.7, page 248). A maximum of 81 result calculations can be generated. Afterwards, the button **[New]** will be disabled.

#### [Delete]

Deletes the selected calculations from the table.

#### [Properties]

Opens the dialog window **Result 'Result name' - RS#** in order to edit calculations selected in the table (see Chapter 4.5.2.6.4.7, page 248).

#### 4.5.2.6.4.4 Modifications - Statistics

Tab: **Database** ▶ **Determination overview** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Modifications** ▶ **Statistics**

On the tab **Statistics** the single results for the statistics calculation can subsequently be switched on and off.



## Results with statistics

### Result name

Selection of the statistically evaluated result by using the result name for which the single results of all determinations are shown.

| Selection | Result name |
|-----------|-------------|
|-----------|-------------|

### Table of single results

For the result selected above the following data for the individual determinations is shown:

### Determination start

Shows the date and time at which the determination was started.

### Version

Shows the version number of the determination.

### Sample size

Shows the sample size.

### Result value

Shows the result value. The statistics data (mean value, standard deviations, etc.) for the selected determination are listed in the subwindow

#### **Result view**

### [Determination on/off]

All single results of the selected determination for statistical calculations can be switched off or on. If the determination is switched off then an asterisk (\*) appears behind all result values in the table and the line is shown as inactive (gray); if it is switched on again then the asterisks will disappear. However, updating the statistics data always only takes place with **[Recalculate]**.

### [Result on/off]

Switch the selected single result for the statistical calculations off or on. If the result is switched off, an asterisk (\*) appears behind the result value, if it is switched on again, the asterisk disappears. However, updating the statistics data always only takes place with **[Recalculate]**.

**NOTE**

If the results of a determination are switched off, the statistics for these results will be switched off when this determination is recalculated, i.e. no data for the mean value and standard deviations will be shown. However, the determinations remain statistically linked to each other so that the results can also be switched on again.

**4.5.2.6.4.5 Modify variable**

Dialog window: **Reprocessing** ▶ **Modifications** ▶ **Variables** ▶ **[Modify]** ▶ **Modify variable**

In the dialog window **Modify variable** the value of the selected variable is modified.

**Variable**

Shows the name of the variable.

**Value**

Value of the variables. With variables of the type **Date** the date must be entered in the dialog window (see *Chapter 2.5.1, page 72*).

|             |   |
|-------------|---|
| Input range | <b>-1.0 E+99 - 1.0 E+99 (max. 15 digits)</b><br>(for <b>Type = Number</b> ) |
|-------------|---|

|       |  |
|-------|--|
| Entry | <b>100 characters</b><br>(for <b>Type = Text</b> ) |
|-------|--|

|           |   |
|-----------|---|
| Selection | <b>'Date'</b><br>(for <b>Type = Date/Time</b> ) |
|-----------|---|

**4.5.2.6.4.6 Curve evaluation****4.5.2.6.4.6.1 Modifications - Curve evaluation**

Tab: **Database** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Modifications** ▶ **Curve evaluation**

On the tab **Curve evaluation** the curves that can be manually evaluated are displayed.

**Command name**

Selection of the measuring command (**command name.index - command type**) for which the curve is to be shown for reprocessing.

|           |                     |
|-----------|---------------------|
| Selection | <b>Command name</b> |
|-----------|---------------------|

**[Edit]**

The dialog window **Curve evaluation** opens for manually reprocessing the curve evaluation.

**4.5.2.6.4.6.2 Edit curve evaluation**

Dialog window: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Modifications ▶ Curve evaluation ▶ [Edit] ▶ Curve evaluation**

In the dialog window **Curve evaluation** the evaluation of the selected curve can be reprocessed manually.

In the curve those EP's are indicated, which have values for the dimensions of the x and y axis, i.e. manually set EP's are possibly not indicated.

**Command name**

| Selection | Command name |
|-----------|--------------|
|-----------|--------------|

**Command name**

Selection of the measuring command for which the curve is to be shown for reprocessing.

**Toolbar**

The toolbar above the curve contains symbols for the following functions for re-evaluation of the curve:

**Set EP manually**

By moving the mouse a point on the curve is selected. The current X and Y values are shown graphically with a blue cross hair and numerically above the curve in the fields **X** and **Y**. A new endpoint can be set by clicking with the left mouse button. This function is activated as standard when the window **Curve evaluation** is opened.

**Set EP with intersection lines**

By moving the mouse a point on the curve is selected to which the tangent is automatically applied. The first tangent is set by clicking the left mouse button. The mouse is then used to select a second point to which the second tangent is to be applied. The second tangent is set with clicking the left mouse button and at the same time a new endpoint is set at the point where both tangents intersect.



### Set EP with parallel tangents

By moving the mouse a point on the curve is selected to which the tangent is automatically applied. At the same time a tangent parallel to it is applied to the other leg of the curve. The two tangents are set with a click of the left mouse button and at the same time a new endpoint is set at the intersection of the middle line of the two tangents with the curve.



#### NOTE

If new endpoints are set manually or by intersection or tangent evaluation or if existing endpoints are deleted then the endpoints will always be renumbered from left to right. During recalculation the automatic evaluations will generally no longer be used for curves, i.e. the endpoints defined in the curve evaluation are retained.



### Set horizontal auxiliary lines

By moving the mouse a horizontal auxiliary line is drawn in the graph; this can be set by clicking the left mouse button. This function is only active when under **Curve evaluation ▶ Properties ▶ Properties - Curves 1 ▶ Options** the option **Show evaluation lines** is enabled.



### Set vertical auxiliary lines

By moving the mouse a vertical auxiliary line is drawn in the graph; this can be set by clicking the left mouse button. This function is only active when under **Curve evaluation ▶ Properties ▶ Properties - Curves 1 ▶ Options** the option **Show evaluation lines** is enabled.



### Delete endpoints and auxiliary lines

With the context-sensitive menu item **Delete EP#** the selected endpoint can be deleted, with **Delete ###.###** the selected auxiliary line can be deleted.



### Zooming

By drawing out a rectangle with the left mouse button the selected area can be zoomed.



### Reset zoom

The graph will be reset to zoom level 100%.



### Copy to clipboard

The content of the curve window is copied to the clipboard.



### Define properties for the graph display

The dialog window **Properties - Curves #** is opened for graph display. The curve properties defined for each command type are saved for the reprocessing window per client.



### Show EP list

The dialog window **Endpoints** is opened in which all endpoints of the selected curve are displayed in a table. If an endpoint is added to or deleted from the curve then the table will be updated automatically.

### Show coordinates

The current coordinates of the cursor are shown in the coordinate display:

**X:**


X-coordinate.

**Y:**

Y-coordinate.

#### 4.5.2.6.4.6.3 Curve evaluation - Endpoint list

Dialog window: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Modifications ▶ Curve evaluation ▶ [Edit] ▶ Curve evaluation ▶ Show EP list ▶ Endpoints**

The dialog window **Endpoints** opened with the icon  shows all automatically found and manually set endpoints of the selected curve in tabular form. The endpoints are sorted according to ascending volume, if an endpoint is deleted from or added to the curve then the table will be updated automatically.

### Endpoint

Designation of the endpoint with number. The following names are possible:

| Selection | EP#   |
|-----------|---|
|           | <b>EP#</b>  |
|           | Endpoint that has been determined automatically by potentiometric evaluation or set manually by using the intersection or tangent method. |
| Selection | BP#   |
|           | <b>BP#</b>  |
|           | Endpoint that has been determined by automatic break point evaluation.  |
| Selection | FP#   |

**FP#**

Endpoint that has been determined by automatic fixed point evaluation.

**Volume**

Volume value in mL for endpoint.

**Measured value**

Measured value (pH) for endpoint.

**ERC**

ERC value for the endpoint.

**Time**

Time for the endpoint.

**Temperature**

Temperature for the endpoint.

**NOTE**

Manually set endpoints only have two measured quantities, for the other measured quantities **invalid** is entered.

**[Delete]**

Delete selected endpoint.

**[Exit]**

Close dialog window.

**4.5.2.6.4.6.4 Curve evaluation - Properties****4.5.2.6.4.6.4.1 Properties curve evaluation - Overview**

Dialog window: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Curve evaluation ▶ [Edit] ▶ Curve evaluation ▶ Icon 'Properties and Graphical display' ▶ Properties - 'Curve #'**

The properties of the curve display in the dialog window **Properties - 'Curve #'** can be set on the following 4 tabs:

- *x axis*  
Parameters for the graphical display of the curves on the x axis.
- *y axis*  
Parameters for the graphical display of the curves on the left y axis.
- *y2 axis*  
Parameters for the graphical display of the curves on the right y axis.



- *Options*  
Options for graphical display of curves.

#### 4.5.2.6.4.6.4.2 Properties curve evaluation - x axis

Tab: **Database** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Curve evaluation** ▶ **[Edit]** ▶ **Curve evaluation** ▶ **Properties** ▶ **x axis**

On the tab **x axis** the parameters for the graphical display of the curves on the x axis can be set.

#### Command type

Shows the type of command for which the curve properties can be defined. The curve properties defined for each command type for the reprocessing window are saved per client.

#### Autoscaling

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

#### Size

| Selection | Command-dependent selection                          |
|-----------|--|
|           | <b>Command-dependent selection</b>                   |
|           | Selection of the quantity to be shown on the x axis. |

#### Label

Freely definable axis label for the x axis.

| Selection     | 50 characters   auto                                     |
|---------------|--|
| Default value | <b>auto</b>  |
|               | <b>auto</b>  |
|               | The designation from the field <b>Size</b> will be used. |

#### Scaling

Fixed scaling of the x axis between the start value and the end value.

#### Start value

Initial value for scaling the x axis.

*Only editable when the option Autoscaling is disabled.*

|               |                         |
|---------------|-------------------------|
| Input range   | <b>-1.0E12 - 1.0E12</b> |
| Default value | <b>0</b>                |

#### End value

End value for scaling the x axis.

*Only editable when the option Autoscaling is disabled.*

|               |                         |
|---------------|-------------------------|
| Input range   | <b>-1.0E12 - 1.0E12</b> |
| Default value | <b>1000</b>             |

#### 4.5.2.6.4.6.4.3 **Properties curve evaluation - y axis**

Tab: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Curve evaluation ▶ [Edit] ▶ Curve evaluation ▶ Properties ▶ y axis**

On the tab **y axis** the parameters for the graphical display of the curves on the y axis (left y axis) can be set.

#### **Command type**

Shows the type of command for which the curve properties can be defined. The curve properties defined for each command type for the reprocessing window are saved per client.

#### **Autoscaling**

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

#### **Size**

|           |                                    |
|-----------|------------------------------------|
| Selection | <b>Command-dependent selection</b> |
|-----------|------------------------------------|

#### **Command-dependent selection**

Selection of the quantity to be shown on the y axis.

#### **Label**

Freely definable axis label for the y axis.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>50 characters   auto</b> |
| Default value | <b>auto</b>                 |

#### **auto**

The designation from the field **Size** will be used.

#### **Scaling**

Fixed scaling of the y axis between the start value and the end value.

#### **Start value**

Initial value for scaling the y-axis.

*Only editable when the option Autoscaling is disabled.*

|               |                         |
|---------------|-------------------------|
| Input range   | <b>-1.0E12 - 1.0E12</b> |
| Default value | <b>0</b>                |



## End value

End value for scaling the y-axis.

*Only editable when the option Autoscaling is disabled.*

|               |                         |
|---------------|-------------------------|
| Input range   | <b>-1.0E12 - 1.0E12</b> |
| Default value | <b>1000</b>             |

## Curve

### Curve color

Selection of the color for the curve line.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   blue</b> |
| Default value | <b>blue</b>             |

### Symbol

Selection of the symbol for the display of the individual measuring points.

|               |                              |
|---------------|------------------------------|
| Selection     | <b>5 symbols   No symbol</b> |
| Default value | <b>No symbol</b>             |

#### No symbol

Measuring points are not shown.



#### NOTE

With curves, for which the distance between to measuring points is smaller than 5 pixels, the separate measuring points are not displayed anymore, even if a symbol has been selected. In this case, the graphics window can eventually be enlarged in order to display the symbols again.

### Symbol color

Selection of the color for the measuring point symbol.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   blue</b> |
| Default value | <b>blue</b>             |

## Smoothing

### Smoothing

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

Switches smoothing on/off for the curve.

### Smoothing factor x axis

Factor for smoothing on the x axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

### Smoothing factor y-axis

Factor for smoothing on the y axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

### Show with original curve

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

If this check box is activated, then the original curve (solid line, same color) will be shown in addition to the smoothed curve (dotted line).

#### 4.5.2.6.4.6.4.4

### Properties curve evaluation - y2 axis

Tab: **Database** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Curve evaluation** ▶ **[Edit]** ▶ **Curve evaluation** ▶ **Properties** ▶ **y2 axis**

On the tab **y2 axis** the parameters for the graphical display of the curves on the y2 axis (right y axis) can be set.

### Command type

Shows the type of command for which the curve properties can be defined. The curve properties defined for each command type for the reprocessing window are saved per client.

### Autoscaling

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

### Size

|               |  |
|---------------|--|
| Selection     | <b>Command-dependent selection   off</b> |
| Default value | <b>off</b>                               |

#### Command-dependent selection

Selection of the quantity to be shown on the y2 axis.

### Label

Freely definable axis label for the y2 axis.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>50 characters   auto</b> |
| Default value | <b>auto</b>                 |

#### auto

The designation from the field **Size** will be used.



## Curve

### Curve color

Selection of the color for the curve line.

|               |                        |
|---------------|------------------------|
| Selection     | <b>13 colors   red</b> |
| Default value | <b>red</b>             |

### Symbol

Selection of the symbol for the display of the individual measuring points.

|               |                              |
|---------------|------------------------------|
| Selection     | <b>5 symbols   No symbol</b> |
| Default value | <b>No symbol</b>             |

#### No symbol

Measuring points are not shown.



#### NOTE

With curves, for which the distance between to measuring points is smaller than 5 pixels, the separate measuring points are not displayed anymore, even if a symbol has been selected. In this case, the graphics window can eventually be enlarged in order to display the symbols again.

### Symbol color

Selection of the color for the measuring point symbol.

|               |                        |
|---------------|------------------------|
| Selection     | <b>13 colors   red</b> |
| Default value | <b>red</b>             |

## Smoothing

### Smoothing

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

Switches smoothing on/off for the curve.

### Smoothing factor x axis

Factor for smoothing on the x axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

### Smoothing factor y-axis

Factor for smoothing on the y axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

#### 4.5.2.6.4.6.4.5 **Properties curve evaluation - Options**

Tab: **Database** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Curve evaluation** ▶ **[Edit]** ▶ **Curve evaluation** ▶ **Properties** ▶ **Options**

On the tab **Options** the parameters for the graphical display of the curves can be set.

#### **Command type**

Shows the type of command for which the curve properties can be defined. The curve properties defined for each command type for the reprocessing window are saved per client.

#### **Autoscaling**

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

#### **Display grid**

#### **Display grid**

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

If this check box is activated then a grid will be shown against the background.

#### **Grid type**

Selection of the type of grid line.

|           |                     |
|-----------|---------------------|
| Selection | <b>5 line types</b> |
|-----------|---------------------|

#### **Grid color**

Selection of the grid line color.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   gray</b> |
| Default value | <b>gray</b>             |

#### **Background**

#### **Background color**

Selection of the color for the curve background.

|               |                          |
|---------------|--------------------------|
| Selection     | <b>13 colors   white</b> |
| Default value | <b>white</b>             |



## Show endpoints

### Show endpoints

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

If this check box is activated then the endpoints found will be shown on the curve by the symbol **◆** and labeled with **EP#** (potentiometric end-point), **BP#** (break point), **FP#** (fixed endpoint), **HP** (HNP), **MI** (minimum value) or **MA** (maximum value).

### Automatic EPs

Selection of the color for automatically set endpoints.

|               |                          |
|---------------|--------------------------|
| Selection     | <b>13 colors   black</b> |
| Default value | <b>black</b>             |

### Manual EPs

Selects the color for manually set endpoints.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   pink</b> |
| Default value | <b>pink</b>             |

## Show evaluation lines

### Show evaluation lines

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

If this check box is activated the evaluation lines (tangents, auxiliary lines) will be shown.

### Tangents

Selection of the color for the tangents and auxiliary lines.

|               |                                |
|---------------|--------------------------------|
| Selection     | <b>13 colors   light green</b> |
| Default value | <b>light green</b>             |

### Auxiliary lines

Selection of the color for the auxiliary lines.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   blue</b> |
| Default value | <b>blue</b>             |

#### 4.5.2.6.4.7 Result Result name

Dialog window: **Database ▶ Determination ▶ Reprocessing ▶ Modifications ▶ Calculations ▶ [New]/[Properties] ▶ Result 'Result name' - RS##**

In the dialog window **Result Result name - RS##** results and their properties can be edited.

The dialog window consists of the following two tabs:

#### 4.5.2.6.4.7.1 Definition

Tab: **Database ▶ Determinations ▶ Reprocessing ▶ Modifications ▶ Calculations ▶ [New]/[Properties] ▶ Result 'Result name' - RS## ▶ Definition**

#### Result variable


Variable, which is automatically generated by the program during the evaluation or by the results defined by the user.

#### Result name

Name of the result. This name will be shown in the result view as well as in the report. The result name can be used in further calculations as variable **RS.Result name.VAL**.

|               |                      |
|---------------|----------------------|
| Entry         | <b>50 characters</b> |
| Default value | <b>empty</b>         |

#### Formula

Calculation formula which can be generated after pressing  in the formula editor.

Formula lines can be deleted according to normal rules (**[Delete]**), copied (**[Ctrl+C]**), cut (**[Ctrl+x]**) and be pasted (**[Ctrl+v]**)

|               |                        |
|---------------|------------------------|
| Entry         | <b>1000 characters</b> |
| Default value | <b>empty</b>           |

#### Unit

Unit of the result for the output (text only). The unit can be used in further calculations as variable **'RS.Result name.UNI'**.

|               |                      |
|---------------|----------------------|
| Entry         | <b>16 characters</b> |
| Default value | <b>empty</b>         |

#### 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   | <b>0 - 5</b> |
| Default value | <b>2</b>     |

#### Assignment

Assign a result to a defined result column **RS01 ... RS25**. This order specifies in which of the 25 available result columns in the determination overview the result is being added to. Per calculation the result columns **RS01 ... RS25** are available. Only the columns still free are made available. With **none** the result will not be assigned to any column.



|               |                    |
|---------------|--------------------|
| Input range   | <b>RS01 - RS25</b> |
| Default value | <b>none</b>        |

### Statistics

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

If this check box is activated, the mean value and the absolute and relative standard deviation are calculated for the result. This field is only active when the statistics is enabled in the method of the imported determination (i.e. the statistics can only then be disabled and enabled again, if it has already been enabled in the method).

### Description

Freely selectable description of the result.

|               |                        |
|---------------|------------------------|
| Entry         | <b>1000 characters</b> |
| Default value | <b>empty</b>           |

#### 4.5.2.6.4.7.2 Monitoring

Tab: **Database** ▶ **Determinations** ▶ **Reprocessing** ▶ **Modifications** ▶ **Calculations** ▶ **[New]/[Properties]** ▶ **Result 'Result name' - RS##** ▶ **Monitoring**

### Result monitoring

If this check box is activated, then the limit values for the result of the calculation formula are being monitored.

### Lower limit

Lower limit for the result. This parameter is only editable when the result monitoring is enabled.

|               |                  |
|---------------|------------------|
| Entry         | <b>10 digits</b> |
| Default value | <b>0</b>         |

### Upper limit

Upper limit for the result. This parameter is only editable when the result monitoring is enabled.

|               |                    |
|---------------|--------------------|
| Entry         | <b>10 digits</b>   |
| Default value | <b>99999.99999</b> |

### Message

Only editable when the check box **Monitoring result** is activated.

|           |   |
|-----------|---|
| Selection | <b>Display message   Record message</b> |
|-----------|---|

#### Display message

If this option is selected, the message "The limit value for the result 'result name' has been exceeded." appears. At the same time the message is documented, i.e. it is saved in the determination.

**Record message**

If this option is selected, the message "The limit value for the result 'result name' has been exceeded." is saved in the determination.

**4.5.2.6.5 Result view**

Subwindow: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Result view**

In the **Result view** subwindow of the **Reprocessing** dialog window, results and raw data are displayed on the following two tabs:

**4.5.2.6.5.1 Result view - Results overview**

Tab: **Database ▶ Determinations ▶ Reprocess... ▶ Reprocessing ▶ Result view ▶ Result overview**

On the **Result view** tab of the **Result display** subwindow the results calculated in the calculating commands and the variables used for this are displayed and updated with each recalculation.

The following elements are displayed:

**Title**

Name of the calculation command (1C - 9C).

**Result**

Result name, result value with defined number of decimal places, result unit.

**Statistical evaluations**

Results of the statistical evaluation (mean value, absolute and relative standard deviations, number of measured values used for the statistics).

**Navigation**

If several determinations are selected for reprocessing, the navigation buttons can be used to switch between the result view of the individual determinations:



Jump to the first determination.



Jump to the previous determination.



Jump to the next determination.



Jump to the last determination.



#### 4.5.2.6.5.2 Result view - Raw data

Tab: **Database** ▶ **Determinations** ▶ **Reprocess...** ▶ **Reprocessing** ▶ **Result display** ▶ **Raw data**

On the **Raw data** tab of the **Result view** subwindow the raw data generated in commands with evaluations will be shown and updated at each recalculation.

If several determinations are selected for reprocessing then the navigation buttons can be used to switch between the result view of the individual determinations:



Jump to the first determination.



Jump to the previous determination.



Jump to the next determination.



Jump to the last determination.

#### 4.5.2.6.6 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 | <b>Selection from default reasons</b> |
|-----------|---------------------------------------|

##### Comment

Entry of a comment on the modification of the determinations.

|       |                        |
|-------|------------------------|
| Entry | <b>1000 characters</b> |
|-------|------------------------|

### 4.5.2.7 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     | <b>Determination ID   Sample identification   File name</b> |
| Default value | <b>Determination ID</b>                                     |

#### **Determination ID**

With this option, 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**

With this option the sample identification is selected. 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.

#### **File name**

With this option the name under which the export file of a determination is saved as an attachment to the E-mail message is entered. If more than one determination is selected, then a sequential number will be added to this name for each determination.

After each confirmation of the file name with **[OK]** every determination is exported to a separate **\*.tdet** file. The standard Windows E-mail Client will open with an empty message and the export files will automatically be added as an attachment.

### 4.5.2.8 Exporting determinations

Dialog window: **Database ▶ Determinations ▶ Export... ▶ Export determinations**

Click on the **Determinations ▶ Export...** menu item to open the **Export determinations** dialog window for exporting the selected determinations.

#### **Selection**

Selection of determinations for the export.

|               |  |
|---------------|--|
| Selection     | <b>All selected data records   All filtered data records</b> |
| Default value | <b>All selected data records</b>                             |

#### **All selected data records**

All those determinations are exported that have been selected (highlighted) in the determination table.



### All filtered data records

All the determinations from the determination table as a whole that correspond to the set filter are exported.

### Export template

Selection of the export template for the data export.

| Selection | 'Export template' |
|-----------|-------------------|
|-----------|-------------------|

#### 4.5.2.9 Importing determinations

Dialog window: **Database ▶ Determinations ▶ Import... ▶ Import determinations**

The **Determinations ▶ Import...** menu item opens the **Import determinations** dialog window, in which the determinations to be imported must be selected. These determinations are then imported into the open database.




#### NOTE

Supported file formats:

- **\*.txt** (PC/LIMS report)
- **\*.tdet** (tiBase format)
- **\*.utf8** (Unicode)

#### 4.5.2.10 Deleting determinations

Menu item: **Database ▶ Determinations ▶ Delete**

The selected determinations are deleted after the confirmation request with the  symbol or the **Determinations ▶ Delete** menu item.



#### NOTE

If a database is opened simultaneously on several clients and if determinations are deleted on a client, then these will continue to be shown on the other clients in the determination table until the table is updated. All the fields of these determinations will then have the entry **deleted**.



#### NOTE

If the **Comment on modification of determinations** check box in the **Security settings** is activated, then the **Modification comment determination** window will appear before the modification is saved.

#### 4.5.2.11 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     | <b>Selected determinations   All filtered determinations</b> |
| Default value | <b>Selected determinations</b>                               |

##### 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     | <b>Portrait   Landscape</b> |
| Default value | <b>Portrait</b>             |

##### 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.

#### 4.5.2.12 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     | <b>Selected determinations   All filtered determinations</b> |
| Default value | <b>Selected determinations</b>                               |

##### 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     | <b>Original report(s)   Report template</b> |
| Default value | <b>Original report(s)</b>                   |

#### 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.

#### 4.5.2.13 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.

#### 4.5.2.14 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.

#### 4.5.2.15 Determinations - Show calibration curve

Dialog window: **Database ▶ Determinations ▶ Show calibration curve... ▶ Calibration curve**

With the **Determinations, Show calibration curve...** menu item or the  symbol the calibration or standard addition curve is shown for the determination selected in the **Calibration curve** dialog window.

##### Calibration curve for CAL LOOP pH

In the **Calibration curve** dialog window a tab marked with the command name showing the calibration curve and calibration data will be displayed for each CAL LOOP pH command . The command type is shown above the calibration curve. The curve display shows the measured values and the curve calculated from these measured values. Listed below are the individual measured values and the results for **Slope**, **E(0)** and **Variance**.

##### Calibration curve for CAL LOOP Conc

In the **Calibration curve** dialog window a tab marked with the command name showing the calibration curve and calibration data will be displayed for each CAL LOOP Conc command . above the calibration curve. The curve display shows the measured values and the curve calculated from these measured values. Listed below are the individual measured values and the results for **Slope**, **E(0)**, **c(blank)** and **Variance**. Calibration curve for CAL LOOP Conc




**[Print (PDF)]**

Opens the **Print control chart (PDF)** (see Chapter 4.5.2.19, page 260) dialog window. The content of the control chart can be shown as a PDF file in the required format.

**4.5.2.17 Determinations - Overlay curves**

Menu item: **Database ▶ Determinations ▶ Overlay curves... ▶ Overlay curves**

The **Determinations, Overlay curves...** menu item or the  symbol opens the **Overlay curves** dialog window, in which overlaid curves of the selected determinations are shown according to the loaded template.

**Template**

Selection of a saved template for showing overlaying curves.

|               |   |
|---------------|---|
| Selection     | <b>Standard   "Template"   Last saved template</b>  |
| Default value | <b>Last saved template</b><br>If a new template is selected then the display will be updated automatically. |

**NOTE**

The **Command type** for which the overlaying of curves is possible is defined in the template. Curves from the selected determinations can only be overlaid when the determination method contains a command with this **Command type** (e.g. **DET**).

**Command name**

Selection of the command whose curves are to be displayed with the selected template.

|           |  |
|-----------|--|
| Selection | <b>"Command"</b><br>This selection is only necessary if the method contains several commands of the same <b>Command type</b> . |
|-----------|--|

**[Templates]**

Opens the **Curve overlay templates** dialog window.

**Graph display**

Shows the curves according to the settings of the selected template. The command type (e.g. **DET pH**) is shown centrally above the graph. At the right of the curve the legend is shown with the line number in the determination table belonging to the determination.



The legend consists of the content of a data field which can be defined in the options of the template and of a counter identifying the curves if the same command has been executed several times during a determination.

### [Print (PDF)]

Opens the **Print curves (PDF)** (see Chapter 4.5.2.18, page 260) dialog window. The content of the curve overlay with legend can be shown as a PDF file in the required format.

### 4.5.2.18 Printing overlaid curves

Dialog window: **Database ▶ Determinations ▶ Overlay curves... ▶ Overlay curves ▶ [Print (PDF)] ▶ Print curves (PDF)**

With **[Print (PDF)]** in the **Overlay curves** dialog window, the **Print curves (PDF)** dialog window is opened.

#### Orientation

|               |   |
|---------------|---|
| Selection     | <b>Portrait format   Landscape format</b> |
| Default value | <b>Landscape format</b>                   |

#### Portrait format

Produces the control chart in portrait format.

#### Landscape format

Produces the control chart in landscape format.

### Comment

Possibility of entering comments on the control chart which will be produced together with the control chart.

|       |                         |
|-------|-------------------------|
| Entry | <b>1,000 characters</b> |
|-------|-------------------------|

### [OK]

Close the dialog window. The control chart is produced in the required format as a PDF file and opened directly with the Acrobat Reader. It can then be printed out and/or saved.

### 4.5.2.19 Print control chart

In the dialog window **Print control chart (PDF)** the format for the print-out of the control chart is indicated.

#### Orientation

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>Portrait   Landscape</b> |
| Default value | <b>Landscape</b>            |

#### 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 | <b>1000 characters</b> |
|-------|------------------------|

**[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.

## 4.6 Subwindow Information

### 4.6.1 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 determination.
- *Method*  
Shows general information about the method used.
- *Sample*  
Shows general information about the sample used.
- *Configuration*  
Shows general information about the devices, sensors and common variables used.
- *Messages*  
Shows messages about the determination.
- *Determination comment*  
Shows the comment on the determination.

### 4.6.2 Information - Determination

Tab: **Database ▶ Information ▶ Determination**

Display of general information about determination.

#### Identification

Information about the identification of the determination.

**Determination ID:**

Unambiguous and unmistakable identification for the determination.

**Sample number:**

Shows the **Sample number** entered in the run window.

**Start counter:**

Shows 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.

**Recording**

Information about recording the determination.

**Determination start:**

Date and time at start of determination.

**Determination duration:**

Duration of the determination from its start to its end or termination in s.

**Determination run:**

Way in which the determination was ended:

| Selection | <b>Regular without errors</b>   <b>Manual stop</b>   <b>error</b> |
|-----------|---|
|-----------|---|

**Regular without errors**

The determination was finished automatically after the method was processed normally and without any errors.

**Manual stop**

The determination has been ended with the **[Stop]** fixed key.

**error**

The determination has been ended because an error occurred.

**User (short name):**

Short name of the user.

**Program version**

Display of program version and build number of **tiBase** with which the PC\_LIMS report was imported and edited.

**Status/Version**

Information about the determination version.

**Determination status:**

| Selection | <b>original</b>   <b>modified</b> |
|-----------|-----------------------------------|
|-----------|-----------------------------------|

**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. If a new version was generated automatically by reprocessing statistically linked determinations without modification of determination data, tiBase 1.1 Patch 1 will be displayed here.

**Reprocessed by (full name):**

Full name of user logged in when determination was reprocessed. If a new version was generated automatically by reprocessing statistically linked determinations without modification of determination data, **New generated version for statistics** will be displayed here.

**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 user who signed the determination.

**Signed by (full name):**

Full name of user who signed the determination.

**Signature reason:**

Reason for signature selected by user.

**Signature comment:**

User comments on signing the determination.

**4.6.3 Information - Method**

Tab: **Database** ▶ **Information** ▶ **Method**

Shows general information about the method used.

**Identification**

Information about the identification of the method.

**Method name:**

Name of the method.

**Method ID:**

Unambiguous identification for the method.

**Method comment:**

Method comment (**Command comment** on **START** command).

**Status/Version**

Information about method version.

**Method status:**

| Selection | <b>new</b> | <b>modified</b> | <b>saved</b> | <b>reviewed</b> | <b>released</b> |
|-----------|------------|-----------------|--------------|-----------------|-----------------|
|-----------|------------|-----------------|--------------|-----------------|-----------------|

**new**

The method has been newly created and not yet saved.

**modified**

The method has been reprocessed but not saved.

**saved**

The method has been saved.

**reviewed**

The method has been signed at stage 1.

**released**

The method has been signed at stage 2.

**Method version:**

Version of the method the determination was created with.

**Method saving date:**

Date and time when the modified method version was saved.

**Method saved by (short name):**

Short name of user logged in when modified method was saved.

**Modification reason method:**

Reason for the method modification.

**Modification comment method:**

User comment on the method modification.

**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 signed the method.

**Signature reason:**

Reason for signature selected by user.

**Signature comment:**

User comments on signing the method.

**4.6.4 Information - Sample**

Tab: **Database** ▶ **Information** ▶ **Sample**

Shows 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.

**Sample size:**

Value for the sample size.

**Sample size unit:**

Unit of sample size.

**Identification**

Information about the sample identifications.

**ID1**

Shows the sample identification saved under **ID1**. The identifications will only be shown when a value is present.

**ID2**

Shows the sample identification saved under **ID2**. The identifications will only be shown when a value is present.

**4.6.5 Information - Configuration**

Tab: **Database** ▶ **Information** ▶ **Configuration**

Shows general information about the devices, sensors and common variables used.

**Device 'Software name'**

Information about the device used (only the existing device information will be shown).

**Device type:**

Name of the software.

**Program version:**

Version of the software.

**Device serial number:**

Serial number of the software.

**Device 'Device name'**

Information about the device used (only the existing device information will be shown).

**Device type:**

Type of device.

**Program version:**

Device program version.

**Device serial number:**

Serial number of the instrument.

**Rack name:**

Name of the rack on the sample changer.

**Rack code:**

Rack code of the rack on the sample changer.

**Tower:**

Number of the tower on which a Swing Head is used.

**Swing Head type:**

Type of Swing Head attached to tower.

**Swing Head serial number:**

Serial number of Swing Head attached to tower.

**Measuring input:**

Number of the measuring input (+ designation **iConnect** for intelligent sensors).

**ADC type:**

Type of analog/digital converter.

**ADC serial number:**

Serial number of measuring input.

**Temperature sensor:**

Type of connected temperature sensor.

**Stirrer:**

Stirrer connection at device.

**Stirrer type:**

Type of stirrer.

**Stirrer serial number:**

Serial number of stirrer.

**Dosing device:**

Dosing connection at device.

**Dosing device type:**

Dosing device type.

**Dosing device serial number:**

Serial number of dosing device.

**Exchange/Dosing unit:**

Type of exchange or dosing unit.

**Remote Box:**

Connection to device.

**Buret serial number**

Serial number of the buret.

**Solution 'Solution name'****Solution name:**

Name of the solution.

**Concentration:**

Concentration value and unit of the solution.

**Titer:**

Titer value and units of the solution.

**Date titer det.:**

Date of the titer determination.

**Titer method:**

Method with which the titer was determined.

**Sensor 'Sensor name'**

Information about the sensor used.

**Sensor type:**

Type of sensor (+ designation **IS** for intelligent sensors).

**Sensor serial number:**

Serial number of sensor.

**Order number:**

Order number of sensor.

**Slope:**

Electrode slope of the sensor used (in % for pH sensor or in mV for ISE).

**pH (0):**

Electrode zero point of the sensor used (dimensionless for pH sensor).

**Calibration temperature:**

Temperature during the calibration.

**Calibration method:**

Shows the method with which the calibration was carried out.

**User:**

Shows the user logged in during the calibration or who entered the calibration data manually.

**E (0):**

Electrode zero point of the sensor used (in mV only for ISE).

**c (blank):**

Blank value of the ISE sensor used.

**Cell constant:**

Cell constant of the conductivity sensor used.

**Common variable 'Name'**

Information about the common variable used.

**Value:**

Value and unit of the common variables at the start of the determination.

**4.6.6 Information - Messages**

Tab: **Database ▶ Information ▶ Messages**

Shows messages generated during the determination run.

**'Time'**

Shows 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:**

Shows the message title and number.

**Message source:**

Shows from where the message comes:



## 4.6.7 Information - Determination comment

Tab: **Database** ▶ **Information** ▶ **Determination comment**

Shows the comment on the determination.

### Determination comment:

Shows the comment entered for the determination.

## 4.7 Results subwindow

### 4.7.1 Results - General

Subwindow: **Database** ▶ **Results**

In the subwindow **Results** in the program part **Database** the results calculated in the calculation commands and the variables used for are shown. It shows the results overview, the raw data of the commands with evaluations as well as the results calculated in the calculation commands, statistical evaluations, formulas and all variables used for for the determination selected in the determination overview.

When navigating in the determination overview this data will be updated automatically (with a certain delay).

The subwindow **Results** can be switched on and made visible in the definition of the layout in the program part **Database**. 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 overview*  
Shows the results overview for all calculation commands.
- *Raw data*  
Display of evaluation raw data for commands with evaluations.
- *"Command name"*  
Show the results for a single calculation command. A tab with the corresponding command name is provided for each calculation command.

### 4.7.2 Results - Results overview

Tab: **Database** ▶ **Result** ▶ **Results overview**

On the tab **Results overview** the results for all calculation commands and (if existent and desired) the corresponding statistical evaluations are displayed. The display of the statistical evaluations can be selected in the dialog window **Properties result window**

### Command "Command name"

For each **CALC** command a results overview is shown according to the following pattern:

#### "Command name"

Name of the **CALC** command.



#### NOTE

Only the last results having been calculated will be shown. For example, if there are several commands that generate a result with the same name, then the corresponding result data will be shown only for that command that was the last to calculate the result. Nothing will be shown for the other commands.

#### "Result"

Shows the result name and result value with the defined number of decimal places and units.



#### NOTE

If a result value is monitored and lies within the limit value defined in the **CALC** command then the text will be shown in green, if it lies outside the limits it will be shown in red text color.

#### Mean value:

Shows the mean value for statistically evaluated results.

#### s(abs):

Shows the absolute standard deviation for statistically evaluated results.

#### s(rel):

Shows the relative standard deviation for statistically evaluated results.

#### Minimum:

Shows the minimum value for statistically evaluated results.

#### Maximum:

Shows the maximum value for statistically evaluated results.

#### n:

Shows the number of measurements for statistically evaluated results.



### 4.7.3 Results - Raw data

Tab: **Database** ▶ **Results** ▶ **Raw data**

On the **Raw data** tab the evaluation results of commands with evaluations are shown.

#### "Command name"

For each CALC command the raw data is displayed in six columns.

#### Column 1

Display of the command type.

#### Column 2

Shows the variable designation for the raw data.

#### Columns 3 - 6

Display of the raw data.

The following tables show the raw data displayed depending on the command type. For each variable the **Variable name**, **Unit** and **Number of decimal places** is indicated.

Table 1 Command DET pH

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,pH, 3  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, pH, 3 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, pH, 3 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, pH, 3  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, pH, 3  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, pH, 3 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 2 Command DET U

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,mV, 1  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, mV, 1 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, mV, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 3 Command DET lpol

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,mV, 1  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, mV, 1 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, mV, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 4 Command DET Upol

| Column 2: Variable | Column 3       | Column 4            | Column 5      | Column 6       |
|--------------------|----------------|---------------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA, $\mu$ A, 1 | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, $\mu$ A, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, $\mu$ A, 1 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, $\mu$ A, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, $\mu$ A, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, $\mu$ A, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 5 Command MET pH

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA, pH, 3 | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, pH, 3 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, pH, 3 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, pH, 3  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, pH, 3  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, pH, 3 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 6 Command MET U

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,mV, 1  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, mV, 1 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |



| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| MA                 | MA.VOL, mL, 4  | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, mV, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 7 Command MET Ipol

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA, mV, 1 | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, mV, 1 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, mV, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 8 Command MET Upol

| Column 2: Variable | Column 3       | Column 4            | Column 5      | Column 6       |
|--------------------|----------------|---------------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA, $\mu$ A, 1 | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, $\mu$ A, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| HP#                | HP#.VOL, mL, 4 | HP#.MEA, $\mu$ A, 1 | HP#.TIM, s, 1 | HP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, $\mu$ A, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, $\mu$ A, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |
| BP#                | BP#.VOL, mL, 4 | BP#.MEA, $\mu$ A, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |

Table 9 Command SET pH

| Column 2: Variable | Column 3            | Column 4       | Column 5      | Column 6       |
|--------------------|---------------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4      | EP#.MEA, pH, 3 | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| DRI                | DRI, $\mu$ L/min, 1 |                |               |                |
| DTI                | DTI, s, 1           |                |               |                |
| FP#                | FP#.VOL, mL, 4      | FP#.MEA, pH, 3 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4       | MI.MEA, pH, 3  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4       | MA.MEA, pH, 3  | MA.TIM, s, 1  | MA.TEM, °C, 1  |

Table 10 Command SET U

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,mV, 1  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| DRI                | DRI, µL/min, 1 |                |               |                |
| DTI                | DTI, s, 1      |                |               |                |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |

Table 11 Command SET lpol

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,mV, 1  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| DRI                | DRI, µL/min, 1 |                |               |                |
| DTI                | DTI, s, 1      |                |               |                |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |

Table 12 Command SET Upol

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP#                | EP#.VOL, mL, 4 | EP#.MEA,µA, 1  | EP#.TIM, s, 1 | EP#.TEM, °C, 1 |
| DRI                | DRI, µL/min, 1 |                |               |                |
| DTI                | DTI, s, 1      |                |               |                |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, µA, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4  | MI.MEA, µA, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4  | MA.MEA, µA, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |

Table 13 Command KFT lpol

| Column 2: Variable | Column 3       | Column 4       | Column 5      | Column 6       |
|--------------------|----------------|----------------|---------------|----------------|
| EP                 | EP.VOL, mL, 4  | EP.MEA,mV, 1   | EP.TIM, s, 1  | EP.TEM, °C, 1  |
| DRI                | DRI, µL/min, 1 |                |               |                |
| DTI                | DTI, s, 1      |                |               |                |
| FP#                | FP#.VOL, mL, 4 | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |



| Column 2: Variable | Column 3      | Column 4      | Column 5     | Column 6      |
|--------------------|---------------|---------------|--------------|---------------|
| MI                 | MI.VOL, mL, 4 | MI.MEA, mV, 1 | MI.TIM, s, 1 | MI.TEM, °C, 1 |
| MA                 | MA.VOL, mL, 4 | MA.MEA, mV, 1 | MA.TIM, s, 1 | MA.TEM, °C, 1 |

Table 14 Command KFT Upol

| Column 2: Variable | Column 3            | Column 4            | Column 5      | Column 6       |
|--------------------|---------------------|---------------------|---------------|----------------|
| EP                 | EP.VOL, mL, 4       | EP.MEA, $\mu$ A, 1  | EP.TIM, s, 1  | EP.TEM, °C, 1  |
| DRI                | DRI, $\mu$ L/min, 1 |                     |               |                |
| DTI                | DTI, s, 1           |                     |               |                |
| FP#                | FP#.VOL, mL, 4      | FP#.MEA, $\mu$ A, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4       | MI.MEA, $\mu$ A, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4       | MA.MEA, $\mu$ A, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |

Table 15 Command KFC

| Column 2: Variable | Column 3            | Column 4            | Column 5      | Column 6       |
|--------------------|---------------------|---------------------|---------------|----------------|
| EP                 | EP.MEA, mV, 1       | EP.QTY, $\mu$ g, 1  | EP.TIM, s, 1  | EP.TEM, °C, 1  |
| DRI                | DRI, $\mu$ g/min, 1 |                     |               |                |
| DTI                | DTI, s, 1           |                     |               |                |
| FP#                | FP#.MEA, mV, 1      | FP#.QTY, $\mu$ g, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |

Table 16 Command BRC

| Column 2: Variable | Column 3            | Column 4            | Column 5      | Column 6       |
|--------------------|---------------------|---------------------|---------------|----------------|
| EP                 | EP.MEA, mV, 1       | EP.QTY, $\mu$ g, 1  | EP.TIM, s, 1  | EP.TEM, °C, 1  |
| DRI                | DRI, $\mu$ g/min, 1 |                     |               |                |
| DTI                | DTI, s, 1           |                     |               |                |
| FP#                | FP#.MEA, mV, 1      | FP#.QTY, $\mu$ g, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |

Table 17 Command STAT pH

| Column 2: Variable | Column 3           | Column 4           | Column 5            | Column 6       |
|--------------------|--------------------|--------------------|---------------------|----------------|
| MR                 | MR.MRT, mL/min, 4  | MR.MRS, mL/min, 4  | MR.MRC, "empty", 3  |                |
| RE#                | RE#.DRT, mL/min, 4 | RE#.DRS, mL/min, 4 | RE#.DRC, "empty", 3 |                |
| FP#                | FP#.VOL, mL, 4     | FP#.MEA, pH, 3     | FP#.TIM, s, 1       | FP#.TEM, °C, 1 |

| Column 2: Variable | Column 3      | Column 4      | Column 5     | Column 6      |
|--------------------|---------------|---------------|--------------|---------------|
| MI                 | MI.VOL, mL, 4 | MI.MEA, pH, 3 | MI.TIM, s, 1 | MI.TEM, °C, 1 |
| MA                 | MA.VOL, mL, 4 | MA.MEA, pH, 3 | MA.TIM, s, 1 | MA.TEM, °C, 1 |

Table 18 Command STAT U

| Column 2: Variable | Column 3           | Column 4           | Column 5            | Column 6       |
|--------------------|--------------------|--------------------|---------------------|----------------|
| MR                 | MR.MRT, mL/min, 4  | MR.MRS, mL/min, 4  | MR.MRC, "empty", 3  |                |
| RE#                | RE#.DRT, mL/min, 4 | RE#.DRS, mL/min, 4 | RE#.DRC, "empty", 3 |                |
| FP#                | FP#.VOL, mL, 4     | FP#.MEA, mV, 3     | FP#.TIM, s, 1       | FP#.TEM, °C, 1 |
| MI                 | MI.VOL, mL, 4      | MI.MEA, mV, 3      | MI.TIM, s, 1        | MI.TEM, °C, 1  |
| MA                 | MA.VOL, mL, 4      | MA.MEA, mV, 3      | MA.TIM, s, 1        | MA.TEM, °C, 1  |

Table 19 Command MEAS pH

| Column 2: Variable | Column 3       | Column 4      | Column 5       | Column 6 |
|--------------------|----------------|---------------|----------------|----------|
| EME                | EME, pH, 3     |               |                |          |
| ETE                | ETE, °C, 1     |               |                |          |
| FP#                | FP#.MEA, pH, 3 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |          |
| MI                 | MI.MEA, pH, 3  | MI.TIM, s, 1  | MI.TEM, °C, 1  |          |
| MA                 | MA.MEA, pH, 3  | MA.TIM, s, 1  | MA.TEM, °C, 1  |          |
| BP#                | BP#.MEA, pH, 3 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |          |

Table 20 Command MEAS U

| Column 2: Variable | Column 3       | Column 4      | Column 5       | Column 6 |
|--------------------|----------------|---------------|----------------|----------|
| EME                | EME, mV, 1     |               |                |          |
| ETE                | ETE, °C, 1     |               |                |          |
| FP#                | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |          |
| MI                 | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |          |
| MA                 | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |          |
| BP#                | BP#.MEA, mV, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |          |



Table 21 Command MEAS Ipol

| Column 2: Variable | Column 3       | Column 4      | Column 5       | Column 6 |
|--------------------|----------------|---------------|----------------|----------|
| EME                | EME, mV, 1     |               |                |          |
| ETE                | ETE, °C, 1     |               |                |          |
| FP#                | FP#.MEA, mV, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |          |
| MI                 | MI.MEA, mV, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |          |
| MA                 | MA.MEA, mV, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |          |
| BP#                | BP#.MEA, mV, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |          |

Table 22 Command MEAS Upol

| Column 2: Variable | Column 3       | Column 4      | Column 5       | Column 6 |
|--------------------|----------------|---------------|----------------|----------|
| EME                | EME, µA, 1     |               |                |          |
| ETE                | ETE, °C, 1     |               |                |          |
| FP#                | FP#.MEA, µA, 1 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |          |
| MI                 | MI.MEA, µA, 1  | MI.TIM, s, 1  | MI.TEM, °C, 1  |          |
| MA                 | MA.MEA, µA, 1  | MA.TIM, s, 1  | MA.TEM, °C, 1  |          |
| BP#                | BP#.MEA, µA, 1 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |          |

Table 23 Command MEAS T

| Column 2: Variable | Column 3       | Column 4      | Column 5 | Column 6 |
|--------------------|----------------|---------------|----------|----------|
| EME                | EME, °C, 1     |               |          |          |
| FP#                | FP#.MEA, °C, 3 | FP#.TIM, s, 1 |          |          |
| MI                 | MI.MEA, °C, 1  | MI.TIM, s, 1  |          |          |
| MA                 | MA.MEA, °C, 1  | MA.TIM, s, 1  |          |          |
| BP#                | BP#.MEA, °C, 1 | BP#.TIM, s, 1 |          |          |

Table 24 Command MEAS T/Flow

| Column 2: Variable | Column 3      | Column 4          | Column 5     | Column 6 |
|--------------------|---------------|-------------------|--------------|----------|
| EME                | EME, °C, 1    |                   |              |          |
| MI                 | MI.MEA, °C, 1 | MI.GFL, mL/min, 1 | MI.TIM, s, 1 |          |
| MA                 | MA.MEA, °C, 3 | MA.GFL, mL/min, 1 | MA.TIM, s, 1 |          |

Table 25 Command MEAS Conc

| Column 2: Variable | Column 3                | Column 4 | Column 5 | Column 6 |
|--------------------|-------------------------|----------|----------|----------|
| EME                | EME, "selected unit", 3 |          |          |          |
| ETE                | ETE, °C, 1              |          |          |          |

Table 26 Command MEAS Cond

| Column 2: Variable | Column 3          | Column 4      | Column 5       | Column 6 |
|--------------------|-------------------|---------------|----------------|----------|
| EME                | EME, mS/cm, 4     | RTE, °C, 1    |                |          |
| ETE                | ETE, °C, 1        |               |                |          |
| FP#                | FP#.MEA, mS/cm, 4 | FP#.TIM, s, 1 | FP#.TEM, °C, 1 |          |
| MI                 | MI.MEA, mS/cm, 4  | MI.TIM, s, 1  | MI.TEM, °C, 1  |          |
| MA                 | MA.MEA, mS/cm, 4  | MA.TIM, s, 1  | MA.TEM, °C, 1  |          |
| BP#                | BP#.MEA, mS/cm, 4 | BP#.TIM, s, 1 | BP#.TEM, °C, 1 |          |

For the salinity, the unit for EME, FP#.MEA, MI.MEA, MA.MEA and BP#.MEA is "Sal"; for TDS it is "mg/L", and for the specific resistance it is "kOhm·cm".

Table 27 Command CAL LOOP pH

| Column 2: Variable | Column 3  | Column 4 | Column 5 | Column 6 |
|--------------------|-----------|----------|----------|----------|
| SLO                | SLO, %, 1 |          |          |          |
| ENP                | ENP, -, 3 |          |          |          |

Table 28 Command CAL LOOP Conc

| Column 2: Variable | Column 3                          | Column 4 | Column 5 | Column 6 |
|--------------------|-----------------------------------|----------|----------|----------|
| SLO                | SLO, mV, 1                        |          |          |          |
| ENP                | ENP, -, 3                         |          |          |          |
| BLV                | BLV, "unit from configuration", 2 |          |          |          |

Table 29 Command CAL Cond

| Column 2: Variable | Column 3    | Column 4 | Column 5 | Column 6 |
|--------------------|-------------|----------|----------|----------|
| CLC                | CLC, /cm, 3 |          |          |          |



| Column 2: Variable | Column 3   | Column 4 | Column 5 | Column 6 |
|--------------------|------------|----------|----------|----------|
| RTE                | RTE, °C, 1 |          |          |          |

Table 30 Command STDADD

| Column 2: Variable | Column 3                | Column 4 | Column 5 | Column 6 |
|--------------------|-------------------------|----------|----------|----------|
| SLO                | SLO, mV, 1              |          |          |          |
| ENP                | ENP, mV, 1              |          |          |          |
| RES                | RES, "selected unit", 1 |          |          |          |
| VAR                | VAR, "empty", 3         |          |          |          |

Table 31 Command DOS pH

| Column 2: Variable | Column 3          | Column 4          | Column 5           | Column 6 |
|--------------------|-------------------|-------------------|--------------------|----------|
| MR                 | MR.MRT, mL/min, 4 | MR.MRS, mL/min, 4 | MR.MRC, "empty", 3 |          |

Table 32 Command DOS U

| Column 2: Variable | Column 3          | Column 4          | Column 5           | Column 6 |
|--------------------|-------------------|-------------------|--------------------|----------|
| MR                 | MR.MRT, mL/min, 4 | MR.MRS, mL/min, 4 | MR.MRC, "empty", 3 |          |

#### 4.7.4 Results - Calculation #

Tab: Database ▶ Results ▶ Command name

For each calculation command the results and (if existent and desired) the corresponding statistical evaluations are displayed on a separate tab **Calculation\_#**. The sequence of the shown results corresponds to that defined in the calculation command. The display of the statistical evaluations can be selected in the dialog window **Properties result window**

For every single result a maximum of the following information is displayed:

##### Result "Result name"

##### Result "Result name"

Display of the result with variable name.

**NOTE**

Only the last results having been calculated will be shown. For example, if there are several commands that generate a result with the same name, then the corresponding result data will be shown only for that command that was the last to calculate the result. Nothing will be shown for the other commands.

**"Result"**

Shows the result name and result value with the defined number of decimal places and units.

**NOTE**

If a result value is monitored and lies within the limit value defined in the CALC command then the text will be shown in green, if it lies outside the limits it will be shown in red text color.

**Mean value:**

Shows the mean value for statistically evaluated results.

**s(abs):**

Shows the absolute standard deviation for statistically evaluated results.

**s(rel):**

Shows the relative standard deviation for statistically evaluated results.

**Minimum:**

Shows the minimum value for statistically evaluated results.

**Maximum:**

Shows the maximum value for statistically evaluated results.

**n:**

Shows the number of measurements for statistically evaluated results.

**Assignment:**

Assigns the result to one of the result columns **RS01...RS25** in the **Determination overview**.

**Formula:**

Shows the formula used for calculating the result.

**'Variable name':**

'Displays the variables used in the formula.'

**NOTE**

Variables that have not been created during the determination are not displayed and lead to invalid results.

**4.7.5 Results - Properties**

Dialog window **Database ▶ View ▶ Properties ▶ Properties ▶ Properties result window**

In the dialog window **Properties result window** the information to be displayed in the result window can be selected.

**Display for results overview**

Selection of the information to be displayed on the tab **Results overview**.

**Results**

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

Shows all results.

**Statistics**

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

Shows the statistics results.

**Display for calculation commands**

Selection of the information to be displayed on the tabs **Calculation\_#**.

**Results**

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

Shows the results defined in the calculation command.

**Statistics**

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

Shows the statistics results.

**Assignment**

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

Shows the assignment.

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

Shows the calculation formula.

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

Displays the variables used in the formula.

**4.8 Curves subwindow****4.8.1 Curves - General**Subwindow: **Database ▶ Curves****Curves subwindow**

The **Curves 1 - 5** subwindows are subwindows in the **Database** program part. In these subwindows, the measuring points generated by the measuring commands for the focused determination in the **Determination table** are shown as a graph. When navigating in the determination overview, this data will be updated automatically (after a certain time delay).

The **Curves 1 - 5** subwindows can be switched on in the **Database** program part and thus made visible when the layout is defined. They can be enlarged and reduced as required, and they can also be maximized.

**Tabs**

In the curve window a tab with the corresponding command name and the run index (e.g. **Chloride.1**) is provided for each run of a measuring command; their sequence is determined by the method.

**Display of curves**

The curves of the selected determination are shown on the tabs with the properties defined per window and per command type. The command type (e.g. **DET pH**) is shown above the left-hand y axis.

Curves can be **zoomed** as often as required by spanning a section of the curve display with the left mouse button pressed down. Zooming can be undone by double-clicking on the section of the graph or with the context-sensitive **Show All** menu command.



|               |  |
|---------------|--|
| Selection     | <b>DET   MET   SET   KFT   KFC   BRC   STAT   MEAS   DOS</b> |
| Default value | <b>DET</b>   |

**NOTE**

When the dialog window is opened, those **Command type** will be selected as standard which applies for the curve shown in the curve window.

**Autoscaling**

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

**Size**

Selection of the quantity to be shown on the x axis.

*For DET commands*

|               |   |
|---------------|---|
| Selection     | <b>Volume [mL]   Measured value   ERC   Time [s]   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Volume [mL]</b>  |

*For MET commands*

|               |   |
|---------------|---|
| Selection     | <b>Volume [mL]   Measured value   dMW   Time [s]   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Volume [mL]</b>  |

*For SET, STAT, DOS and KFT commands*

|               |  |
|---------------|--|
| Selection     | <b>Time [s]   Measured value   Volume [mL]   dV/dt [µL/min]   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Time [s]</b>  |

*For KFC commands*

|               |   |
|---------------|---|
| Selection     | <b>Time [s]   Measured value   Amount [µg]   Charge [mAs]   Drift [µg/min]   dV/dt [µ/min]   Ugen   Igen [mA]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Time [s]</b>   |



*For BRC commands*

|               |   |
|---------------|---|
| Selection     | <b>Time [s]   Measured value   Amount [µg]   Charge [mAs]   Drift [µg/min]   dV/dt [µ/min]   Ugen   Igen [mA]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Time [s]</b>   |

*For MEAS commands*

|               |  |
|---------------|--|
| Selection     | <b>Time [s]   Measured value   dMW/dt   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Time [s]</b>  |

### Label

Freely definable axis label for the x axis. With **auto** the designation from the field **Size** will be used.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>50 characters   auto</b> |
| Default value | <b>auto</b>                 |

### Scaling

#### Start value

Initial value for scaling the x axis.

*Only editable when autoscaling is disabled.*

|               |                              |
|---------------|------------------------------|
| Input range   | <b>-1.00E+12 - +1.00E+12</b> |
| Default value | <b>0</b>                     |

#### End value

End value for scaling the x axis.

*Only editable when autoscaling is disabled.*

|               |                              |
|---------------|------------------------------|
| Input range   | <b>-1.00E+12 - +1.00E+12</b> |
| Default value | <b>1000</b>                  |

### 4.8.3.3 Curve properties - y1 axis

Dialog window: **Database ▶ Curves ▶ Properties curves # ▶ y1 axis**

Parameters for the graphical display of the curves on the y1 axis (left-hand y axis).

#### Command type

Selection of the command type for which the curve properties are to be defined. The curve properties defined for each command type are saved per curve window and per client.

|               |  |
|---------------|--|
| Selection     | <b>DET   MET   SET   KFT   KFC   BRC   STAT   MEAS   DOS</b> |
| Default value | <b>DET</b>   |

**NOTE**

When the dialog window is opened, those **Command type** will be selected as standard which applies for the curve shown in the curve window.

**Autoscaling**

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

**Size**

Selection of the quantity to be shown on the y1 axis.

*For DET commands*

|               |   |
|---------------|---|
| Selection     | <b>Volume [mL]   Measured value   ERC   Time [s]   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Measured value</b>   |

*For MET commands*

|               |   |
|---------------|---|
| Selection     | <b>Volume [mL]   Measured value   dMW   Time [s]   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Measured value</b>   |

*For SET, STAT, DOS and KFT commands*

|               |  |
|---------------|--|
| Selection     | <b>Time [s]   Measured value   Volume [mL]   dV/dt [µL/min]   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Volume [mL]</b>   |

*For KFC commands*

|               |   |
|---------------|---|
| Selection     | <b>Time [s]   Measured value   Amount [µg]   Charge [mAs]   Drift [µg/min]   dV/dt [µ/min]   Ugen   Igen [mA]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Amount [µg]</b>  |



*For BRC commands*

|               |   |
|---------------|---|
| Selection     | <b>Time [s]   Measured value   Amount [µg]   Charge [mAs]   Drift [µg/min]   dV/dt [µ/min]   Ugen   Igen [mA]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Amount [µg]</b>  |

*For MEAS commands*

|               |  |
|---------------|--|
| Selection     | <b>Time [s]   Measured value   dMW/dt   Temperature [°C]   Calculated 1...3   External 1...3</b> |
| Default value | <b>Measured value</b>  |

### Label

Freely definable axis label for the y1 axis. With **auto** the designation from the field **Size** will be used.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>50 characters   auto</b> |
| Default value | <b>auto</b>                 |

### Scaling

#### Start value

Initial value for scaling the y1 axis.

*Only editable when autoscaling is disabled.*

|               |                              |
|---------------|------------------------------|
| Input range   | <b>-1.00E+12 - +1.00E+12</b> |
| Default value | <b>0</b>                     |

#### End value

End value for scaling the y1 axis.

*Only editable when autoscaling is disabled.*

|               |                              |
|---------------|------------------------------|
| Input range   | <b>-1.00E+12 - +1.00E+12</b> |
| Default value | <b>1000</b>                  |

### Curve

#### Curve color

Selection of the color for the curve line.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   blue</b> |
| Default value | <b>blue</b>             |

#### Symbol

Selection of the symbol for the display of the individual measuring points.

|               |                                      |
|---------------|--------------------------------------|
| Selection     | ●   ×   *   ■   ▲   <b>No symbol</b> |
| Default value | <b>No symbol</b>                     |

**No symbol**

Measuring points are not shown.

**NOTE**

With curves, for which the distance between to measuring points is smaller than 5 pixels, the separate measuring points are not displayed anymore, even if a symbol has been selected. In this case, the graphics window can eventually be enlarged in order to display the symbols again.

**Symbol color**

Selection of the color for the measuring point symbol.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   blue</b> |
| Default value | <b>blue</b>             |

**Smoothing****Smoothing**

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

Switches smoothing on/off for the curve.

**Smoothing factor x axis**

Factor for smoothing on the x axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

**Smoothing factor y-axis**

Factor for smoothing on the y axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

**Show with original curve**

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

If this check box is activated, then the original curve (solid line, same color) will be shown in addition to the smoothed curve (dotted line).



*For SET, STAT, DOS and KFT commands*

|               |  |
|---------------|--|
| Selection     | <b>Time [s]   Measured value   Volume [mL]   dV/dt [µL/min]   Temperature [°C]   Calculated 1...3   External 1...3   off</b> |
| Default value | <b>off</b>   |

*For KFC commands*

|               |   |
|---------------|---|
| Selection     | <b>Time [s]   Measured value   Charge [mAs]   Amount [µg]   Drift [µg/min]   Ugen   Igen [mA]   Calculated 1...3   External 1...3   off</b> |
| Default value | <b>off</b>  |

*For BRC commands*

|               |  |
|---------------|--|
| Selection     | <b>Time [s]   Measured value   Amount [mAs]   Water [µg]   Drift [µg/min]   Ugen   Igen [mA]   Calculated 1...3   External 1...3   off</b> |
| Default value | <b>off</b>   |

## Label

Freely definable axis label for the y1 axis. With **auto** the designation from the field **Size** will be used.

|               |                             |
|---------------|-----------------------------|
| Selection     | <b>50 characters   auto</b> |
| Default value | <b>auto</b>                 |

## Curve

### Curve color

Selection of the color for the curve line.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   pink</b> |
| Default value | <b>pink</b>             |

### Symbol

Selection of the symbol for the display of the individual measuring points.

|               |                              |
|---------------|------------------------------|
| Selection     | <b>5 symbols   No symbol</b> |
| Default value | <b>No symbol</b>             |

#### **No symbol**

Measuring points are not shown.



**NOTE**

With curves, for which the distance between to measuring points is smaller than 5 pixels, the separate measuring points are not displayed anymore, even if a symbol has been selected. In this case, the graphics window can eventually be enlarged in order to display the symbols again.

**Symbol color**

Selection of the color for the measuring point symbol.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   pink</b> |
| Default value | <b>pink</b>             |

**Smoothing**

**Smoothing**

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

Enables/disables the smoothing for curves.

**Smoothing factor x axis**

Factor for smoothing on the x axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

**Smoothing factor y-axis**

Factor for smoothing on the y axis.

|               |                    |
|---------------|--------------------|
| Input range   | <b>0.01 - 1000</b> |
| Default value | <b>0.01</b>        |

**4.8.3.5 Curve properties - Options**

Dialog window: **Database ▶ Curves ▶ Properties curves # ▶ Options**

Options for graphical display of curves.

**Command type**

Selection of the command type for which the curve properties are to be defined. The curve properties defined for each command type are saved per curve window and per client.

|               |  |
|---------------|--|
| Selection     | <b>DET   MET   SET   KFT   KFC   BRC   STAT   MEAS   DOS</b> |
| Default value | <b>DET</b>   |

**NOTE**

When the dialog window is opened, those **Command type** will be selected as standard which applies for the curve shown in the curve window.

**Autoscaling**

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

If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

**Display grid****Display grid**

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

If this check box is activated then a grid will be shown against the background.

**Grid type**

Selection of the type of grid line.

|               |                            |
|---------------|----------------------------|
| Selection     | <b>Line types   dotted</b> |
| Default value | <b>dotted</b>              |

**Grid color**

Selection of the grid line color.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   gray</b> |
| Default value | <b>gray</b>             |

**Background****Background color**

Selection of the color for the curve background.

|               |                          |
|---------------|--------------------------|
| Selection     | <b>13 colors   white</b> |
| Default value | <b>white</b>             |



### Show endpoints

#### Show endpoints

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

If this check box is activated then the endpoints found will be shown on the curve by the symbol **◆** and labeled with **EP#** (potentiometric end-point), **BP#** (break point), **FP#** (fixed endpoint), **HP** (HNP), **MI** (minimum value) or **MA** (maximum value).

#### Automatic EPs

Selection of the color for automatically set endpoints.

|               |                          |
|---------------|--------------------------|
| Selection     | <b>13 colors   black</b> |
| Default value | <b>black</b>             |

#### Manual EPs

Selects the color for manually set endpoints.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   pink</b> |
| Default value | <b>pink</b>             |

### Show evaluation lines

#### Show evaluation lines

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

If this check box is activated the evaluation lines (tangents, auxiliary lines) will be shown.

#### Tangents

Selection of the color for the tangents and auxiliary lines.

|               |                                |
|---------------|--------------------------------|
| Selection     | <b>13 colors   light green</b> |
| Default value | <b>light green</b>             |

#### Auxiliary lines

Selection of the color for the auxiliary lines.

|               |                         |
|---------------|-------------------------|
| Selection     | <b>13 colors   blue</b> |
| Default value | <b>blue</b>             |

#### 4.8.3.6 Curve properties - Measuring point list

Dialog window: **Database ▶ Curves ▶ Properties curves # ▶ Options**

Parameters for showing the measuring point list.

## Command type

Selection of the command type for which the curve properties are to be defined. The curve properties defined for each command type are saved per curve window and per client.

|               |  |
|---------------|--|
| Selection     | <b>DET   MET   SET   KFT   KFC   BRC   STAT   MEAS   DOS</b> |
| Default value | <b>DET</b>   |



### NOTE

When the dialog window is opened, those **Command type** will be selected as standard which applies for the curve shown in the curve window.

## Autoscaling

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

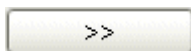
If this option is switched on then all axes in the curve window will be scaled automatically. In this case the fields **Start value** and **End value** cannot be edited.

## Available columns

Shows all fields that can be displayed as columns in the measuring point list.

## Displayed columns

Shows all fields that will be shown as columns in the measuring point list.



Adds the selected column to the measuring point list.



Removes the selected column from the measuring point list.



Modifies the sequence of displayed columns by moving the selected column up and down.



The **Backup database 'Database name'** dialog window opens.

- 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 the data is restored.

- 7 Click on **[Start]**.

The manual backup of the database is started and the database is backed up to the selected directory.

### Backing up a database automatically

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Database manager...** menu item.  
The **Database manager** dialog window opens.
- 3 Select desired database and click on **[Properties]**.  
The **Properties - Database - 'Database name'** dialog window opens for editing the database properties.
- 4 On the **General** tab, enter a comment on the database in the **Comment** field.
- 5 On the **Backup** tab, enable the **Backup monitoring** check box.
- 6 Enter an **Interval** for backup monitoring or a 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 **Properties - Database** dialog window closes and the database will be backed up automatically to the selected directory at the desired time.

## 5.1.2 Restoring the database

How to proceed?

**1** Select **Database** program part.

**2** Click on the  symbol or the **File ► Database manager...** menu item.

The **Database manager** window 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** field in which the desired database was backed up.

**5** Select the name for the desired backup file in the **Backup name** list box.

**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 restored under its old name.

### 5.1.3 Backing up configuration data

How to proceed?

#### General

The configuration data is saved in **tiBase** in the **Configuration database**. Included among the configuration data are settings for the data import, **Security settings** (see *Chapter 3.2.2.1, page 87*), **User administration** (see *Chapter 3.2.1.1, page 79*), **Program administration** (see *Chapter 3.2.3.1, page 97*) and templates.

In local server systems (**tiBase full**), the configuration database is located in the program directory of the computer on which the program has been installed. In client/server systems (**tiBase multi**), the configuration database is stored centrally on the server 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 **Configuration** program part.
- 2 Click on the **File ► Backup ► Manually** menu item.  
The **Backup configuration data manually** dialog window 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 data is restored.

- 5 Click on **[Start]**.



The manual backup is started and the configuration database is backed up to the selected directory.

### Backing up configuration data automatically

- 1 Select **Configuration** program part.
- 2 Click on the **File ► Backup ► Automatically** menu item.  
The **Backup configuration data automatically** dialog window opens.
- 3 Activate the **Automatic backup** check box.
- 4 Enter an **Interval** for backup monitoring or a 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 **Backup configuration data automatically** dialog window closes and the configuration database will be backed up automatically to the selected directory at the desired time.

#### 5.1.4 Restoring configuration data

How to proceed?

##### tiBase full

- 1 Exit **tiBase**.
- 2 Start the **ConfigRestore.exe** file in the **...\tiBase\bin** program directory.  
The **Restore configuration data** dialog window 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 in the **Backup name** list box.
- 5 Click on **[Start]**.

The restoring of the configuration database is started.

### tiBase multi



- 1 Make sure that **tiBase** is closed on all clients connected to the server and on the server itself.
- 2 Start the **ConfigRestore.exe** file in the **...\tiBase\bin** program directory on the server.  
The **Restore configuration data** dialog window 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 in the **Backup name** list box.
- 5 Click on **[Start]**.

The restoring of the configuration database is started.

## 5.2 Determinations

### 5.2.1 Searching for determinations

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Open...** menu item.  
The **Open database** dialog window opens.
- 3 Select desired database or enter name in the **Database name** field.
- 4 Click on **[Open]**.  
The data sets of the selected database are displayed in the **Determination overview**.
- 5 Click on the  symbol or the **Determinations ► Find...** menu item.

The **Search - Database 'Database name'** dialog window opens.



**6** Enter or select desired search terms and search options.

**7** Click on **[Search next]**.


The next determination containing the search term is highlighted in the **Determination overview**.

## 5.2.2 Filtering determinations

How to proceed?

### Opening a database

**1** Select **Database** program part.

**2** Click on the  symbol or the **File ► Open...** menu item.

The **Open database** dialog window opens.

**3** Select desired database or enter name in the **Database name** field.

**4** Click on **[Open]**.

The data sets of the selected database 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 mouse button.

The contents of the field selected in the table will be set as a filter criterion and this filter will be applied directly to the table.

**NOTE**

The quick filter can be applied 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 **Special filter** dialog window for the definition of user-specific filters opens.

- 2 Use the **Edit ► Edit line** menu item to open the **Edit filter criterion New filter** dialog window.

- 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 **Filter** selection list, select the desired special filter.


The table will be filtered.

**5.2.3 Signing determination**

How to proceed?

**Selecting a determination**

- 1 Select **Database** program part.

- 2 Click on the  symbol or the **File ► Open...** menu item.

The **Open database** dialog window opens.



**3** Select desired database or enter name in the **Database name** field.

**4** Click on **[Open]**.

The data sets of the selected database 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 permission (see Chapter 3.2.1.2.3, page 82).

**1** Click on the  symbol or **Determinations ▶ Sign ▶ Signature 1...** menu item.

The **Signature Level 1** window opens. If the selected determination can be signed, **Signature possible** is displayed in the **Info** field.

**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 permission (see *Chapter 3.2.1.2.3, page 82*).

- 1 Click on the  symbol or the **Determinations ▶ Sign ▶ Signature 2...** menu item.

The **Signature Level 2** window opens. If the selected determination can be signed, **Signature possible** is displayed in the **Info** field.

- 2 Enter or select **User**, **Password**, **Reason** and **Comment** and click on **[Sign]**.

The selected determination will be signed on level 2.



### NOTE

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

## 5.2.4 Exporting determinations

How to proceed?

### Defining export templates

- 1 Select **Database** program part.
- 2 Click on the **Tools ▶ Templates ▶ Export templates...** menu item.  
The **Export templates** window 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 closes.

**6** Click on **[Close]**.  
The **Export templates** dialog window closes.

### Selecting determinations

**1** Select **Database** program part.

**2** Click on the  symbol or the **File ► Open...** menu item.  
The **Open database** dialog window opens.

**3** Select desired database or enter name in the **Database name** field.

**4** Click on **[Open]**.  
The data sets of the selected database are displayed in the **Determination overview**.

**5** Select desired determinations.

### Exporting determinations

**1** Click on the **Determinations ► Export...** menu item.  
The **Export determinations** window opens.



**2** In the **Selection** field, select the desired option (**All records** or **Selected records**).

**3** In the **Export template** selection list, select an export template.

**4** Click on **[OK]**.  
The selected determinations are exported into the directory defined in the export template.

## 5.2.5 Importing determinations

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Open...** menu item.  
The **Open database** dialog window opens.
- 3 Select desired database or enter name in the **Database name** field.
- 4 Click on **[Open]**.  
The data sets of the selected database are displayed in the **Determination overview**.
- 5 Click on the **Determinations ► Import....** menu item or the  symbol.  
The **Import determinations** window opens.
- 6 Select desired determinations.
- 7 Click on **[Open]**.  
The selected determinations are imported into the open database.




### NOTE

Only determinations in the **\*.tdet** and **\*.txt** file formats can be imported.

## 5.2.6 Deleting determinations

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Open...** menu item.  
The **Open database** dialog window opens.
- 3 Select desired database or enter name in the **Database name** field.



- 4 Click on **[Open]**.

The data sets of the selected database are displayed in the **Determination overview**.

- 5 Select desired determinations.

- 6 Click on the  symbol or the **Determinations ► Delete** menu item.

- 7 Confirm deleting.

The selected determinations are deleted along with all **Determination versions**.




#### NOTE

If the **Comment on modification of determinations** option in the **Security settings** is enabled, then the **Modification comment determination** window will appear before the modification is saved.

### 5.2.7 Making the determination version current

How to proceed?

- 1 Select **Database** program part.

- 2 Click on the  symbol or the **File ► Open...** menu item.

The **Open database** dialog window opens.

- 3 Select desired database or enter name in the **Database name** field.

- 4 Click on **[Open]**.

The data sets of the selected database are displayed in the **Determination overview**.

- 5 Select desired determination.

- 6 Click on the  symbol or the **Determinations ► Show history...** menu item.

Only the currently selected determination as well as all the previous versions of this determination will be shown in the **determination table**.

**7** Select desired determination that is once again to be made the current determination version.

**8** Click on the  symbol or the **Determinations ► Make current** menu item.

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.

## 5.2.8 Reprocessing determinations


How to proceed?



### NOTE

Determinations signed at level 2 cannot be reprocessed.

**1** Select **Database** program part.

**2** Click on the  symbol or the **File ► Open...** menu item.

**3** Select desired database or enter name in the **Database name** field.  
The data sets of the selected database are displayed in the **Determination overview**.

**4** Select desired determinations.

**5** Click on the  symbol or the **Determinations ► Reprocess...** menu item.

The **Reprocessing** dialog window opens. The first of the selected determinations is displayed.

### Modifying variables

**1** Select the **Variables** tab.



**2** Select the desired variable in the table.

**3** Click on **[Modify]**.

The **Modify variable** dialog window opens.

**4** In the **Value** field, enter a new value for the variable.

**5** Click on **[OK]**.

**6** Click on **[Recalculate]**.

The selected determinations are recalculated. The results of this recalculation are entered automatically in the **Result view** subwindow.



#### NOTE

If a variable is modified, then all selected determinations will be recalculated with the new value by clicking on **[Recalculate]**. If a variable is not modified, then the original variable values will be used when several determinations are recalculated (i.e. variables with the same name but different values will not be overwritten until they are deliberately modified).

**7** In the **Reprocessing** dialog 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 **Reprocessing** dialog window will be closed. This button is disabled for as long as recalculating has not yet been triggered and if not all of the selected determinations could have been recalculated.

### Modifying calculations

**1** Change to the **Calculations** tab.

**2** Click on **[New]**.

The **Result New result - RSxx** dialog window opens.

**3** Modify the new calculation as desired.

**4** Click on **[OK]**.

**5** Click on **[Recalculate]**.

The selected determinations are recalculated. The results of this recalculation are entered automatically in the **Result view** subwindow.

**6** If desired, save the modified method with **[Save As...]** under the same name or under a new name.

If the modified method is saved under the name of an existing method then all the earlier method versions will be deleted and a new version with the number **1** will be generated.

**7** In the **Reprocessing** dialog 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 **Reprocessing** dialog window will be closed. This button is disabled for as long as recalculating has not yet been triggered and if not all of the selected determinations could have been recalculated.

## Changing statistics



### NOTE

The **Statistics** tab will only be shown when the last determination (and only this one) is selected from a set of determinations which belong together because of the statistics defined in the method.

**1** Change to the **Statistics** tab.**2** In the **Result name** field, select the result whose **Result value** is to be displayed.**3** Select desired determination whose result value(s) should be switched on or off for the statistics.**4** If only the selected result of the determination is to be switched on or off for the statistics, click on **[Result on/off]**.

If the result is switched off, an asterisk (\*) appears after the result value; if it is switched on again, the asterisk disappears.



- 5 If all results of the selected determination are to be switched on or off for the statistics, click on **[Determination on/off]**.

If the determination is switched off, then an asterisk (\*) appears after all result values in the table and the line is shown as inactive (gray); if it is switched on again then the asterisks will disappear.



#### NOTE

If the results of a determination are switched off, the statistics for these results will be switched off when this determination is recalculated, i.e. no data for the mean value and standard deviations will be shown. However, the determinations remain statistically linked to each other so that the results can also be switched on again.

- 6 Click on **[Recalculate]**.

The selected determinations are recalculated. The results of this recalculation are entered automatically in the **Result view** subwindow.

- 7 In the **Reprocessing** dialog 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 **Reprocessing** dialog window will be closed. This button is disabled for as long as recalculating has not yet been triggered and if not all of the selected determinations could have been recalculated.

### Editing curve evaluations



#### NOTE

The **Curve evaluation** tab is only shown when a single determination is selected that contains curves that can be evaluated.

- 1 Change to the **Curve evaluation** tab.
- 2 In the **Command name** field, select the command whose curve is to be displayed.
- 3 Click on **[Edit]**.

The **Curve evaluation** dialog window opens for manually reprocessing the curve evaluation.

**4** Modify curve evaluation manually.

**5** Then close the window with **[OK]**.

**6** Click on **[Recalculate]**.

The selected determinations are recalculated. The results of this recalculation are entered automatically in the **Result view** subwindow.


**7** In the **Reprocessing** dialog 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 **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 have been recalculated.

## 5.2.9 Printing determination reports

How to proceed?

**1** Select **Database** program part.

**2** Click on the  symbol or the **File ► Open...** menu item.

The **Open database** dialog window opens.

**3** Select desired database or enter name in the **Database name** field.

**4** Click on **[Open]**.

The data sets of the selected database 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 exited will be automatically opened the next time the program is started.



- 5 Select desired determinations.
- 6 Click on the **File ► Print ► Report...** menu item.  
The **Report output** dialog window opens.
- 7 Under **Selection**, select desired determinations for report output.
- 8 Under **Report type** select the option **Original report** or **Report template**.
- 9 Under **Output target**, enable the **Printer** check box 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 **Report output** dialog window, click on **[OK]**.  
The reports of the selected determinations will be output.

### 5.2.10 Printing determination overviews

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Open...** menu item.  
The **Open database** dialog window opens.
- 3 Select desired database or enter name in the **Database name** field.
- 4 Click on **[Open]**.

The data sets of the selected database 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 exited will be automatically opened the next time the program is started.

- 5 Select desired determinations.
- 6 Click on the **File ▶ Print ▶ Determination overview...** menu item.  
The **Print determination overview (PDF)** dialog window opens.
- 7 Under **Selection**, select desired determinations for report output.
- 8 Under **Orientation**, select the **Portrait format** or **Landscape format** option.
- 9 Click on **[OK]**.  
The determination overview opens as a PDF file.

## 5.3 Databases

### 5.3.1 Database in general

The **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 in **tiBase**. Included among such determination data is the method data used for the determination, the measured data generated during the determination and the results calculated from it.


In local server systems (**tiBase full**), 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 (**tiBase multi**), the databases are stored on drives administered centrally by the server and are globally available 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.

### 5.3.2 Opening a database

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Open...** menu item.  
The **Open database** dialog window opens.
- 3 Select desired database or enter name in the **Database name** field.
- 4 Click on **[Open]**.

The data sets of the selected database 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 exited will be automatically opened the next time the program is started.

### 5.3.3 Closing a database

How to proceed?

#### Closing a single database


- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Close...** menu item.  
The focused database will be closed.

### Closing all databases

- 1 Select **Database** program part.
- 2 Click on the **File ► Close all...** menu item.  
All opened databases will be closed.

## 5.3.4 Creating a database

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Database manager...** menu item.  
The **Database manager** dialog window opens.
- 3 Click on the **Edit ► New...** menu item.  
The **New database** dialog window opens.
- 4 Enter a name for the new database.
- 5 Click on **[OK]**.

The **Properties - Database - 'Database name'** dialog window opens for editing the database properties.



#### NOTE

The database name must be unique in the entire client/server system.


- 6 On the **General** tab, enter a comment on the database in the **Comment** field.
- 7 On the **Access rights** tab, define access rights for reading and editing the new database for the different user groups.
- 8 On the **Backup** tab, define backup monitoring and automatic backup for the newly created database.



- 3 Select desired database.
- 4 Click on **[Properties]**.  
The **Properties - Database - 'Database name'** dialog window opens for editing the database properties.
- 5 On the **General** tab, enter a comment on the database in the **Comment** field.
- 6 On the **Backup** tab, enable the **Backup monitoring** check box.
- 7 Enter an **Interval** for backup monitoring or a 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 **Properties - Database** dialog window closes.  
The database is automatically saved in the selected directory at the desired time.

### 5.3.6 Restoring the database

How to proceed?

- 1 Select **Database** program part.
- 2 Click on the  symbol or the **File ► Database manager...** menu item.  
The **Database manager** dialog window opens.
- 3 Click on **[Restore]**.  
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 restored under its old name.

### 5.3.7 Deleting a database

How to proceed?

**1** Select **Database** program part.

**2** Click on the symbol  or **File ► Database manager...** menu item.  
The **Database manager** dialog window opens.

**3** Select desired database.

**4** Click on the **Edit ► Delete...** menu item.

The selected database is deleted.



#### NOTE

Databases that are open cannot be deleted.

## 5.4 Configuration data

### 5.4.1 Configuration data in general

The configuration data is saved in **tiBase** in the **Configuration database**. Included among the configuration data are settings for the data import, **Security settings** (see *Chapter 3.2.2.1, page 87*), **User administration** (see *Chapter 3.2.1.1, page 79*), **Program administration** (see *Chapter 3.2.3.1, page 97*) and templates.

In local server systems (**tiBase full**), the configuration database is located in the program directory of the computer on which the program has been installed. In client/server systems (**tiBase multi**), the configuration database is stored centrally on the server and contains all the configuration data of all computers (clients) that are connected to this server.

### 5.4.2 Exporting configuration data

How to proceed?

**1** Select **Configuration** program part.

**2** Click on the **File ► Export...** menu item.

The **Export configuration data** dialog window opens.

**3** Select desired configuration data.

**4** Click on **[OK]**.

The **Export configuration data** dialog window closes and the **Save** dialog window opens.

**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**.



### 5.4.3 Importing configuration data

How to proceed?

- 1 Select **Configuration** program part.
- 2 Click on the **Import ► file...** menu item.  
The **Open** dialog window opens.
- 3 Select or enter a new name and directory for the **\*.mcfg** import file.
- 4 Click on **[Open]**.  
The **Import configuration data** dialog window 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.

### 5.4.4 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 **Configuration** program part.
- 2 Click on the **File ► Backup ► Manually** menu item.  
The **Backup configuration data manually** dialog window 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 data is restored.

- 5 Click on **[Start]**.

The manual backup is started and the configuration database is backed up to the selected directory.

**Backing up configuration data automatically**

- 1 Select **Configuration** program part.
- 2 Click on the **File ► Backup ► Automatically** menu item.  
The **Backup configuration data automatically** dialog window opens.
- 3 Activate the **Automatic backup** check box.
- 4 Enter an **Interval** for backup monitoring or a date for the **Next backup**.
- 5 Select a directory for the backup in the **Backup directory** field.
- 6 Click on **[OK]**.

The **Backup configuration data automatically** dialog window closes.

The configuration database is automatically saved in the selected directory at the desired time.



### 5.4.5 Restoring configuration data

How to proceed?

#### tiBase full

- 1 Exit **tiBase**.
- 2 Start the **ConfigRestore.exe** file in the **...\tiBase\bin** program directory.

The **Restore configuration data** dialog window 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.

#### tiBase multi

- 1 Make sure that **tiBase** is closed on all clients connected to the server and on the server itself.

- 2 Start the **ConfigRestore.exe** file in the **...\tiBase\bin** program directory on the server.

The **Restore configuration data** dialog window 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.

## 5.5 Import of PC/LIMS reports

### 5.5.1 Import - automatic

How to proceed?

- 1 Select **Configuration** program part.
- 2 In the **Import processes** subwindow, click on the **Edit ▶ New** menu item.  
The **Properties import process** dialog window opens.
- 3 Enter the name of the import process.
- 4 Click on the  symbol.  
The **Select directory** dialog window opens.
- 5 Select the source directory with the PC/LIMS reports to be imported to the database.
- 6 Click on **[Select]**.  
The path is entered in the **Data source** field.
- 7 Select the database in which the PC/LIMS reports are to be saved.
- 8 Enter a comment (optional).
- 9 If importing the PC/LIMS reports is to run automatically at the start of tiBase, then activate the **Start automatically** check box.  
If the check box is deactivated, then the PC/LIMS reports have to be imported manually.
- 10 Activate the **Delete file** radio button if the PC/LIMS reports are to be deleted in the source directory after the import into the tiBase database.
- 11 Activate the **Move file** radio button if the PC/LIMS reports are to be moved from the source directory to another directory after the import into the tiBase database.
- 12 Click on the  symbol.



The **Select directory** dialog window opens.

**13** Select the folder (create new) to which the PC/LIMS reports are to be moved.

**14** Click on **[Select]**.

The path is entered in the **Directory** field.



#### NOTE

#### Faulty determination data


Faulty data are saved to a sub-directory during the automatic import.

The import of the additional data then continues.

### 5.5.2 Import - manual

How to proceed?

**1** Select **Database** program part.

**2** Click on the **Determinations ► Import....** menu item or the  symbol.

The **Import determinations** dialog window opens.

**3** Select the PC/LIMS reports.

**4** Click on **[Open]**.

### 5.5.3 Editing the import


How to proceed?

**1** Select **Configuration** program part.


**2** In the **Import processes** subwindow, click on the **Edit ► New** menu item.

The **Properties Import process** dialog window opens.

**3** Edit the name of the import process.

**4** Click on the  symbol.

The **Select directory** dialog window opens.

- 5** Select the folder with the PC/LIMS reports to be imported to the database.
- 6** Click on **[Select]**.  
The path is entered in the **Data source** field.
- 7** Enter a comment (optional).
- 8** If importing the PC/LIMS reports is to run automatically at the start of tiBase, then activate the **Start automatically** check box.  
If the check box is deactivated, then the PC/LIMS reports have to be imported manually.
- 9** Activate the **Delete file** radio button if the PC/LIMS reports are to be deleted in the source directory after the import into the tiBase database.
- 10** Activate the **Move file** radio button if the PC/LIMS reports are to be moved from the source directory to another directory after the import into the tiBase database.
- 11** Click on the  symbol.  
The **Select directory** dialog window opens.
- 12** Select the folder (create new) to which the PC/LIMS reports are to be moved.
- 13** Click on **[Select]**.  
The path is entered in the **Directory** field.

#### 5.5.4 Import - one USB flash drive

How to proceed?

##### Defining the properties of the import


- 1** Select **Configuration** program part.



- 2 In the **Import processes** subwindow, click on the **Edit ▶ New** menu item.

The **Properties import process** dialog window opens.

- 3 Enter the name of the import process.

- 4 Click on the  symbol.

The **Select directory** dialog window opens.

- 5 As the data source, select a path which can access a USB flash drive.

- 6 Click on **[Select]**.

The path is entered in the **Data source** field.

- 7 Select the database in which the PC/LIMS reports are to be saved.


- 8 Enter a comment (optional).

- 9 If importing the PC/LIMS reports is to run automatically at the start of tiBase, then activate the **Start automatically** check box.

If the check box is deactivated, then the PC/LIMS reports have to be imported manually.

- 10 Activate the **Delete file** radio button if the PC/LIMS reports are to be deleted in the source directory after the import into the tiBase database.

- 11 Activate the **Move file** radio button if the PC/LIMS reports are to be moved from the source directory to another directory after the import into the tiBase database.

- 12 Click on the  symbol.

The **Select directory** dialog window opens.

- 13 Select the folder (create new) to which the PC/LIMS reports are to be moved.

- 14 Click on **[Select]**.

The path is entered in the **Directory** field.

### Importing with USB flash drive

The PC/LIMS reports are saved on a USB flash drive by the Titrino plus.

- 1 Connect the USB flash drive to the PC.

tiBase imports the PC/LIMS reports directly from the USB flash drive.

## 5.5.5 Import - several USB sticks

How to proceed?

When importing via several USB flash drives, each flash drive must be assigned its own drive letter.

### Assigning a drive letter - Windows XP

- 1 Connect the USB flash drive to the PC.
- 2 Open the context menu of the **Workplace** with the right mouse button.
- 3 Click on the **Administration** menu item.  
The **Computer administration** dialog window opens.
- 4 Click on **Storage device administration**.
- 5 In the list of storage devices, right-click on the drive letter of the USB flash drive.
- 6 In the context menu, click on **Modify drive letter and paths**.  
The **Modify drive letter and path for 'Name'** dialog window opens.
- 7 Click on **[Modify...]**.
- 8 Select a new drive letter in the selection list.  
The new drive letter must not be in use. This also includes a USB flash drive which is not connected.
- 9 Confirm with **[OK]**.

**NOTE**

If the USB flash drive is used on another PC, then the drive letter must be checked.

**Assigning a drive letter - Windows Vista**

- 1** Connect the USB flash drive to the PC.
- 2** Click on **Start ► Computer**.
- 3** Click on the **Administration** menu item.  
The **Computer administration** dialog window opens.
- 4** Click on **Storage device administration**.
- 5** In the list of storage devices, right-click on the drive letter of the USB flash drive.
- 6** In the context menu, click on **Modify drive letter and paths**.  
The **Modify drive letter and path for 'Name'** dialog window opens.
- 7** Click on **[Modify...]**.
- 8** Select a new drive letter in the selection list.  
The new drive letter must not be in use. This also includes a USB flash drive which is not connected.
- 9** Confirm with **[OK]**.

**NOTE**

If the USB flash drive is used on another PC, then the drive letter must be checked.

## Defining the properties of the import

- 1** Select **Configuration** program part.
- 2** In the **Import processes** subwindow, click on the **Edit ▶ New** menu item.  
The **Properties import process** dialog window opens.
- 3** Enter the name of the import process.
- 4** Click on the  symbol.  
The **Select directory** dialog window opens.
- 5** As the data source, select a path which can access a USB flash drive.
- 6** Click on **[Select]**.  
The path is entered in the **Data source** field.
- 7** Select the database in which the PC/LIMS reports are to be saved.
- 8** Enter a comment (optional).
- 9** If importing the PC/LIMS reports is to run automatically at the start of tiBase, then activate the **Start automatically** check box.  
If the check box is deactivated, then the PC/LIMS reports have to be imported manually.
- 10** Activate the **Delete file** radio button if the PC/LIMS reports are to be deleted in the source directory after the import into the tiBase database.
- 11** Activate the **Move file** radio button if the PC/LIMS reports are to be moved from the source directory to another directory after the import into the tiBase database.
- 12** Click on the  symbol.  
The **Select directory** dialog window opens.



**13** Select the folder (create new) to which the PC/LIMS reports are to be moved.

**14** Click on **[Select]**.

The path is entered in the **Directory** field.

### Importing with USB flash drive

The PC/LIMS reports are saved on a USB flash drive by the Titrino plus.

**1** Connect the USB flash drive to the PC.

tiBase imports the PC/LIMS reports directly from the USB flash drive.

## 5.5.6 Import - via RS Server

How to proceed?

### Configuring analysis instrument

#### Installing RS Server

**1** Install RS Server by downloading it from ...

**2** With the right mouse button, click on the  symbol in the status bar.

**3** Select RS Server settings.

**4** Click on **[New]**.

**5** In the **Target directory** field, select the directory in which the PC/LIMS reports sent by the analysis instrument are stored.

**6** In the **Autostart** part, activate the **Automatically start with Windows** check box.

**7** Click on **[OK]**.

## Defining the import process

- 1** Select **Configuration** program part.
- 2** In the **Import processes** subwindow, click on the **Edit ▶ New** menu item.  
The **Properties import process** dialog window opens.
- 3** Enter the name of the import process.
- 4** Click on the  symbol.  
The **Select directory** dialog window opens.
- 5** Select the source directory with the PC/LIMS reports to be imported to the database.
- 6** Click on **[Select]**.  
The path is entered in the **Data source** field.
- 7** Select the database in which the PC/LIMS reports are to be saved.
- 8** Enter a comment (optional).
- 9** If importing the PC/LIMS reports is to run automatically at the start of tiBase, then activate the **Start automatically** check box.  
If the check box is deactivated, then the PC/LIMS reports have to be imported manually.
- 10** Activate the **Delete file** radio button if the PC/LIMS reports are to be deleted in the source directory after the import into the tiBase database.
- 11** Activate the **Move file** radio button if the PC/LIMS reports are to be moved from the source directory to another directory after the import into the tiBase database.
- 12** Click on the  symbol.  
The **Select directory** dialog window opens.



**13** Select the folder (create new) to which the PC/LIMS reports are to be moved.

**14** Click on **[Select]**.

The path is entered in the **Directory** field.

### 5.5.7 Import protocol - properties

How to proceed?

**1** Select **Configuration** program part.

**2** In the **Import protocol** subwindow, click on the **Edit ► Options...** menu item.

The **Properties Import protocol** dialog window opens.

**3** Activate the check box for the required filter options.

**4** Enter the required maximum number of log entries.

**5** Click on **[OK]**.

### 5.5.8 Deleting an import protocol

How to proceed?

**1** Select **Configuration** program part.

**2** In the **Import protocol** subwindow, click on the **Edit ► Delete all messages** menu item.

## 5.6 Reports

### 5.6.1 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...** or **Tools ▶ Report templates ▶ New ▶ Tabular 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.

### 5.6.2 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 settings 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.




**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.

### 5.6.4 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 **Land-  
scape format**.

**9** Click on **[OK]**.

The determination overview is opened as PDF file.

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