IC Process Extension (2.875.8010)

Manual

8.875.8002EN / 2015-03-27

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8.875.8002EN / 2015-03-27 fpe

Technische Dokumentation
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1 General

Caution

This instrument documentation is included in the scope of delivery and has to be read through carefully before starting the instrument. Work other than that described in this manual may not be performed on the instrument or the components connected to it, and all work must be performed in accordance with legal and in-house regulations. Deutsche METROHM Prozessanalytik GmbH bears no liability if these instruction guidelines are not followed.

Information

This instrument documentation includes detailed technical information on the analysis system and its modules. Contact the responsible contact person for more information.

1.1 Scope of delivery

Included in the scope of delivery are a METROHM IC Process Extension, optionally an operating unit (TFT with touchpad and keyboard) as well as additional accessories (see section 5.4 Parts list).
The IC Process Extension is delivered in special packaging together with the included accessories. It is delivered via forwarder. Please check the delivery for potential damage and completeness according to the packing list/delivery note.
If the analysis system is unpacked before assembly, please keep the packaging. Only the packaging can ensure that the analysis system is transported safely later on.

1.2 Safety

- Please note the following warnings and safety instructions used in the documentation:

Information

Note on additional information and tips.

Caution

Indicates potential damage to the instrument or components.

Warning

Indicates important context information or a potential risk of injury.

Warning

Indicates a danger when handling electricity.

- Please keep the following warnings in mind, particularly when handling chemicals:

Caution / Danger

Hazardous to the aquatic environment.

Caution / Danger

Used to solely or additionally indicate different categories; health hazard, caustic and irritating.

Caution / Danger

Caustic effect. Corrosive to metals, causes severe skin burns and serious eye damage.

Danger

Various health hazards.

Danger

Acute toxicity.

Danger

Flammable, self-heating, self-reactive, pyrophoric, organic peroxides.

Caution / Danger

All necessary safety measures must be followed when handling chemicals! Personal protective equipment must be worn.

- Please keep the following notes in mind, particularly for transportation and storage:

Fragile packed goods

This symbol is used for fragile goods. Goods that are labeled in this way should be handled with care and must not be turned over or tied up.

This side up!

Electronic components

This symbol is used for electronic components. Goods that are labeled in this way should be handled with care and must not be exposed to any radiation or humidity.

Protect from moisture and humidity

1.3 Transport and storage

Caution

The analyzer should be transported using a suitable industrial transport vehicle. The load's center of gravity must be taken into account in the process.

The packaging used for general transport consists of an outer box made of cardboard including dunnage. This allows the delivery to be safely brought to the provided installation location on site using an industrial transport vehicle. The warning notices on the outside of the packaging must be followed.

Fragile packed goods

This symbol is used for fragile goods. Goods that are labeled in this way should be handled with care and must not be turned over or tied up.

Electronic components

This symbol is used for electronic components. Goods that are labeled in this way should be handled with care and must not be exposed to any radiation or humidity.

If the IC Process Extension is intended to be installed at a later point in time, it can be stored temporarily in the packaging while taking the following information into account.

This side up!

Protect from moisture and humidity

Protect from heat and cold

The system must be stored at a temperature ranging from 0 to 40 °C! The humidity can fluctuate in a range from 15 to 80% (no condensation at 35 °C).

1.4 Protective measures

- Personal protection
    - Personal protective equipment must be worn at all times!
    - All necessary safety measures must be followed when handling chemicals (e.g. protective glasses, gloves).
    - All protective measures in effect on site have to be observed and followed!
    - Work safety regulations have to be followed!
    - All warnings and safety instructions in the documentation have to be followed!
    - The instrument may only be controlled and operated after instruction/training by a Metrohm employee.
- Protection for the analysis system
    - The analysis system has been developed for use in enclosed spaces. Protection from frost, moisture, high temperatures, direct sunlight and other environmental factors must be ensured. Also see the information under Chapters:
        - 1.3 Transport and storage
        - 2.2 Ambient conditions

2 Assembly and installation

2.1 General

- A level and firm surface must be available to set up the analysis system.

2.1.1 Dimensions and weight

Component 1: IC Process Extension

Dimensions:	63 x 62 x 47 (W x H x D)
Weight:	approx. 60 kg
Protection:	IP 54

Component 2: Control unit (TFT with touchpad and keyboard)

Dimensions:	44 x 55 x 45 cm (W x H x D)
Weight:	approx. 22 kg
Protection:	IP 54

2.2 Ambient conditions

The following ambient conditions are required at the installation site:

- Cleanliness
- Sufficient weather protection from frost, moisture, high temperatures, direct sunlight and other environmental factors must be ensured.
- Temperature range: 4 - 40 °C
- Humidity: 15 - 80% (no condensation at 35 °C)
- Power supply: 230 V (115), 50 Hz (60), max. power consumption: 2,200 VA
- No vibrations
- Utilities (**ultrapure water** for storage tank or directly connected ultrapure water system)
- Fixture for wastewater connection
- Sample supply (volumetric flow 5-10 mL/min)

2.3 Assembly

Warning

The weight of the analyzer can be over 60 kg.
Use appropriate and safe equipment to transport the analyzer to its destination whenever possible.

Information

The analyzer needs the necessary clearance to the left and right side for cable connections. The analyzer also needs clearance in the front and on the left and right side for the wet end door swing (see Figure 1).

Information

If the analyzer is wall mounted, make sure that the wall that is used for mounting can support four times the weight of the analyzer. The analyzer must be mounted level.

- The IC Process Extension can be set up on a table. Best suited is a freestanding table.
- There are four mounting brackets (with 12 mm bore holes) at the rear of the IC Process Extension housing for wall mounting.
- If two IC Process Extension housings are placed on top of each other on a table, then the system has to be protected against falling over (see Figure 1: Instrument dimensions).
- The operating unit is set up next to the housing on the table.
- The TFT monitor can be mounted to the wall as well. (option)

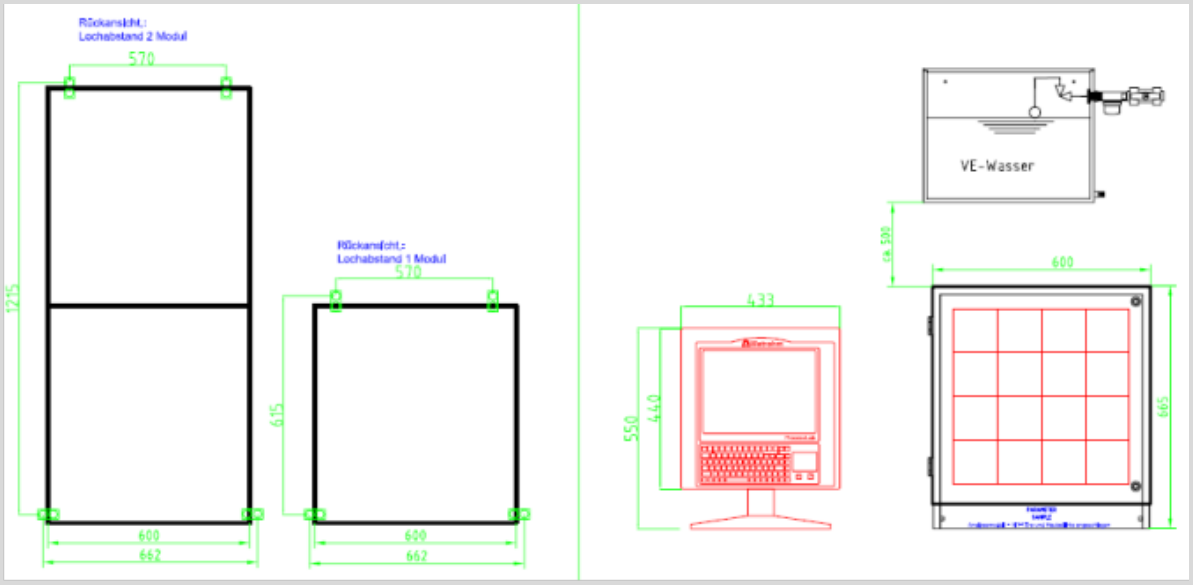


Figure 1: Instrument dimensions for wall mounting and demineralized water

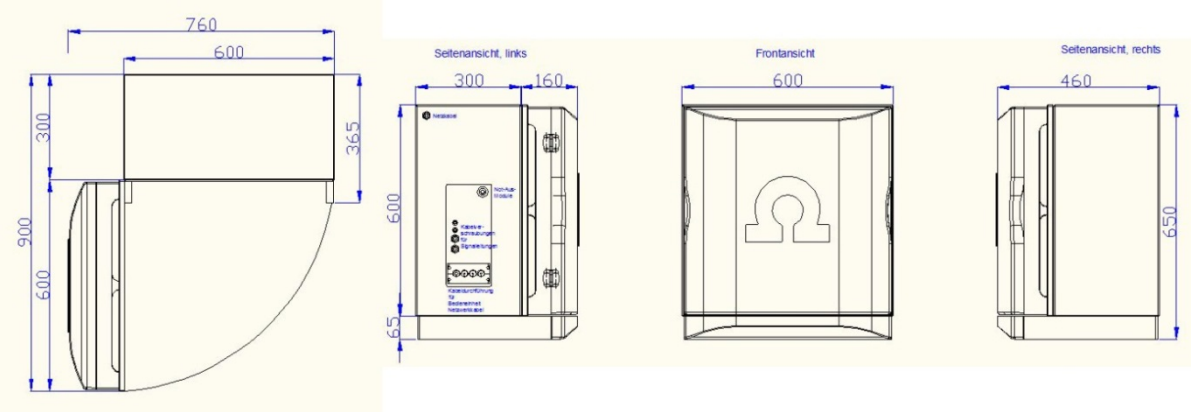


Figure 2: Instrument dimensions and swing range

2.4 Electrical installation

2.4.1 General

Warning

Electrical connections may only be made by authorized specialist personnel.

Warning

Always remove the analyzer from the power supply when working on the instrument.
Never touch, remove or install modules/instruments during ongoing operation.
Take the necessary measures for personal and instrument safety.
Working on electrically live parts is not permitted!

Therefore, always follow the safety rules below before beginning to work in or on the analysis system:

- Isolate - The power must be switched off first.
- Secure the instrument against being switched on again
- Verify that the instrument is de-energized - Use a two-pole voltage tester
- Cover or switch off neighboring live parts
- Keep ESD protection in mind
- Only use shielded cords

2.4.2 Power supply and grounding connection

Warning

The on-site supply voltage has to match the voltage specified on the side of the ProcessLab housing (220-240/110-120 VAC).

- At least 2-3 Schuko sockets should be available for the power supply of all components of the analysis system.
- As an alternative, the analysis system can be connected to a safety main switch that can be locked. This switch should be wall mounted so that it can easily be reached from the analysis system.
- The analysis system is grounded via the power cord.
- The emergency stop button is attached on the left side of the analysis system. It resets all signals and wet end modules to the default value (see Figure 3: Emergency stop button).

Figure 3: Emergency stop button

2.4.3 Connecting the operating unit (optional)

- The keyboard and the touchpad (Figure 4: Monitor of the analysis system) are plugged into the industrial PC directly at the labeled locations (also see Figure 7: IPC connectors).

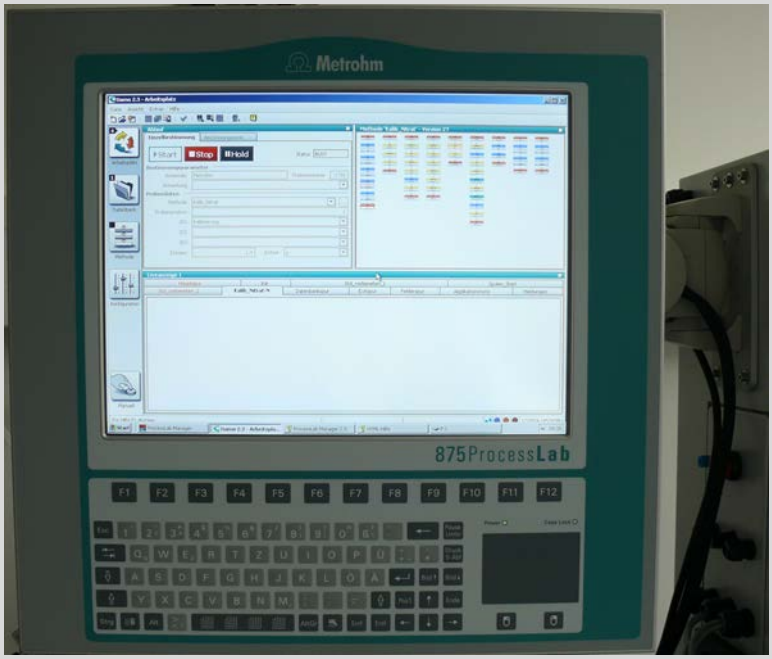
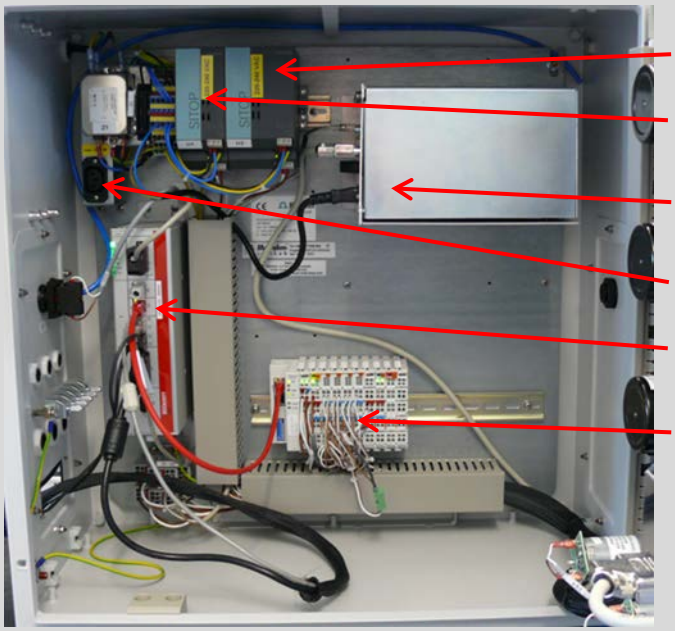


Figure 4: Monitor of the analysis system

- The power supply cable of the monitor is plugged into the IEC connector in the IC Process Extension housing.
- The cable entry plate is screwed onto the IC Process Extension housing (Figure 6: Flange plate for signal lines).

2.4.4 Industrial PC and electronics plate



Power supply unit (24 V, 10 A) for IPC & I/O controller

Power supply unit (24 V, 5 A) for valves & pumps

Dosing interface

IEC connector (220-240 V)

Industrial PC (Windows 7)

I/O controller

Figure 5: Inside view IC Process Extension

Cable feed-through (PG screw connector):

a. Signal lines PG M16x1.5
b. Signal lines PG M20x1.5

Cable entry plate

a. DVI cable (TFT monitor)
b. USB cable (membrane keyboard and touchpad)
c. TFT power plug

Figure 6: Flange plate for signal lines

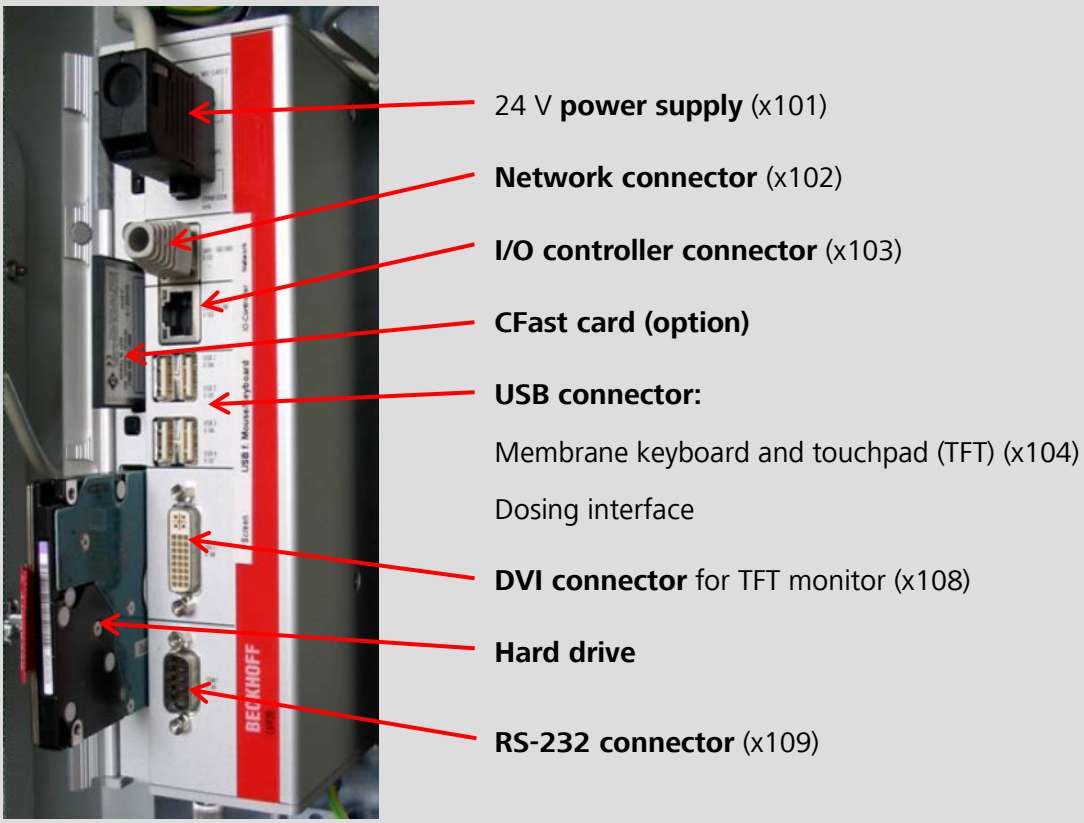


Figure 7: IPC connectors

2.4.5 Connecting the signal lines

Warning

Always remove the analyzer from the power supply when working on the instrument. Never touch, remove or install modules/instruments during ongoing operation. Take the necessary measures for personal and instrument safety.

Caution

- Always disconnect the instrument from the supply voltage.
- Only use shielded cords. The cable shielding must be fastened to the ground bus with the shielding terminal screw.
- The lines are connected to the I/O controller directly.
- In order to open the contact springs, insert a 2.5 x 0.4 mm screwdriver horizontally into the rectangular actuation openings and press towards the LED.
- A prefabricated cable has to be connected to the computer's network card directly if the IPC is being integrated into a LAN.

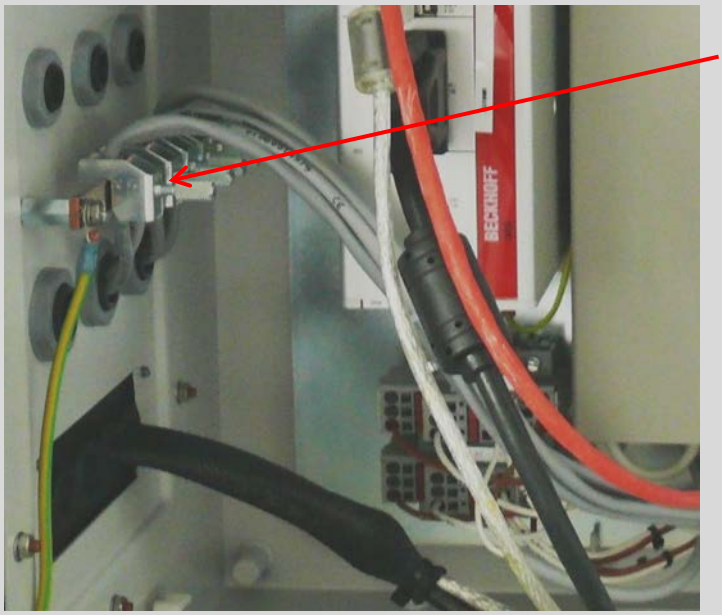


Figure 8: Ground bus connector

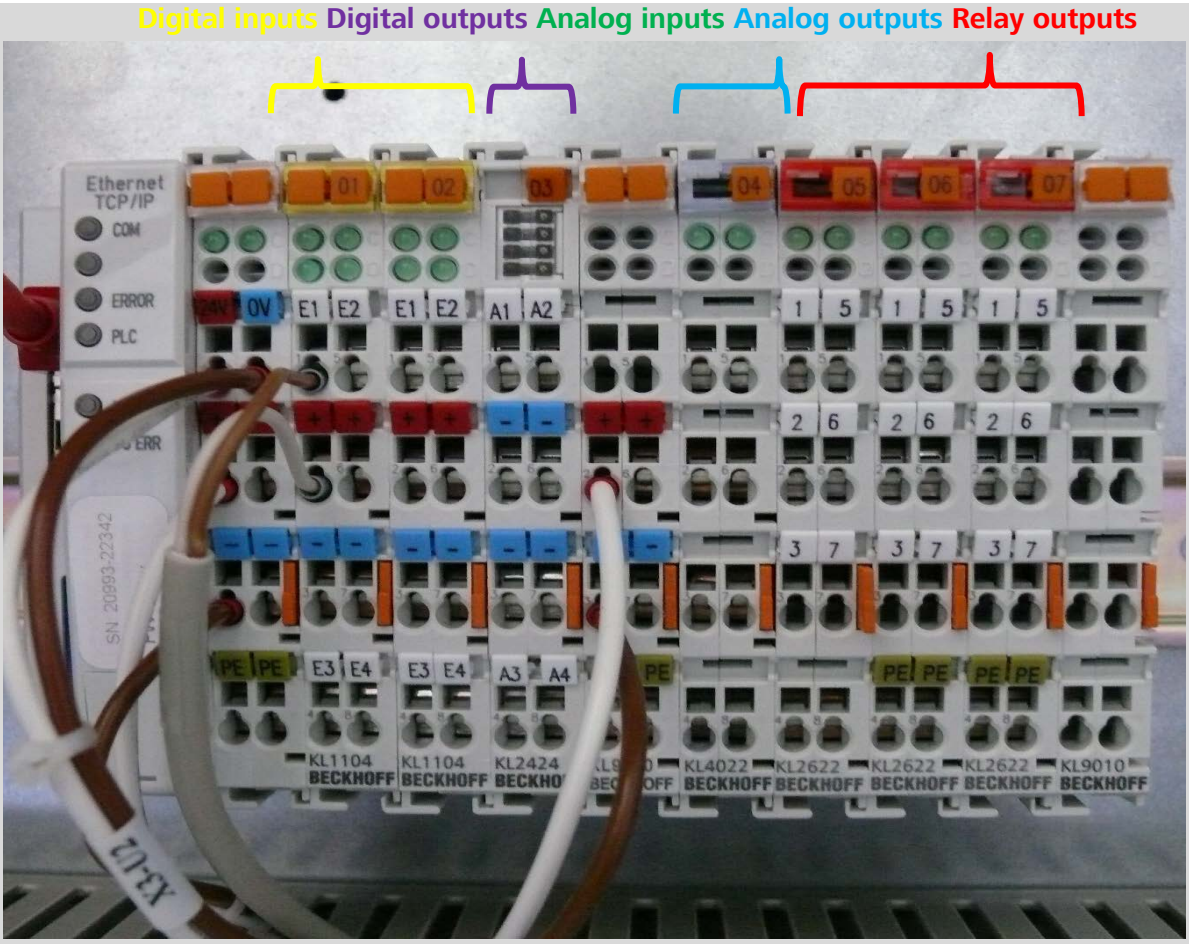


Figure 9: I/O controller

DI terminals (KL1104)				
Terminal no.	**Function / measuring range**	**Designation**	**Contact assignment**	
			Input	**Contact**
1-1-1	Emergency off	DigIn_1_1_1	E1	1
1-1-2	Gen. input	Externstart	E2	5
1-1-3	Gen. input	Externstopp	E3	4
1-1-4	Gen. input	Multiport_1	E4	8
1-2-1	Gen. input	An_Eluent_conc	E1	1
1-2-2	Gen. input	Cat_Eluent_conc	E2	5
1-2-3	Gen. input	Regeneration_solution	E3	4
1-2-4	Gen. input	Waste	E4	8

DO terminals (KL2424)				
Terminal no.	**Function / measuring range**	**Designation**	**Contact assignment**	
			Output	**Contact**
1-3-1	Pump	PUMP 1	A1	1
1-3-2	Pump	PUMP 2	A2	5
1-3-3	Pump	PUMP 3	A3	4
1-3-4	Pump	PUMP 4	A4	8

AO terminals (KL4022) (option)				
Terminal no.	**Function / measuring range**	**Designation**	**Contact assignment**	
			Output	**Contact**
1-4-1	0,5 - 5 µg/L	Parameter 1	AO1	1
			0V	3
1-4-2	5 - 50 µg/L	Parameter 2	AO2	5
			0V	7

Information

The analog outputs are mapped in the I/O controller's configuration in the ProcessLab Manager. The measuring range has to be adjusted to the analog outputs' working range (4 - 20 mA) here.

DOR terminals (KL2612)					
Terminal no.	**Function / measuring range**	**Designation**	**Contact assignment**		
			C	**NC**	**NO**
1-5-1	Error signal	Error	2 / +24 V	3	1
1-5-2	General output	In_Service	6 / +24 V	7	5
1-6-1	Program active	Program_active	2 / +24 V	3	1
1-6-2	Program running	Program_running	6 / +24 V	7	5

Information

Configuration ProcessLab Manger "Level_...": Designation, Function = Fill level detector and the signal should be inverted.

2.4.1 Fill level monitors for the reagent containers

The necessary cables are connected to the I/O controller. Before starting the analyzer, the plugs have to be connected to the relevant containers.

2.5 Hydraulic installation

2.5.1 General hydraulic connections

Warning

Tubing must be laid so that it cannot be pulled out by accident.

Caution / Danger

All necessary safety measures must be followed when handling chemicals! Personal protective equipment must be worn.

The tubing for the different reagents is generally pre-installed and has to be connected to the relevant reagent containers (pre-installed connector adapter) before start-up.

2.5.2 Ultrapure water

- Ultrapure water specification must be 18 MΩ·cm (25 °C), type I grade (ASTM D1193).

2.5.3 Drainage

- The drainage tubing is labeled accordingly on the ends of the tube.
- The drainage tubing has to be connected to a central drain that is connected to the local drainage system. This should be done using the most direct path possible and without making any bends or kinks (see Figure 10: Installation drainage tubing).

Information

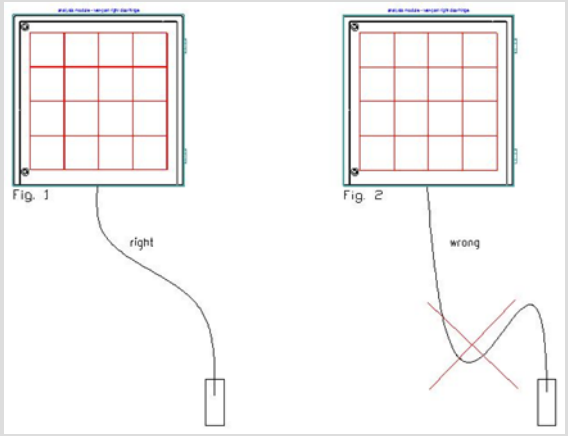


Figure 10: Installation drainage tubing

2.5.4 Sample

Caution

We recommend securing each sample line with a separate shutoff valve!

2.6 Pneumatic installation

2.6.1 Housing cleaning

Caution

Instrument air can be used to clean the housing of the IC Process Extension (electrical and electronic part) for corrosion protection reasons.

- The compressed air connector (instrument air, max. 0.1 bar) for housing cleaning (forced air ventilation) is located on the side of the housing (blue connector adapter for 4/6 mm tubing). The pressure release valve (with red cap) is installed on the opposite side (see Figure 11: Compressed air line connector and Figure 12: Pressure relief valve).
- The compressed air infeed has to be set to a pressure of 0.1 bar or 10 kPa using a pressure regulator (provided by customer).
- The red cap of the pressure relief valve has to be removed.

Figure 11: Compressed air line connector

Figure 12: Pressure relief valve

2.7 Diagrams and schematics

2.7.1 Wet end drawings of analysis system

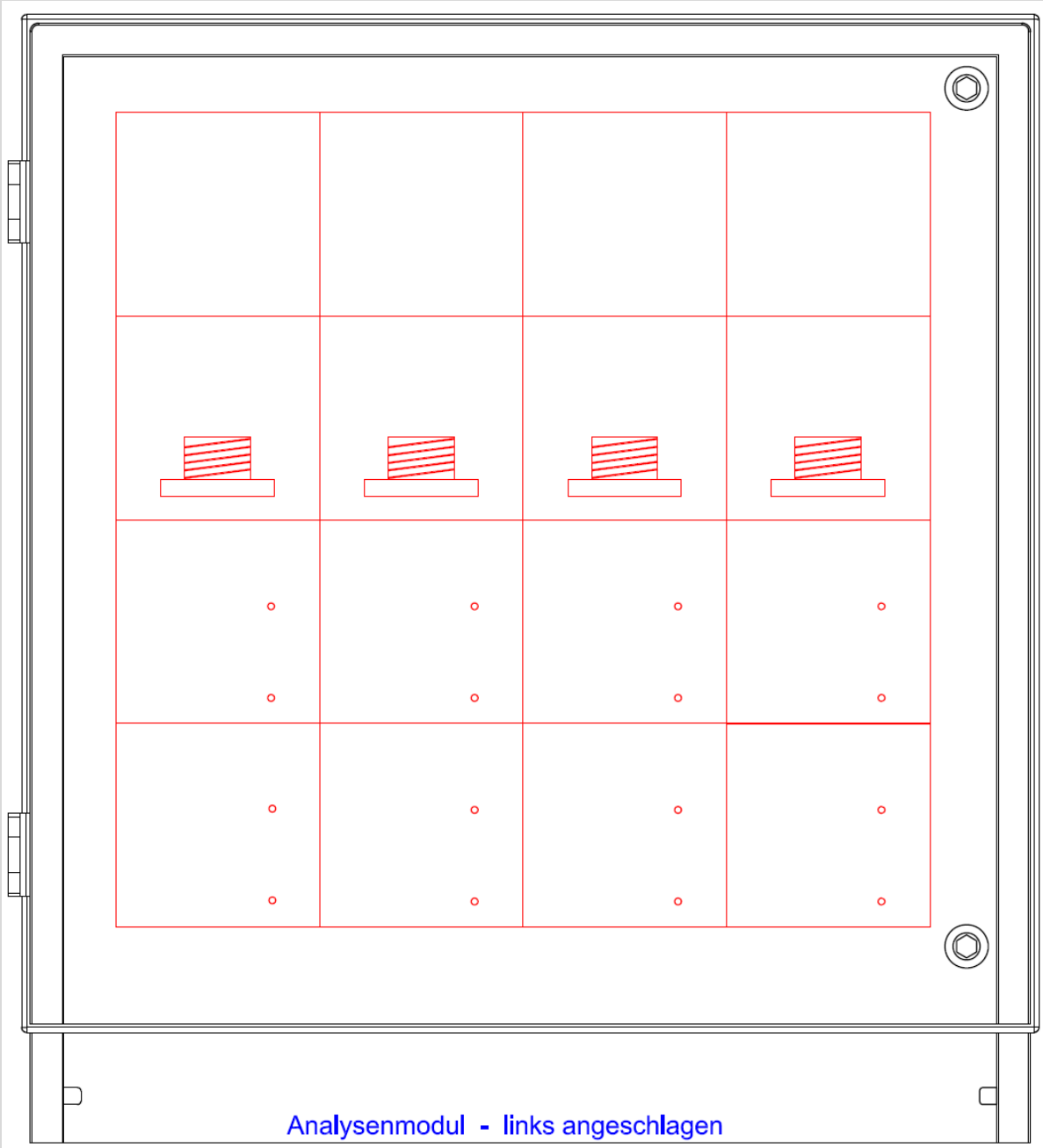


Figure 13: Wet end drawing

2.8 IC Process Extension electrical circuit diagram

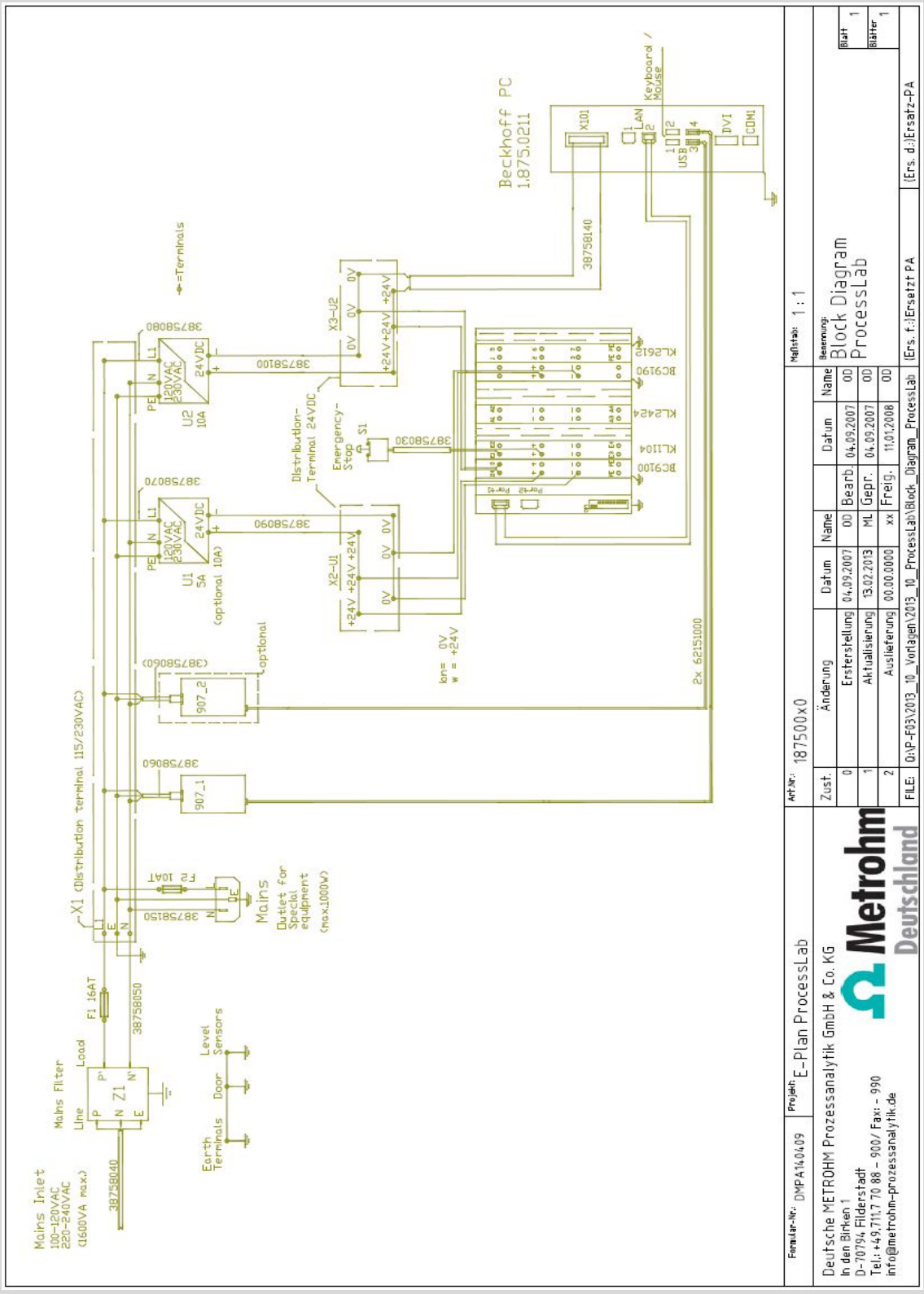


Figure 14: Block diagram

3 System description

3.1 General

The IC Process Extension is a robust, modular control module for routine analysis in the processing environment and supplements the ion chromatograph with respect to process requirements (e.g. ProfIC Vario 12).
The module controls the analysis sequences of the IC system with the help of MagIC Net, is optimized for autonomous continuous operation and is used as the interface for process communication. In addition, the front area allows a clear and user-friendly arrangement of the Liquid Handling components.
The IC Process Extension is comprised of an industrial PC equipped with Windows 7 and ProcessLab Manager software. An 846 Dosing Interface, an I/O controller and their power supply are also located in the interior. All liquid-carrying components are located in the front area, thus separating the wet end completely and making it readily accessible. It can hold Liquid Handling components, e.g., low-pressure pumps, 800 Dosinos and ultrafiltration cells.
The ProcessLab Manager software with its simple and user-friendly interface permits applications in the process environment. It is possible to control various Metrohm analysis methods (e.g., titration and IC). The depiction of all analysis results in a database with limit value definitions and alarms continues to be an outstanding feature of the software.
An optional operating unit can be set up next to the IC Process Extension. This is equipped with a 15" TFT monitor, a keyboard and a touchpad.

3.2 Signalling

3.2.1 Output signals

Digital output signals (relay)

- **Alarm signal**: (binary, potential-free): This signal is emitted when there is an error in the analysis program
- **Instrument in maintenance**: (binary, potential-free): This signal can be turned on to signal to the master display that the instrument is in maintenance and no analyses can be carried out
- **Maintenance required:** (binary, potential-free): This signal can be used, for example, if fill level monitors for chemicals indicate low fill levels

Analog output signals (optional)

- Result Parameter 1
- Result Parameter 2

3.2.2 Input signals

Digital input signals

- Extern Start
- Extern Stop

4 Starting up the analyzer

Caution

Only Metrohm employees or personnel trained by Metrohm are authorized to carry out maintenance and installation work!

Caution / Danger

All necessary safety measures must be followed when handling chemicals! Personal protective equipment must be worn.

Warning

Never touch, install or remove electrical components if the analyzer is switched on. This can result in damage to the analyzer. Also, severe injuries may result from operating components. Ensure that the analyzer is disconnected from the power supply.
Necessary ESD protection measures must be taken!

4.1 Requirements for start-up

The work listed under 2 Assembly and installation has to be completed in advance to start the analysis system successfully.

4.2 Connections in the wet end

4.2.1 Connecting the reagents

Caution / Danger

All necessary safety measures must be followed when handling chemicals! Personal protective equipment must be worn.

- Fill the labeled reagent containers with the necessary reagents.
  For reagents that are dosed using peristaltic pumps, the individual pumps are connected to the corresponding reagent containers via tubing lines. The ends of the tubing are labeled with the corresponding reagent name.

- The Dosinos in use are connected to the corresponding reagent containers using the pre-installed aspiration and return tubing. The ends of the tubing are labeled with the corresponding reagent name.

4.3 Start-up

Caution

Only Metrohm employees or personnel trained by Metrohm are authorized to carry out start-up work!

4.3.1 Switching on the system

- Switch on the main switch / plug in the power plug.
- The industrial PC starts automatically if there is power.
- Log in to Windows using the ProcessLab user without a password.

User	Password	Group
ProcessLab	Without password	User
Administrator	ADMINISTRATOR	Administrator
Metrohm	**********	Administrator

- Click on the  **ProcessLab Manager** button.

4.3.2 Filling the system with the required media

Caution / Danger

All necessary safety measures must be followed when handling chemicals! Personal protective equipment must be worn.

4.3.2.1 Program start via "Easy interface"

A single or series determination is started in the Easy interface. The single or series determination and the associated ID are linked to a button here. The determinations can be started directly either by using the button or the function keys (e.g. F2 through F12). The F1 function key should not be used in this instance, since it also opens context-sensitive help.

- Select the Easy interface workplace icon  .
- Start the desired analysis program by pressing the button or associated function key (F2) (see Figure 15: Easy interface).
- Pressing the button or function key again stops the running program.

Figure 15: Easy interface

- The "Start Online" series determination is used to start a series determination where two sample streams are always analyzed consecutively. In addition, QC standards are measured from time to time.
- When pressing the "Start Calibration" button, the series determination method "Online_Cal_Anions" is carried out once. This program starts the calibration of all parameters with a singular measurement of QC standards.
- The "Startup IC" series determination starts a triple measurement with ultrapure water in order to equilibrate the entire system.
- Not all series or single determinations are connected to the Easy interface. The methods can also be started from the normal user interface as follows.

4.3.2.2 Program start via "Single determination mode"

- So-called analysis programs can be run in single determination mode. They contain a sequence of single methods.
- Select the single determination workplace icon  .
- Select the required analysis program from the pull-down menu (see Figure 16: Single determination, red rectangle).
- You can adjust the number of cycles for the single determination using "Program cycles".
- "Program cycles" has to be set to -1 in order to operate the single determination continuously (see Figure 16: Single determination, blue rectangle).

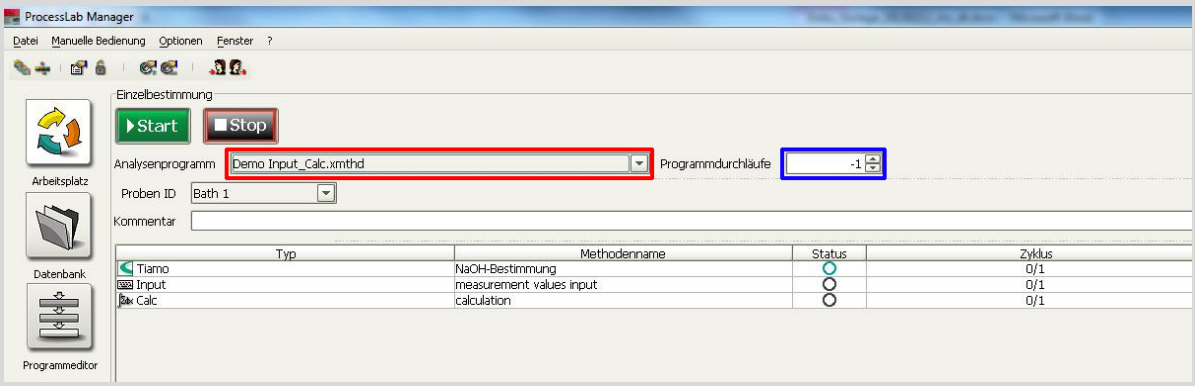


Figure 16: Single determination

- The selected single determination is started after pressing the  button.
- In addition to the type of analysis method, the method name, the base method and the setting for whether the ongoing method is running concurrently with others is displayed.
- The information on the status and cycle are adjusted according to the progress of the analysis program.
- **Live display:** The current sequence is shown on its own tab in the live display for each method defined in the analysis program. Currently active methods have a red title bar in this case.
- **Report:** A separate tab is shown in the report for each started method within an analysis program. They show overview information on the generated results after a method is finished while the analysis program continues to run. In addition, fill level messages and range messages are shown there.

4.3.2.3 Program start via "Series determination mode"

- Multiple analysis programs with different sample IDs at different sample positions can be processed in one work step in series determination mode.
- Select the series determination workplace icon  .
- Open the series determination icon  and select the desired determination series.

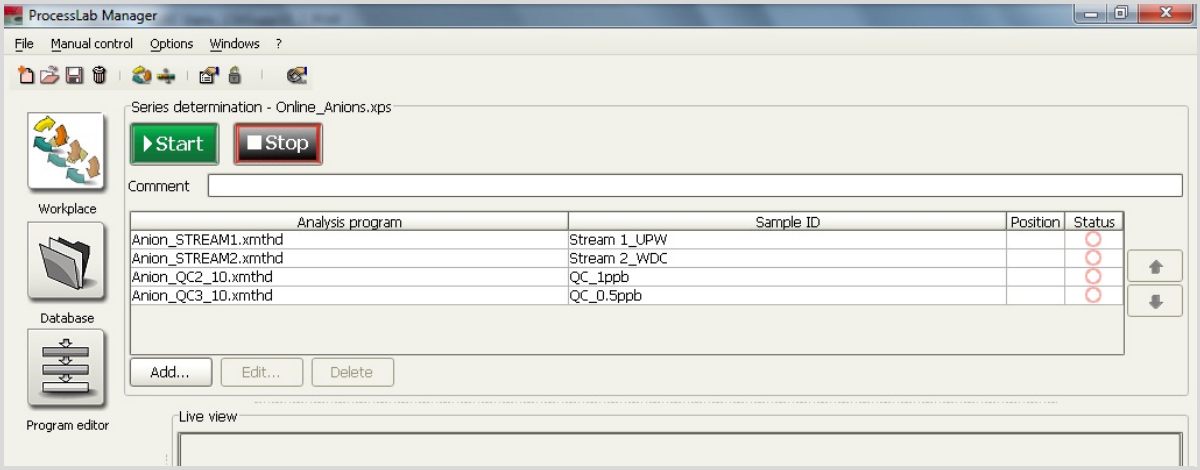


Figure 17: Series determination

- The series determination is started after pressing the  button.
- **Live display:** The current sequence is shown on its own tab in the live display for each method defined in the analysis program. Currently active methods have a red title bar in this case.
- **Report:** A separate tab is shown in the report for each started method within an analysis program. They show overview information on the generated results after a method is finished while the analysis program continues to run.

4.4 Normal operation

4.4.1 Starting the normal operation

- The determination series in the ProcessLab Manager is called Start_Online and is started via the Easy interface analysis.

Figure 18: Easy interface

- The determination series comprises analysis programs, which in turn are comprised of the respective MagIC Net™ methods.
- You can tell which analysis is in progress at any time and what the current status of the analysis program is in the Status line in the sequence display (see figure 15: Status message in the sequence display).

4.4.2 Incorrect operation

- An instrument error or an emergency stop lead to cancellation of the analysis program. The analysis program for normal operation can then be started again. All determinations can also be started individually via the respective button.
- If this does not lead to improvement, the analysis system has to be switched off once. To do so, the industrial PC has to be shut down first and then the analysis system has to be de-energized using the power switch.
- After a brief waiting period (approx. 10 sec), the analysis system can be switched on again and the ProcessLab Manager software can be started (see Chapter 4.3.1: Switching on the system).
- If the error could not be corrected, then follow the instructions in Chapter 5.3: Troubleshooting.

4.4.3 Emergency off module

- The red button on the left side of the module housing resets all of the wet end modules connected to the I/O controller, such as pumps, stirrers, valves and potential-free signal contacts, to their default state (this usually means switched off).
- This button locks in place and has to be pressed again to unlock.

4.4.4 Database views

Table view

Result view: A result view defines the graphical display for any number of settings

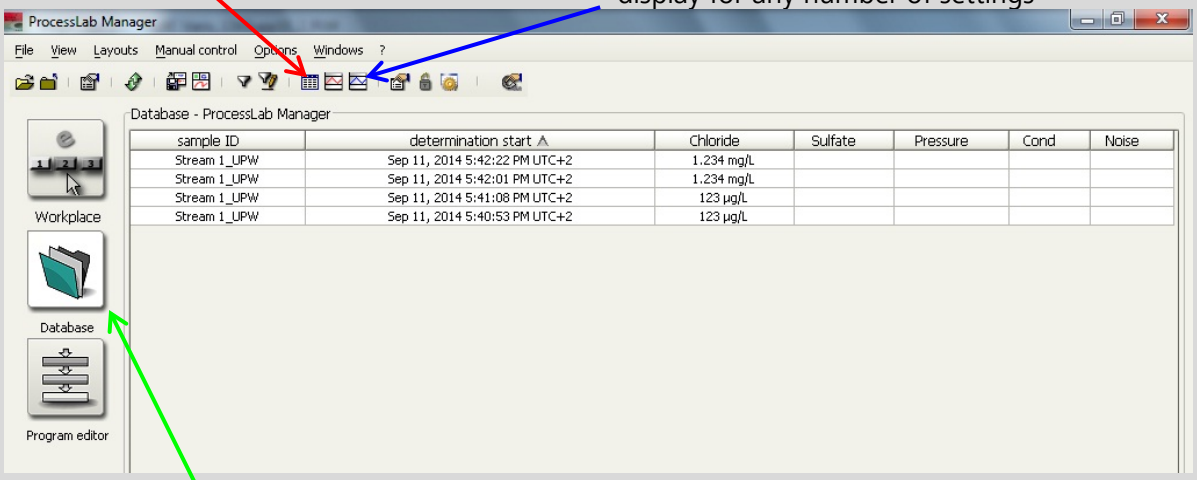


Figure 19: Table view

The following views, including others, can be selected in the Database area

- A determination row is inserted into the table view for each analysis program run with active database output. Depending on the table layout, appropriate columns are displayed for the results obtained.

Sample view

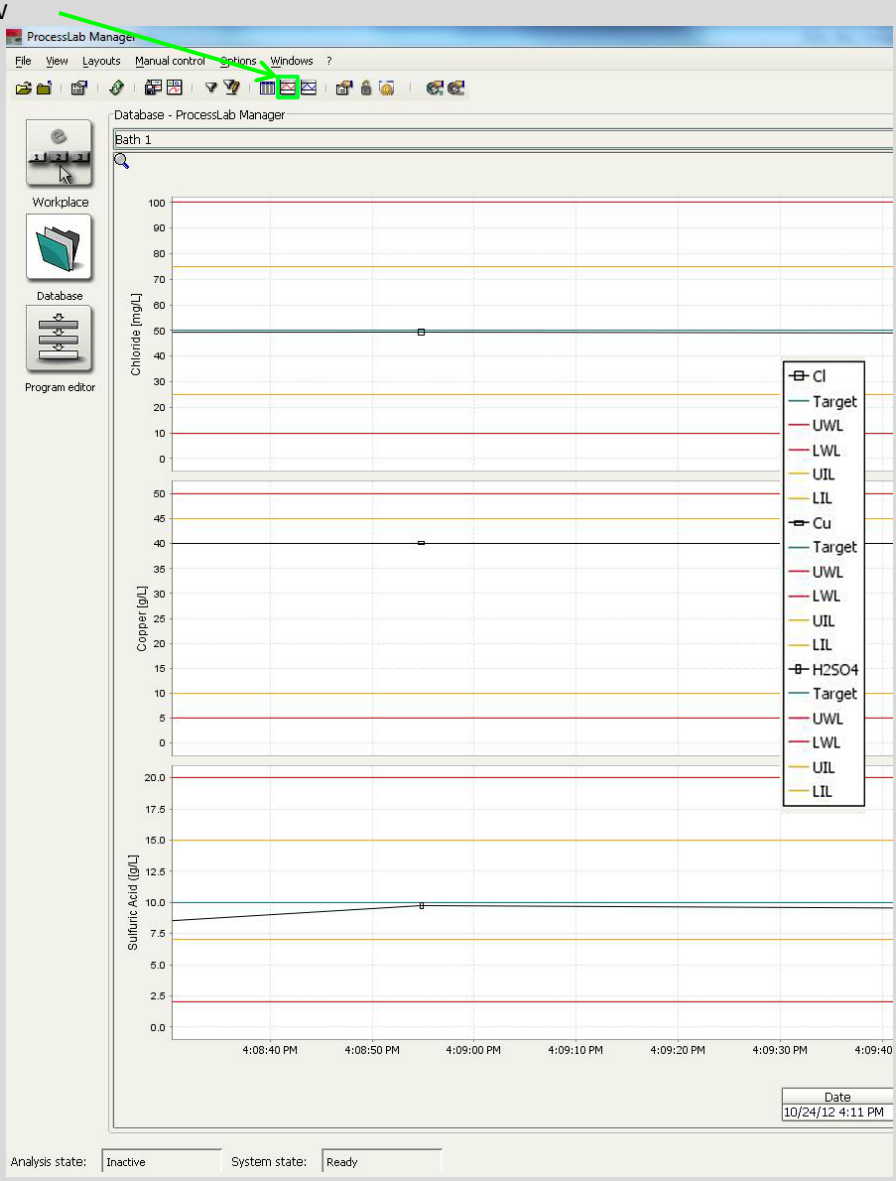


Figure 20: Sample view

- The results are grouped by sample ID in the sample view.

Parameter view

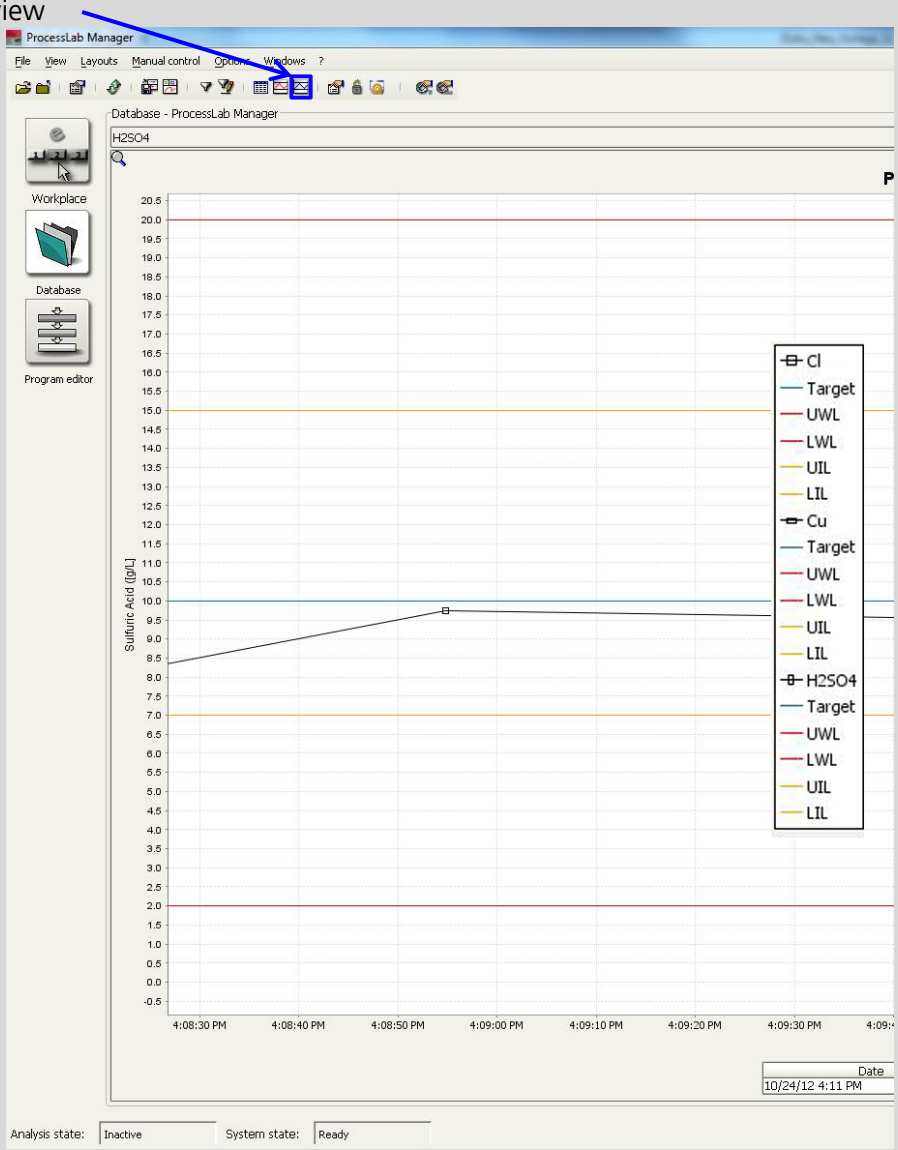


Figure 21: Parameter view

- The results are grouped by parameters in the parameter view.

4.4.5 Program editor

- New analysis programs can be configured or changes can be made to an existing analysis program in the program editor.
- Essentially, an analysis program consists of one or more methods. There are 4 separate method types (module, calc, MagIC Net and input method).
- The different method types can be combined freely and processed sequentially or in parallel in the analysis program depending on the configuration (see Figure 22: Program editor).

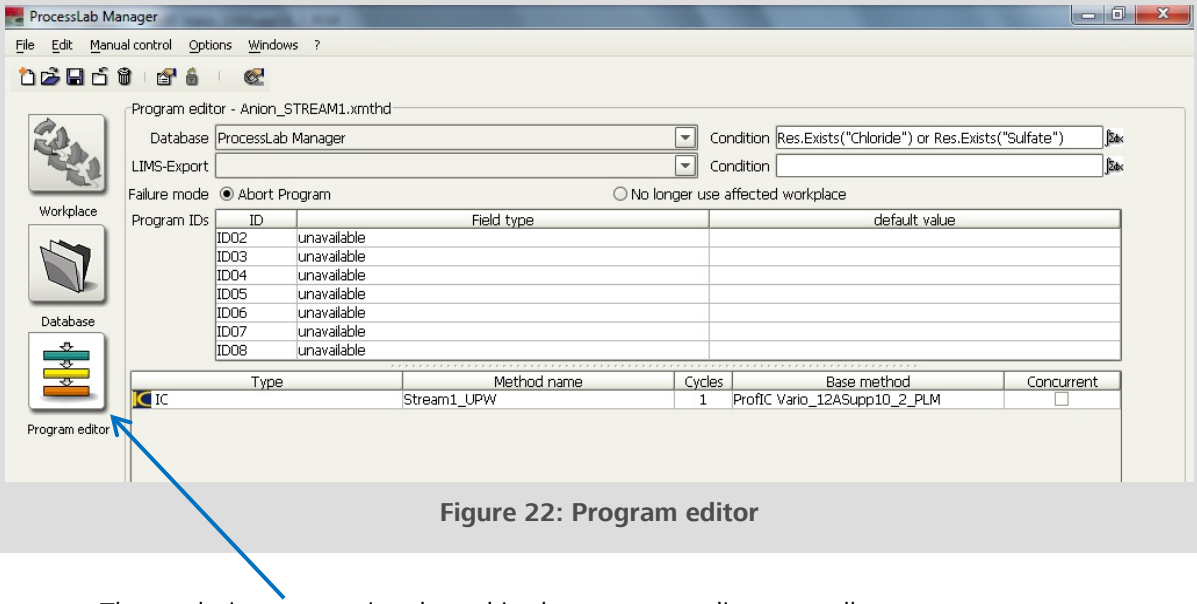


Figure 22: Program editor

- The analysis program is selected in the program editor as well (see Figure 22: Program editor).
- The analysis program can write all of the obtained results, even based on a selectable condition, to the database that has to be defined in the configuration.

Caution

Data must be backed up at the end of start-up.

- See Chapter 8.2 Data backup and restoring data.

4.5 Taking the instrument temporarily out of service

Information

Please carry out the following steps if the analyzer is not used for more than 7 days.

- Empty all of the dosing units and rinse them with water for at least 3 cycles using the Prepare function in the respective manual control
- After this, empty the dosing units again
- Empty the pump tubing and rinse them with demineralized water
- Data backup (see Chapter 8.2: Data backup and restoring data)
- Shut down the industrial PC
- De-energize system

5 Maintenance

5.1 General notes

Please keep the following warnings in mind during maintenance!

Warning

Maintenance, troubleshooting and repairs may be performed only by appropriate qualified personnel trained for the system! Training on the instrument has to have been demonstrably provided by an employee from Metrohm. In addition, the shutoff valve for the sample line has to be closed and only opened for maintenance work if necessary.

Warning

Never touch, install or remove electrical components if the analyzer is switched on. This can result in damage to the analyzer. Also, severe injuries may result from operating components. Ensure that the analyzer is disconnected from the power supply. Necessary ESD protection measures must be taken!

Caution / Danger

All necessary safety measures must be followed when handling chemicals!
Personal protective equipment must be worn.

5.2 Maintenance

5.2.1 Maintenance plan

Careful system maintenance is necessary to avoid analysis errors or instrument faults. The necessary maintenance tasks are listed in the maintenance plan and are determined after starting up the system. The maintenance interval is tailored to the system on a case-by-case basis here. The maintenance interval depends on the frequency of use and the reagents and samples in use. After completing maintenance, the individual wet end components and the sample line first have to be filled with the necessary reagents or sample again.

Information

The maintenance plan is described in the Appendix under Chapter 8.1.2 and is updated regularly during maintenance by Metrohm Service in coordination with the operator.

5.2.2 Data backup ex works

- The following backups from the delivery state are made ex works and archived at Metrohm Prozessanalytik:
  a. Image of hard drive
  b. Export of analysis methods
  c. Backup of ProcessLab Manager and MagIC Net configuration

5.2.3 Data backup after change to the system

- A data backup should be made after each change to the system (method, configuration, hardware, etc.) and it should be stored both externally and on the system (hard drive).
- There is a size limit of 2,000 for the database in MagIC Net in the ProcessLab software. When the limit is exceeded, MagIC Net deletes the oldest determinations so that the database always just contains the configured number of determinations.

5.3 Wear parts

Information

The replacement of wear parts may be performed only by appropriately qualified personnel trained for the system! Training on the instrument has to have been demonstrably provided by an employee from Metrohm.

Module	Article designation	Article number
Dosing unit 2 mL (6.3032.120)	Glass cylinder unit 2 mL	6.1574.120
Dosing unit 5 mL (6.3032.150)	Glass cylinder unit 5 mL	6.1574.150
Dosing unit 10 mL (6.3032.210)	Glass cylinder unit 10 mL	6.1574.210
Dosing unit 20 mL (6.3032.220)	Glass cylinder unit 20 mL	6.1574.220
Dosing unit 50 mL (6.3032.250)	Glass cylinder unit 50 mL	6.1574.250

5.4 Troubleshooting

5.4.1 Telephone support

Information

The following information should be supplied for phone support:

- System information: Instrument type and serial number (see documentation cover page)
- Pictures of the defective component
- Error message: Screenshot of the information window
- Log files: Run Info.Zipper.exe
- Export of determinations from the MagIC Net database

5.4.2 Contact information

Information

Please contact

_____

Phone: _____

Fax: _____

E-mail: _____

5.5 Parts list

Table 1: Parts list

Position	Article	Article (designation)	Quantity	
10		ProcessLab digital input 4 DI 24 V DC	2,00	pcs
20		ProcessLab digital output 4 DO 24 V DC	1,00	pc
30		ProcessLab relay output 2 DOR 230 V	3,00	pcs
40		Canister 10 L Min sensor	3,00	pcs
50		Canister 20 L Max sensor	1,00	pc
60		IC Process Extension, without MagIC Net, without TFT	1,00	pc
Option: 70		ProLab operating unit, TFT/keyboard, US, V4 with ProcessLab stand base, cpl.	1,00	pc
80		ProcessLab analog output 2 AO 4-20 mA	1,00	pc

5.6 Clearance

Information

In order to protect our employees and the environment from the harmful effects caused by hazardous substances, but also due to legal regulations, we have to ensure appropriate measures are taken for the safety of our employees, the environment and compliance with legal requirements. Repairs are performed only if the modules are cleaned and decontaminated carefully before being shipped and they are accompanied by the following completed and signed clearance.

Clearance

Please copy and send with the module

We hereby affirm that the accompanying module

Type .....

Part of instrument serial no. .....

is free of substances that pose health hazards, including those that are:

- **chemical**
- **biological**
- **radioactive**

The module has been thoroughly cleaned before shipment.

_____ _____

Date / signature Company stamp

6 Declaration of conformity / certificates

6.1 EU declaration of conformity

Declaration of Conformity

This is to certify the conformity to the standard specifications for electrical appliances and accessories, as well as to the standard specifications for security and to system validation issued by the manufacturing company.

Name of commodity

875 ProcessLab

Metrohm
ion analysis

CH-9101 Herisau/Switzerland
E-Mail info@metrohm.com
www.metrohm.com

Description PC-based process analyzer for automatic analysis and control of liquid process media.

This instrument has been built and has undergone final type testing according to the standards:

Electromagnetic compatibility: Emission
IEC 61326-1: 2006, EN 55022 / CISPR 22: 2006, IEC 61000-3-2: 2006, IEC 61000-3-3: 2005

Electromagnetic compatibility: Immunity
IEC 61326-1: 2006, IEC 61000-4-2: 2001, IEC 61000-4-3: 2002, IEC 61000-4-4: 2004, IEC 61000-4-5: 2001, IEC 61000-4-6: 2001, IEC 61000-4-11: 2004, IEC 61000-4-14: 2004

Safety specifications
EN/IEC 61010-1:2001, UL 61010-1:2004, CSA-C22.2 No. 61010-1:2004

It has also been certified by ElectroSuisse, which is member of the International Certification Body (CB/IEC).

CE *The instrument meets the requirements of the CE mark as contained in the EU directives 2004/108/EC and 2006/95/EC and fulfils the following specifications:*

EN 61326-1 Electrical equipment for measurement, control and laboratory use – EMC requirements
EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use

Metrohm Ltd. is holder of the SQS-certificate ISO 9001:2000 Quality management system for development, production and sales of instruments and accessories for ion analysis.

The system software, stored in Read Only Memories (ROMs) has been validated in connection with standard operating procedures in respect to functionality and performance.

The technical specifications are documented in the instruction manual.

Herisau, 20 July, 2007

D. Strohm
Vice President
Head of R&D

Ch. Buchmann
Vice President
Head of Production
Responsible for Quality Assurance

Analysensysteme

Metrohm Prozessanalytik

CE

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www.metrohm-prozessanalytik.de

EU-KONFORMITÄTSERKLÄRUNG

Die Firma Deutsche METROHM Prozessanalytik GmbH & Co. KG bescheinigt hiermit, daß das Gerät

TFT-Bedieneinheit für Metrohm Process**Lab**®

den Anforderungen der EG-Richtlinien 89/336/EWG und 73/23/EWG entspricht.

Erfüllte Spezifikationen:

EN 55011	Funkentstörung von elektrischen Betriebsmitteln und Anlagen (ISM-Geräte)
EN 61000-6-2	Elektromagnetische Verträglichkeit - Störfestigkeit Störfestigkeit für Industriebereich
EN 61000-6-4	Elektromagnetische Verträglichkeit - Störaussendung Störaussendung für Industriebereich
EN 61010	Sicherheitsanforderungen für elektrische Labor-, Mess- und Regelausrüstungen

Beschreibung des Gerätes:

TFT-Bedieneinheit mit integriertem TFT-Monitor 15", Tastatur, Maus-Pad, USB-Steckdose, SVGA- und USB-Anschlusskabel
Ausführung in geschlossenem Gehäuse, Schutzart IP 54

Filderstadt, den 29. Dezember 2006

F.Müller

6.2 Certificates for installed parts

Information

The certificates can be downloaded from the Metrohm website using the following link:
http://www.metrohm.com/com/Support/zertifikate/instrumentCertificate.html

7 Disassembly and disposal

Warning

Never touch, install or remove electrical components if the analyzer is switched on. This can result in damage to the analyzer. Also, severe injuries may result from operating components. Ensure that the analyzer is disconnected from the power supply. Necessary ESD protection measures must be taken!

Caution / Danger

All necessary safety measures must be followed when handling chemicals! Personal protective equipment must be worn.

Caution

Disassembly and disposal may be performed only by appropriately qualified personnel trained for the system! Training on the instrument has to have been demonstrably provided by an employee from Metrohm. In addition, the shutoff valve for the sample line and all other media (compressed air, demineralized water) has to be closed.

7.1 Disassembly

- The analysis system is disassembled in reverse order with respect to assembly and installation work.

7.2 Disposal

- At the end of its service life, the analysis system may not be disposed of in normal domestic waste; instead, it has to be recycled as appropriate for electrical and electronic instruments. This is indicated by the symbol on the product, manual or packaging. The materials can be recycled in accordance with how they are marked.
- By reusing and recycling materials or by otherwise recovering old devices, you can provide a vital contribution to protecting our environment. Please check with your local government to locate the appropriate disposal site or contact a local disposal service. The disposal service handles proper disposal based on a return shipment you coordinate with them. The completed clearance (see Chapter 5.4.1: Clearance) must accompany the return shipment.

Information

The analysis system may not be disposed of in normal domestic waste.

8 Appendix

8.1 Maintenance remarks

8.1.1 Maintenance intervals

Daily	Weekly	Monthly	Quarterly	Half-yearly	Yearly	Every 2 years		Customer/user	Metrohm Service
							Maintenance tasks		
							Check fill level of reagents, refill if necessary and remove air bubbles		
							Visual inspection for leakage		
							Check sample supply, clean if necessary		
							Remove air bubbles from aspirating line, dosing cylinder and dosing line		
							Remove gas bubbles from sampling system		
							Visual inspection of one analysis sequence		
							Clean components in contact with the sample		
							Shut down Windows and reboot		
							Rename result database and create new database		
							Save analysis results (= "old" result database) onto an external medium		
							Empty reagent containers (discard of remaining reagent), clean container (swirl with appropriate amount of new reagent, discard) and refill.		
							Refill dosing device. Remove air bubbles from aspirating line, dosing cylinder and dosing line		
							Check flow rate of peristaltic pump, replace peristaltic pump tubing if necessary		

8.1.2 Maintenance plan

Maintenance work									
							Electronics		
					x		Check analog outputs, replace if necessary (adjustment only in accordance with the responsible for the control system)		
						x	Replace lithium battery		
					x		Check grounding and connectors (check level C1)		
					x		Check hardware controls		
					x		Check fan		
					x		Delete temporary files		
					x		Check hard drive using Scandisk		
					x		Check free hard disk memory		
					x		Create PLM backup and save to external medium		
					x		View logbooks		
							Dosing unit		
				x			Check dosing unit incl. tubing and microvalve, replace if necessary		
				x			Grease piston		
				x			Check mechanics drive (check level C1 without §§105/106)		
				x			Replace glass cylinder and piston		
				x			Replace antidiffusion valve		
						x	Replace spindle and spindle nut		
							Peristaltic pumps		
				x			Visual inspection		
				x			Replace peristaltic pump tubing		
					x		Replace covering and nylon washer		
						x	Replace roller support and nylon screws		
				x			Check flow rate		
							Tubing connections, fittings, measuring vessels		
				x			Check for passage		
				x			Clean parts if necessary, replace if necessary		
					x		Replace stirring bar		
				x			Check for tightness after assembly		
				x			Revise maintenance plan	x	x

8.2 Data backup and restoring data

8.2.1 ProcessLab Manager and MagIC Net: data backup

- Close ProcessLab Manager (MagIC Net closes automatically along with it).
- Carry out the following steps
- Press the "Start" button and select the "Execute..." field
- Write **service.msc** in the "Execute..." field
- Double-click on the Metrohm MagIC Net server and shut it down
- Confirm the prompt to shut down the "Metrohm **Fehler! Textmarke nicht definiert.** Admin Server" with **Yes**
- Double-click on the Backup button 

on the desktop. There will be a prompt to enter the password for the Administrator user. The data is then backed up automatically. All necessary data from the source folder C:\programdata\metrohm\magicnet is backed up along with the following subfolders:
    a) \Config ("plmConfiguration.xml und secset")
    b) \Data
    c) \Layout
    d) \logs
    e) \Programs
    f) \props
- After completion of the backup, start the "Metrohm Tiamo Admin Server" service. The "Metrohm Tiamo Server" is started along with it.

8.2.2 ProcessLab Manager and MagIC Net: restoring data

- Log off the ProcessLab user and log in with a user that has administrator rights. Next, you need to deactivate the Metrohm Admin Server and Metrohm Backup Server services. Refer to the procedure below to accomplish this.
- See Chapter 8.1.2 to deactivate the services.
- The data saved under point 4 is copied back into the according directories.

8.2.3 Writing log files

- Run Info.Zipper.exe under the following path: C:\Programfiles\Metrohm\Magic Net\bin
- Acknowledge the message with OK.
- Copy the "Error.zip" file created on the desktop to a USB stick.