WALLACE & TIERNAN® DEPOLOX® 5 E FLOW CELL

INSTRUCTION MANUAL

Please note

Original instruction manual!

Contents

1. Introduction

1.1 Documentation

1.1.1 Target groups

This instruction manual provides the information for installation, operating and maintenance personnel. It is required for operation and maintenance of the DEPOLOX® 5 E flow cell (module type D01).

All persons working with the DEPOLOX® 5 E flow cell must have read and understood the instruction manual, in particular, the safety instructions it contains.

1.1.2 Documentation Structure

This instruction manual is intended for operators of the DEPOLOX® 5 E flow cell. It contains important information for safe, trouble-free, and efficient operation of the DEPOLOX® 5 E flow cell. Observing these instructions will help prevent risks, reduce repair costs and downtimes, and increases the reliability and service life of the DEPOLOX® 5 E flow cell

Chapters Installation, Commissioning, and Maintenance are intended only for trained and authorized service personnel. These chapters contain important information on the assembly, configuration, commissioning and start-up, maintenance and repair of the DEPOLOX® 5 E flow cell that should only be performed by this target group.

Please consult the table of contents and the index to quickly find the information you require.

1.2 Conventions

Please note

This instruction manual contains notes with different priorities that are marked with symbols.

Pictogram	Please note	Meaning
	Danger!	Immediate danger to life and limb! If the situation is not corrected, death or serious injury will result.
	Warning!	Danger to life and limb! If the situation is not corrected, death or serious injury can result.
	Attention!	If this note is not observed, moderate or minor injury or damage to material can result.
	Warning!	Electrocution hazard.
	Please note	These notes indicate a material risk or provide useful information to make working with the device easier.
	Attention!	Environmental hazard! Do not throw away or burn the batteries! Batteries must be disposed of at a collection point.

1.3 Disclaimer

We are not liable for any damages incurred during installation or use of these hardware and software components. This applies specifically to trouble-free interaction with the software and hardware components you choose.

We are not liable for buyer damages (in particular, lost profits, lost information and service interruptions), which arise when using the DEPOLOX® 5 E flow cell, nor for other damages. You are solely responsible for the installation!

The contents of the instruction manual has been checked to make sure that it matches the detailed hardware and software. Deviations can nevertheless not be ruled out and we therefore assume no liability for full conformity. The details in this instruction manual are checked regularly and any necessary corrections are included in subsequent issues.

2. Safety

2.1 Intended use

The DEPOLOX® 5 E flow cell (module type D01) in combination with the installed sensors and the 700 P electronics module (module type E01) or 700 M electronics module (module type E01) is intended only for measurement and control in the treatment of drinking water, process water, industrial water, wastewater, and swimming and bathing pool water.

The operational safety of DEPOLOX® 5 E flow cell is guaranteed only if it is used in accordance with its intended application. It may only be used for the purpose defined in the order and under the installation, operating and ambient conditions specified in this instruction manual.

All inspection and maintenance work must be carried out in accordance at the specified intervals.

Compliance with the intended use also includes reading this instruction manual and observing all the instructions it contains.

The operator bears full and sole responsibility if this unit is put to any use which does not comply strictly and exclusively with this intended use.

Danger!

Risk of injury or death!

The device must not be used with flammable liquids.

2.2 General safety instructions

The manufacturer places great value upon safety when working with the unit. This was already taken into account in the design of the system, by the integration of safety features.

Safety regulations

The safety instructions in this documentation must be observed. Additional industry-wide or in-house safety regulations also continue to apply.

Safety warnings on the unit

All safety instructions attached to the unit itself must be observed. These instructions must always be clearly legible and complete.

State-of-the-art technology

The unit has been constructed in accordance with state-of-the-art technology and the accepted safety regulations. However, if the unit is used by persons who have not been adequately instructed, risks to life and limb of such persons or third parties and damage to the unit itself or to other property cannot be ruled out. Work not described in this instruction manual must be performed only by authorized personnel.

Personnel

The operator of the overall system must ensure that only authorized and qualified specialized personnel are permitted to work with and on the unit within their defined scope of authority. "Authorized, specialized personnel" refers to trained technicians employed by the operator, the manufacturer, or, if applicable, the service partner. Only qualified electricians must perform work on electrical components.

Spare parts / components

Trouble-free operation of the unit is only guaranteed if original spare parts and components are used in precisely the combination described in this instruction manual. Failure to observe this instruction may incur the risk of malfunction or damage to the unit.

Extensions and conversions

Never attempt to perform any modifications, extensions or conversions on the unit that could have an adverse affect on safety without the written approval of the manufacturer.

Electrical power

During normal operation, the controller must remain closed. Connect the power cables in accordance with the wiring diagram.

Danger!

Risk of injury or death!

External voltages can be connected even with the operating voltage switched off.

IT security

The manufacturer offers IT security mechanisms for its products to support secure system operation. We recommend checking on a regular basis to see what information is available regarding IT security developments for your products. Information on this can be found on the Internet.

For the safe operation of an installation, it is furthermore necessary to integrate the automation components into a holistic IT security concept which comprises the entire system and is in accordance with latest state of the art technology. In the process, implemented products deriving from other manufacturers should be taken into account.

Disposal

Ensure safe and environment-friendly disposal of agents and replaced parts.

Attention!

Environmental hazard!

Dispose of the electronics waste in accordance with valid local and national regulations.

2.3 Specific operating phases

Normal operation

Never employ any working methods which could affect safety!

The device must not be used with flammable liquids.

Inspect the DEPOLOX® 5 E flow cell at least daily for externally visible damage and faults! Inform the responsible person/authority immediately of any detected changes (including any changes in the operating performance)!

Have malfunctions remedied immediately!

Installation and maintenance work

Do not use aggressive cleaning agents (e.g., alcohol, abrasive cleaners)! We recommend a damp cloth moistened with a commercially available neutral detergent.

2.4 Warranty conditions

The following must be observed for compliance with warranty conditions:

- Installation and commissioning by the manufacturer or trained and authorized specialists, e.g. of contractors
- Intended use
- Observation of the operational parameters and settings.
- The unit may only be operated by trained personnel.
- An operating log book must be kept (only in the public sector).
- Only approved calibration chemicals may be used
- The unit must not be exposed to frost.
- Maintenance work must be executed
- Use of genuine spare parts

If any of the above conditions are not met, the warranty is void.

3. Description

3.1 General

The DEPOLOX® 5 E flow cell (module type D01) is part of the Pool Management System DEPOLOX® 5 E 700 P and the measuring and control unit DEPOLOX® 5 E 700 M.

The DEPOLOX® 5 E flow cell (module type D01) is a special flow cell adapter for sample water. In combination with the 700 P electronics module (module type E01) or 700 M electronics module (module type E01) and the integrated sensors, the DEPOLOX® 5 E flow cell measures and controls parameters free chlorine, pH value, redox voltage and temperature. To determine parameters total chlorine, combined chlorine and conductivity, further sensors can e installed.

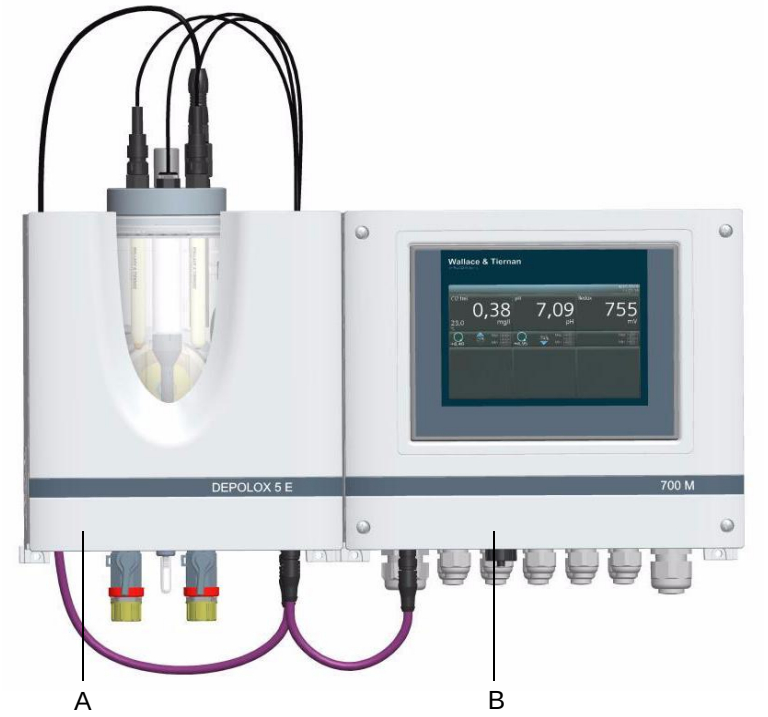


Figure 1 Pool Management System DEPOLOX® 5 E 700 M with sensors (example)

A DEPOLOX® 5 E flow cell, pressurized with sensors
B 700 M electronics module

DEPOLOX® 5 E flow cell is available in both a non-pressurized and a pressurized version. The two versions differ in the number of sensors that can be installed and in the design of the sample water outlet. The non-pressurized version is characterized by a free sample water outlet. With the pressurized version, the sample water is returned into the system's circuit.

The for sensors required for the measurement tasks (optional) and the LED glow stick are inserted or screwed into the mounting hole in the cell body cover.

The maintenance-free flow control valve is the main hydraulic part of DEPOLOX® 5 E flow cell. It has the task of keeping the sample water flow constant, irrespective of fluctuations in operating pressures.

The multi-sensor monitors the correct flow and records the temperature of the sample water. The metallic sensor housing guarantees good sample water earthing. The continuous hydromechanical cleaning of the electrode of the three-electrode measuring cell effectively prevents natural contamination of the electrode surfaces and ensures long-term stable chlorine measurement.

DFMe electronics module converts the analog sensor signals for digital transmission to 700 P electronics module or 700 M electronics module. If a membrane sensor for total chlorine TC2 CAN or TC2-S CAN (optional) is used, this is connected directly to DFMe electronics module or routed through the CAN connection on conductivity module SiDiSens (optional) to DFMe electronics module. The conductivity sensor (optional) is connected to DFMe electronics module through conductivity module SiDiSens.

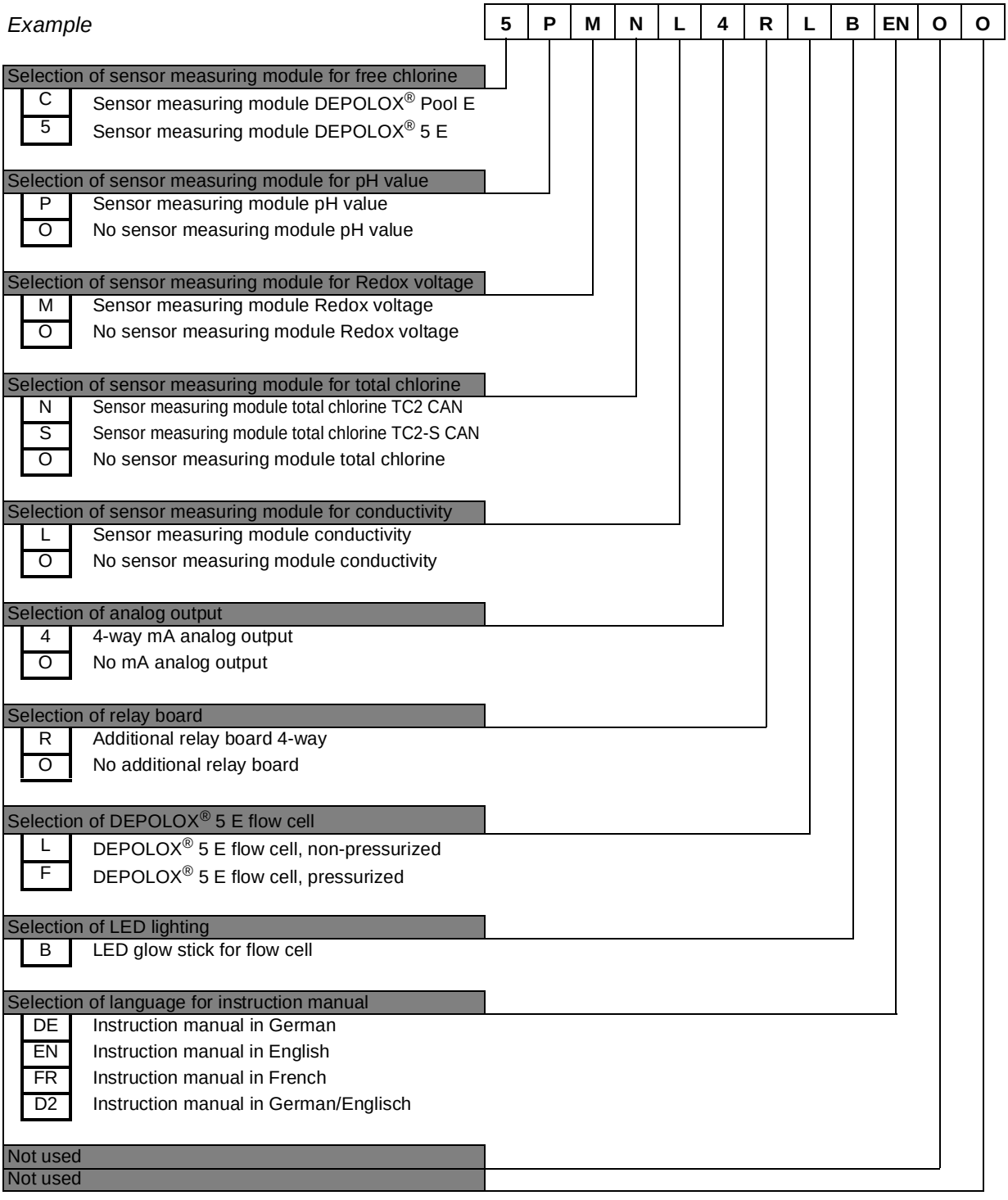
3.2 Versions

The DEPOLOX® 5 E flow cell (module type D01) can be comined with 700 P electronics module (module type E01) or 700 M electronics module (module type E01). The following versions are available:

- Pool Management System DEPOLOX® 5 E 700 P
- Measuring and control unit DEPOLOX® 5 E 700 M

3.2.1 Pool Management System DEPOLOX® 5 E 700 P

The DEPOLOX® 5 E flow cell (module type D01) is factory-configured according to the customer's specific requirements with the 700 P electronics module (module type E01) according to the variant code. The scope of delivery differs in the versions of DEPOLOX® 5 E flow cell, the sensors, electronics components and accessories. The variant code consists of 12 digits and is printed on both the type plate and packaging sticker.



3.2.2 Measuring and control unit DEPOLOX® 5 E 700 M

The measuring and control unit DEPOLOX® 5 E 700 M is available in various versions. They mainly differ in the versions of the DEPOLOX® 5 E flow cell (module type D01) (non-pressurized or pressurized) as well as the sensors. The measuring and control unit DEPOLOX® 5 E 700 M consists of the following:

- 700 M electronics module (module type E01)
- DEPOLOX® 5 E flow cell (module type D01) with 3-electrode measuring cell for free chlorine (chlorine dioxide or ozone)
  - Non-pressurized or pressurized version
- LED glow stick
- 4-way mA output card
- Eight relay outputs

Optional:

- pH reference electrode
- Redox reference electrode
- Membrane sensor for total chlorine TC2 CAN
- Conductivity sensor

DEPOLOX® 5 E 700 M Non-pressurized version

The non-pressurized version of the measuring and control unit DEPOLOX® 5 E 700 M is available in following versions:

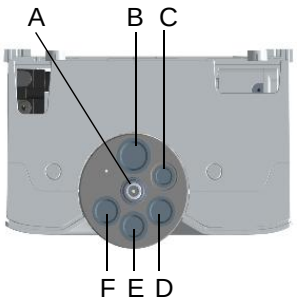
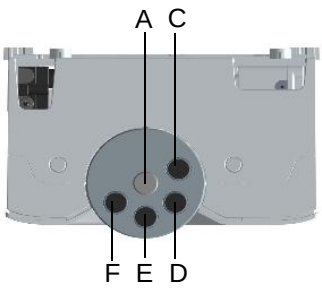
Part no.	3-electrode measuring cell for free chlorine (chlorine dioxide or ozone)	pH reference electrode	Redox reference electrode	Membrane sensor for total chlorine TC2 CAN	Conductivity sensor
W3T371112	X				
W3T371113	X	X			
W3T371114	X	X	X		
W3T371115	X	X	X		X
W3T371116	X	X	X	X	X

DEPOLOX® 5 E 700 M Pressurized version

The pressurized version of the measuring and control unit DEPOLOX® 5 E 700 M is available in following versions:

Part no.	3-electrode measuring cell for free chlorine (chlorine dioxide or ozone)	pH reference electrode	Redox reference electrode	Membrane sensor for total chlorine TC2 CAN	Conductivity sensor
W3T370967	X				
W3T370968	X	X			
W3T370969	X	X	X		
W3T370970	X	X	X		X

3.2.3 Configuration options

Designation	DEPOLOX® 5 E Non-pressurized version	DEPOLOX® 5 E pressurized version
		
		
	A 3-electrode measuring cell (free chlorine) *B Membrane sensor for total chlorine TC2 CAN or TC2-S CAN* *C Conductivity sensor* *D Redox combined measuring and reference electrode* *E LED glow stick* *F pH combined measuring and reference electrode*	
3-electrode measuring cell (free chlorine)	X	X
Membrane sensor for total chlorine TC2 CAN	X	-
Membrane sensor for total chlorine TC2-S CAN (only in combination with 700 P electronics module)	X	-
pH combined measuring and reference electrode	X	X
Redox combined measuring and reference electrode	X	X
Conductivity sensor	X	X
Sample water temperature (multi-sensor)	X	X
Flow rate monitor (multi-sensor)	X	X
Sample water earthing (multi-sensor)	X	X
Sample water fine filter (fine filter)	(X) Only when using membrane sensors	-
LED glow stick	X	X
Shut-off ball valve at sample water inlet	X	X
Shut-off ball valve at sample water outlet	-	X

3.3 Design and functions

3.3.1 Overall design

The DEPOLOX® 5 E flow (module type D01) cell has the following design:

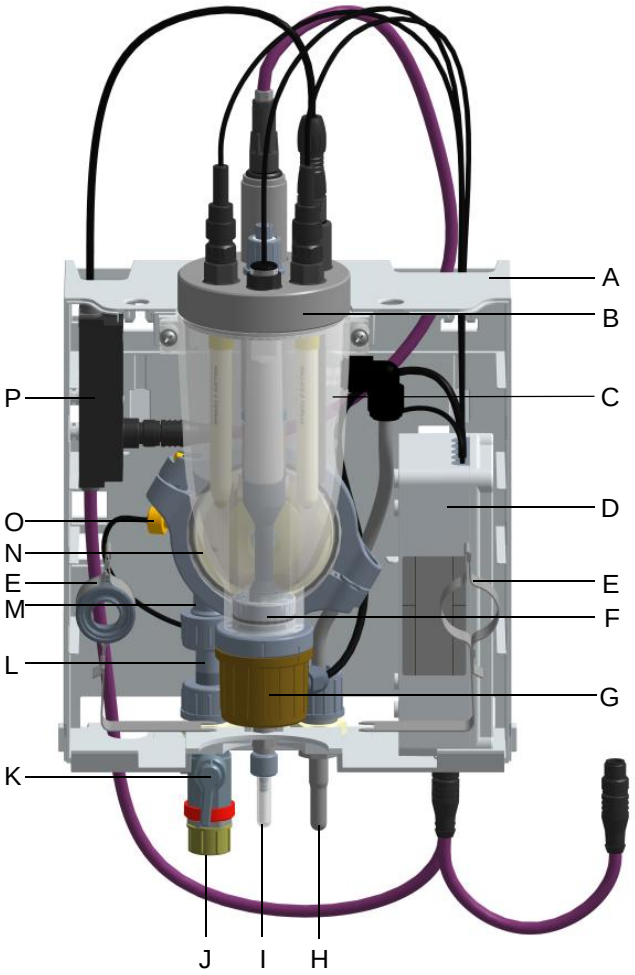
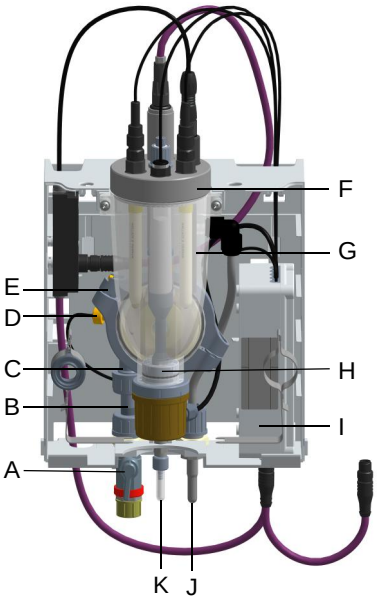


Figure 2 DEPOLOX® 5 E flow cell, non-pressurized (cover removed)

A Plastic housing with removable housing cover
B Cover for holding the sensors and LED glow stick
C Cell body
D DFMe electronics module
E Calibration holding clip
F 3-electrode measuring cell with electrolyte tank
G Cap of the 3-electrode measuring cell
H Sample water outlet, in pressurized version also with ball valve
I Sample taking unit (drain)
J Sample water inlet
K Shut-off ball valve
L Filter unit
M Check valve housing
N Flow control valve
O Multi-sensor
P Module SiDiSens conductivity (optional)

3.3.2 DEPOLOX® 5 E flow cell



The function description of DEPOLOX® 5 E flow cell is described below from the sample water inlet to the sample water outlet.

The sample water is connected on the input side to the shut-off ball valve (A) via the G1/2” connection. The input pressure must be around 0.25 to 3.0 bar. To guarantee a constant flow, the minimum input pressure must not be less than 0.25 bar. Otherwise, an optional booster pump must be used. If the admission pressure exceeds 3.0 bar, an optional pressure reducing valve must be used.

The sample water flows in the flow direction to the check valve housing (C) through the filter unit (B) or through the built-in fine filter (membrane sensors only). In the filter unit a stainless steel fine filter (sample water fine filter) with a mesh size w=500 µm can be installed. The fine filter is only used in conjunction with the non-pressurized version and the membrane sensors.

The check valve housing (C) provides a kick-back function and guides the ball for monitoring the flow rate.

The multi-sensor (D) monitors the correct flow by the float principle with reed switch and measures the temperature with the Pt1000. The large-surface transducer grounding is through the stainless steel sensor housing.

The flow control valve (E) ensures a flow of the sample water that is not dependent on the operating pressure. The correct sample water flow of 33 l/h is factory-preset, checked and logged. If the admission pressure rises, the valve ball moves towards the closing direction; if the admission pressure drops, the ball moves towards the opening direction.

In the cell body (G) the 3-electrode measuring cell (H) with external potentiostatic control circuit and refillable electrolyte tank is fitted. Working and counter electrodes are designed as half-ring electrodes and consist of a special platinum alloy. The reference electrode is a silver–silver chloride electrode, which is connected to the sample water via two membranes. The reference electrode immerses in an electrolyte solution and can also be refilled during operation.

The sample water that flows tangentially into the 3-electrode measuring cell (H) ensures continuous hydromechanical cleaning of the sensor electrodes with special cleaning sand, thereby preventing natural soiling of the electrode surfaces. Clean electrode surfaces and a constant flow of sample water are decisive criteria for a qualitative good oxidizing agent measurement and quick response.

The 3-electrode measuring cell (H) is connected to 700 P electronics module or 700 M electronics module through DFMe electronics module (I) (DES sensor module for 3-electrode measuring cell). The adjustable cell voltage Upot is output through the potentiostatic control circuit. A measuring cell current (µA signal) that is proportional to the disinfectant concentration in the sample water is evaluated with the 700 P electronics module or 700 M electronics module.

The transparent cell body (G), which can be lit, holds the sensors and is designed to allow convenient cleaning and servicing. These additional sensors are installed in the mounting hole of the cell body cover (F) with standard thread connections or in special sensor mounts.

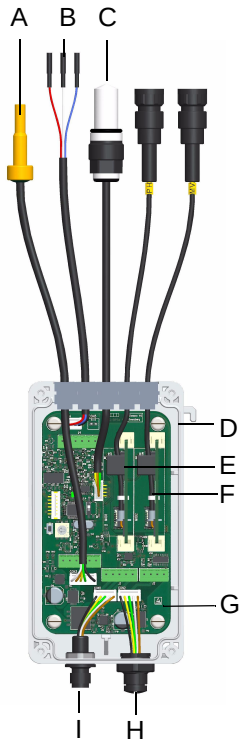
The LED glow stick is fitted in the cell body cover for visual inspection of the sensors, sand cleaning and for color indication of messages or faults.

The sample water runs off directly through the top cell body outlet (J) through an outlet nozzle for hoses with inner diameter 6 mm. In the case of the pressurized version, the sample water runs off through a shut-off ball valve with G 1/2” A-connection. With the pressurized version, a maximum back pressure of 1.5 bar is permitted here.

For calibration, a sample taking unit (K) is fitted. It is used to draw sample from the cell body through the low-pressure side of the flow control valve and to drain the cell body for servicing.

Two calibration holding clips are attached in the cover of the DEPOLOX® 5 E flow cell. For hands-free calibration of the sensors with buffer solution and calibration solution (bag or cup) the two calibration mounting brackets are inserted on the side at the back of the main housing.

3.3.3 DFMe electronics module

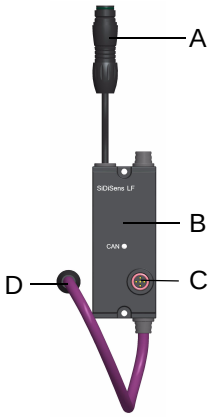


DFMe electronics module consists of a spray-water tight housing with built-in sensor electronics and is integrated in the main housing of the DEPOLOX® 5 E flow cell. The sensor cables are prefabricated and are splash-proof to IP66. The motherboard holds the sensor input for the 3-electrode measuring cell, the LED glow stick and the evaluation electronics for the multi-sensor. Optionally, the motherboard contains two additional slots for the pH and redox combined measuring and reference electrode. To the integrated CAN socket the CAN connection cable to 700 P electronics module or 700 M electronics module is connected. Further optional sensors, such as for total chlorine and/or conductivity module SiDiSens can be connected through a second CAN connection socket (optional).

Figure 3 Cross-section, DFMe electronics module

A Multi-sensor
B Sensor cable DFMe - DES for 3-electrode measuring cell
C LED glow stick
D Housing of DFMe electronics module
E Sensor module pH (optional)
F Sensor module redox (mV) (optional)
G DFMe motherboard with measurement input Cl_2
H CAN extension socket (optional)
I CAN connection socket for 700 P electronics module or 700 M electronics module

3.3.4 Module SiDiSens LF (optional)



To measure the conductivity, conductivity module SiDiSens LF (optional) is installed in DEPOLOX® 5 E flow cell. The SiDiSens LF module contains the sensor electronics for conductivity sensor LF325 (4-conductor measurement). Through the CAN interface the SiDiSens LF module is connected with 700 P electronics module or 700 M electronics module. In addition, the optional membrane sensor for total chlorine TC2 CAN or TC2-S CAN can be connected via the CAN socket.

Figure 4 Module SiDiSens LF

A Sensor cable to conductivity sensor
B SiDiSens LF module
C CAN socket for connecting the membrane sensor
D CAN connection cable with plug

3.4 Optional accessories

The DEPOLOX® 5 E flow cell (module type D01) can optionally be equipped with the following sensors.

- pH combined measuring and reference electrode
- Redox combined measuring and reference electrode
- Conductivity sensor with conductivity module SiDiSens
- Membrane sensor for total chlorine TC2 CAN for conductivity of up to 60 mS (only in combination with 700 M electronics module)
- Membrane sensor for total chlorine TC2 CAN for conductivity of up to 2500 µS/cm (only in combination with 700 P electronics module)
- Membrane sensor for total chlorine TC2-S CAN for conductivity 2.5 – 60 mS (about 4 % NaCl) (only in combination with 700 P electronics module)

Please note

Please find order numbers in chapter 6.4.1 “Sensors”.

3.5 Technical Data

3.5.1 DEPOLOX® 5 E flow cell (module type D01)

Housing

Dimensions (W×H×D)	253 × 375 × 163 mm
Weight	approx. 2.5 kg

Connections

Non-pressurized version	Inlet: G 1/2” A thread connection Outlet: Connecting nipple for hoses ID 6 mm
Pressurized version	Inlet and outlet G 1/2” A thread connection

Flow control valve

Sample water flow	33 l/h, controlled, preset at the factory
Flow control range	0.25 to 3.0 bar admission pressure
Back pressure	Non-pressurized version: free drain Pressurized version: max. 1.5 bar

Multi-sensor

Switching point	21 l/h ±3 l/h
Switching hysteresis	2 l/h
Temperature sensor	Pt1000

Sensors

Measured variables	Free chlorine, chlorine dioxide, ozone

3.5.2 3-electrode measuring cell

Design	Potentiostatic 3-electrode measuring cell with platinum electrodes, tank with reference electrolytes, two diaphragms, Ag/AgCl drain system
Measurement range	0 to 50 mg/l (chlorine reference value)
Working temperature range	0 to 50°C (32 to 122°F)
Area of application, pH value	constant, within range pH 4 to pH 9
Influence of the pH value	HOCl characteristic (for chlorine)
Measurable parameters	Free Cl_2, ClO_2, O_3, $KMnO_4$
Conductivity	>= 100 µS/cm
Response time	t_{90} = < 20 s
Typical output signal	20 µA/mg/l (for chlorine)
Storage temperature	-10 to +50°C (14 to 122°F)

3.5.3 Sensors (optional)

pH combined measuring and reference electrode (W3T169297)

Design	Combined measuring and reference electrode with universal membrane glass, salt reserve, zirconium dioxide diaphragm, polymerized solid electrolyte, Ag/AgCl drain system
Measurement range	pH 0 to 12 (temporarily to pH 14)
Working temperature range	-5 to +80°C (23 to 176°F)
Operating pressure	0 to 6 bar (6×10^5 Pa)
Minimum conductivity of the sample water	50 µS/cm
Installation length	120 mm
Screw-in thread	PG 13.5
Storage temperature	-5 to +30°C (23 to 86°F)

Redox combined measuring and reference electrode (W3T169298 – platinum version)

Design	Combined measuring and reference electrode with platinum electrode, salt reserve, zirconium dioxide diaphragm, polymerized solid electrolyte, Ag/AgCl drain system
Measurement range	±2000 mV
Working temperature range	-5 to +80°C (23 to 176°F)
Operating pressure	0 to 6 bar (6×10^5 Pa)
Minimum conductivity of the sample water	50 µS/cm
Installation length	120 mm
Screw-in thread	PG 13.5
Storage temperature	-5 to +30°C (23 to 86°F)

Conductivity sensor (W3T172052)

Design	4-electrode measurement, integrated temperature sensor NTC 30, graphite electrodes, epoxy shaft
Measurement range	1 µS/cm to 2 S/cm
Cell constant	0.475 cm^{-1} ±1.5%
Working temperature range	-5 to +100°C (23 to 212°F)
Operating pressure (electrode shaft)	0 to 10 bar (1×10^6 Pa)
Installation length	120 mm
Installation	Loose
Protection rating	IP 67 (in plugged in state)
Storage temperature	0 to +50°C (32 to 122°F), store in the fresh air

Total chlorine membrane sensor TC2 CAN (W3T272889 and TC2-S CAN (W3T331061)

Design	Membrane-covered, potentiostatic 2-electrode-system with gold working electrode, silver/silver halogenide dissipation system and potassium halogenide electrolyte solution
Measurement range	0.05 to 20 mg/l
Working temperature range	5 to 45°C (41 to 113°F)
Area of application, pH value	4 to 12 pH
Operating pressure	Max. 0.5 bar, no fluctuations
Running-in time	Approx. two hours
Dimensions	ø 25 mm (1”), length 205 mm (8.1”)
Cross-sensitivities	Ozone, chlorine dioxide
Response time t_{90}	< 120 s
Storage temperature	5 to 40°C (41 to 104°F)
Conductivity TC2 CAN (only in combination with 700 M electronics module)	> 10 µS/cm to 60 mS/cm (about 4 % NaCl)
Conductivity TC2 CAN (only in combination with 700 P electronics module)	> 10 µS/cm to 2500 µS/cm
Conductivity TC2-S CAN (only in combination with 700 P electronics module)	2.5 to 60 mS/cm (about 4 % NaCl)

Please note

For applications in brine with conductivity levels of 2.5 to 60mS/cm (approx. 4 % NaCl), total chlorine membrane sensor TC2-S CAN must be used (only in combination with 700 P electronics module).

3.5.4 DFMe electronics module

Design	Sensor electronics integrated in the DEPOLOX® 5 E flow cell for connection of: • 3-electrode measuring cell • Multi-sensor • LED glow stick • pH electrode • Redox electrode
Power supply	24 V DC
Connection	5-pole M12 socket for CAN interface and 24 V DC supply Extension option for second 5-pole M12 socket
Storage temperature	-20 to +70 °C
Ambient temperature	0 to 50 °C
Environment	No direct sunlight
Atmospheric pressure	75 to 106 kPa
Max. working height	2,000 m
Relative humidity	< 80 %, non-condensing
Noise emission	< 45 dB

3.5.5 Module SiDiSens LF (optional)

Design	Sensor electronics integrated in the flow cell for connection of the conductivity sensor:
Connection	5-pole M12 socket for CAN interface extension CAN connection cable with 5-pole M12 plug for connection to the DFMe Sensor cable for connection of the conductivity sensor LF325 (4-electrode system)
Power supply	24V DC via CAN connection cable
Storage temperature	-20 to +70 °C
Ambient temperature	0 to 50 °C
Environment	No direct sunlight
Atmospheric pressure	75 to 106 kPa
Max. working height	2,000 m
Relative humidity	< 80 %, non-condensing
Noise emission	< 45 dB

4. Installation

4.1 Scope of supply

The DEPOLOX® 5 E flow cell (module type D01) can be comined with 700 P electronics module (module type E01) or 700 M electronics module (module type E01). Depending on the individual order, the scope of supply includes the following:

- Pool Management System DEPOLOX® 5 E 700 P
- Measuring and control unit DEPOLOX® 5 E 700 M

4.1.1 Pool Management System DEPOLOX® 5 E 700 P

Please note

The DEPOLOX® 5 E flow cell is factory-configured according to the customer's specific requirements with the 700 P electronics module according to the variant code. The scope of delivery differs in the versions of DEPOLOX® 5 E flow cell, the sensors, electronics components and accessories. The variant code is printed on the type plate and on the packaging sticker. See chapter 3.2 "Versions".

The scope of delivery of the DEPOLOX® 5 E flow cell includes the following:

- DEPOLOX® 5 E flow cell (module type D01) with 3-electrode measuring cell for free chlorine (chlorine dioxide or ozone)
  - Non-pressurized or pressurized version
- LED glow stick
- Top-hat rail
- Assembly accessories
- Instruction manual DEPOLOX® 5 E flow cell

Depending on the configuration ordered, the scope of delivery also includes:

- 700 P electronics module (module type E01)
- Sensors
  - Membrane sensor for total chlorine TC2 CAN
  - Membrane sensor for total chlorine TC2-S CAN
  - pH combined measuring and reference electrode
  - Redox combined measuring and reference electrode
  - Conductivity sensor
- 4-way mA analog output
- Additional relay board 4-way
- Instruction manual 700 P electronics module

4.1.2 Measuring and control unit DEPOLOX® 5 E 700 M

Please note

The scope of supply mainly differs in the versions of the DEPOLOX® 5 E flow cell (non-pressurized or pressurized) as well as the sensors.

The scope of supply of the measuring and control unit DEPOLOX® 5 E 700 M includes the following, depending on the order:

- DEPOLOX® 5 E flow cell (module type D01) with 3-electrode measuring cell for free chlorine (chlorine dioxide or ozone)
  - Non-pressurized or pressurized version
- 700 M electronics module (module type E01)
  - With 4-way mA output card
  - 8x relay outputs
- LED glow stick
- Top-hat rail
- Assembly accessories
- Instruction manual DEPOLOX® 5 E flow cell, German/Englisch
- Instruction manual 700 M electronics module, German/Englisch

Optional:

- pH reference electrode
- Redox reference electrode
- Membrane sensor for total chlorine TC2 CAN
- Conductivity sensor

4.2 Transport and storage

Transport

The DEPOLOX® 5 E flow cell is supplied in standard packaging. During transport, the packaged system must be handled carefully and should not be exposed to wet weather or moisture.

Check that the transport packaging is undamaged. In the event of damage, please inform the transport company immediately, as your rights to compensation will otherwise be lost.

If a component is damaged, please contact your affiliate immediately.

Keep the packaging until the DEPOLOX® 5 E flow cell has been correctly installed and taken into operation.

Storage

Store the electronics module, the DEPOLOX® 5 E flow cell and the sensors in a dry condition without any residual water in a dry place that is not exposed to the weather. Storage temperature, see chapter 3.5 “Technical Data”.

4.3 Ambient conditions

Please note

Correct and safe operation can only be guaranteed if the requirements for the ambient conditions are met. All applicable national and local regulations must be observed!

4.3.1 Installation site

The following points must be taken into account when installing DEPOLOX® 5 E flow cell:

- The DEPOLOX® 5 E flow cell must be protected from moisture, rain, frost, heat and direct sunlight and must not be installed outdoors.
- Do not use the DEPOLOX® 5 E flow cell in environments where there are flammable gases, fumes or dust or conductive dust.
- Do not subject the DEPOLOX® 5 E flow cell to strong shocks or vibrations.
- The air in the room should be non-condensing.

- Select the sample water extraction point that guarantees a proper mixture of disinfectant and a bubble-free sample water flow.
- To prevent long loop dead times, keep the sample water take-off line as short as possible.
- Do not install water carrying lines made of copper. These would distort the measurements.
- If 700 P electronics module or 700 M electronics module and DEPOLOX® 5 E flow cell are installed in different locations, you must use CAN bus extension cable (optional). This must not be longer than 1000 m.

4.3.2 Installation location for drinking water, industrial water and waste water

For problem-free mixing of the chlorine solution, the distance between chlorine addition and sample water take-off must be at least ten times the pipe diameter:

Example:
Pipe DN300
=> 300 mm × 10 = 3000 mm
=> minimum distance = 3 m

The time between chlorine addition and excess chlorine measurement is the soak time. It consists of the travel time between chlorine addition point and sample water take-off and the travel time between sample water take-off and measurement (sample water line to DEPOLOX® 5 E flow cell). Keep the sample water line to the DEPOLOX® 5 E flow cell as short as possible.

For longer required soak times, for example 5 to 15 minutes, a delay tank can be installed into the sample water line immediately before the DEPOLOX® 5 E flow cell. Note that the longer soak time prevents chlorine addition control based purely on excess chlorine. Instead, combined flow and excess chlorine dependent control must be used. This also applies to the use of chlorine, chlorine dioxide and ozone as disinfectant.

4.3.3 Installation site for pool water

The sample water take-off point must be installed in the pool return line according to standards (see DIN 19643, DIN = German Industrial Norm). Make sure that the sample water take-off point is upstream of the flocculant station.

4.4 Mechanical installation

Warning!

Risk of injury or damage to the installation!

All electrical work on the equipment must be performed only by authorized and qualified electricians. Modifications to the device other than those described in this instruction manual are not permitted.

The following installation options are available to mount the DEPOLOX® 5 E flow cell and 700 P electronics module or 700 M electronics module:

- With top-hat rail
- Without top-hat rail

Please note

We recommend joint assembly of the DEPOLOX® 5 E flow cell and the 700 P electronics module or 700 M electronics module. Leave a clearance of at least 250 mm above the DEPOLOX® 5 E flow cell for handling the sensors.

Please note

The 700 P electronics module or 700 M electronics module is not suitable for electrical connection with permanently installed cable conduits. If the cable glands do not meet local installation rules and regulations, these glands must be replaced with suitable ones.

4.4.1 Sequence

Perform the mechanical installation according to the following check list.

Ser. No.	Task	Reference to chapter	Completed
1	Installation of the modules • With top-hat rail or • Without top-hat rail	4.4.2	
2	Taking off the housing cover	4.4.5	
3	Connecting the sample water inlet • With hose connection or • With rigid pipes	4.4.6	
4	Connecting the sample water outlet	4.4.8	
5	Installing the fine filter (with membrane sensors only)	4.4.9	
6	Removing the felt ring	4.4.10	
7	Removing and replacing transport caps	4.4.11	
8	Filling the electrode cleaning sand	4.4.12	
9	Connecting the three-electrode measuring cell and connecting sensors with DFMe electronics module	4.4.13	
10	Fitting the sensors (optional)	4.4.14	
11	Installing calibration aids	4.4.15	
12	Fitting the enclosure cover	4.4.5	

4.4.2 Installing the modules with top-hat rail

Proceed as follows, referring to the dimension drawings on Chapter 4.4.4 “Dimension drawings”:

1 Secure the top-hat rail to a solid wall using the supplied dowels and screws. Screws and dowels for fixing to a solid wall are included in the scope of delivery.

Please note

If the device is to be installed on a suitable lightweight wall, use the relevant mounting fixtures (not included in the scope of delivery).

2 Hook the electronics module onto the top-hat rail so that it is flush at the right.

3 Fasten the electronics module to the solid wall at the bottom by the holders using dowels and screws.

4 Hook the DEPOLOX® 5 E flow cell onto the mounting rail on the left next to electronics module.

5 Fasten the DEPOLOX® 5 E flow cell to the solid wall at the bottom by the holders using dowels and screws.

4.4.3 Installation variant without top-hat rail

Instead of hooking the DEPOLOX® 5 E flow cell and the 700 P electronics module or 700 M electronics module onto the top-hat rail, they can also be hooked onto suitable tallow-drop screws by the top holding clips.

Please note

The dimensions for the drilling pattern can be found on the back of the plastic housing.

Proceed as follows:

1 Affix the supplied tallow-drop screws and dowels to the solid wall. Tallow-drop screws and dowels for fixing to a solid wall are included in the scope of delivery.

Please note

If the device is to be installed on a suitable lightweight wall, use the relevant mounting fixtures (not included in the scope of delivery).

2 Hook electronics module into the tallow-drop screws.

3 Fasten the electronics module to the solid wall at the bottom by the holders using dowels and screws.

4 Hook DEPOLOX® 5 E flow cell into the tallow-drop screws.

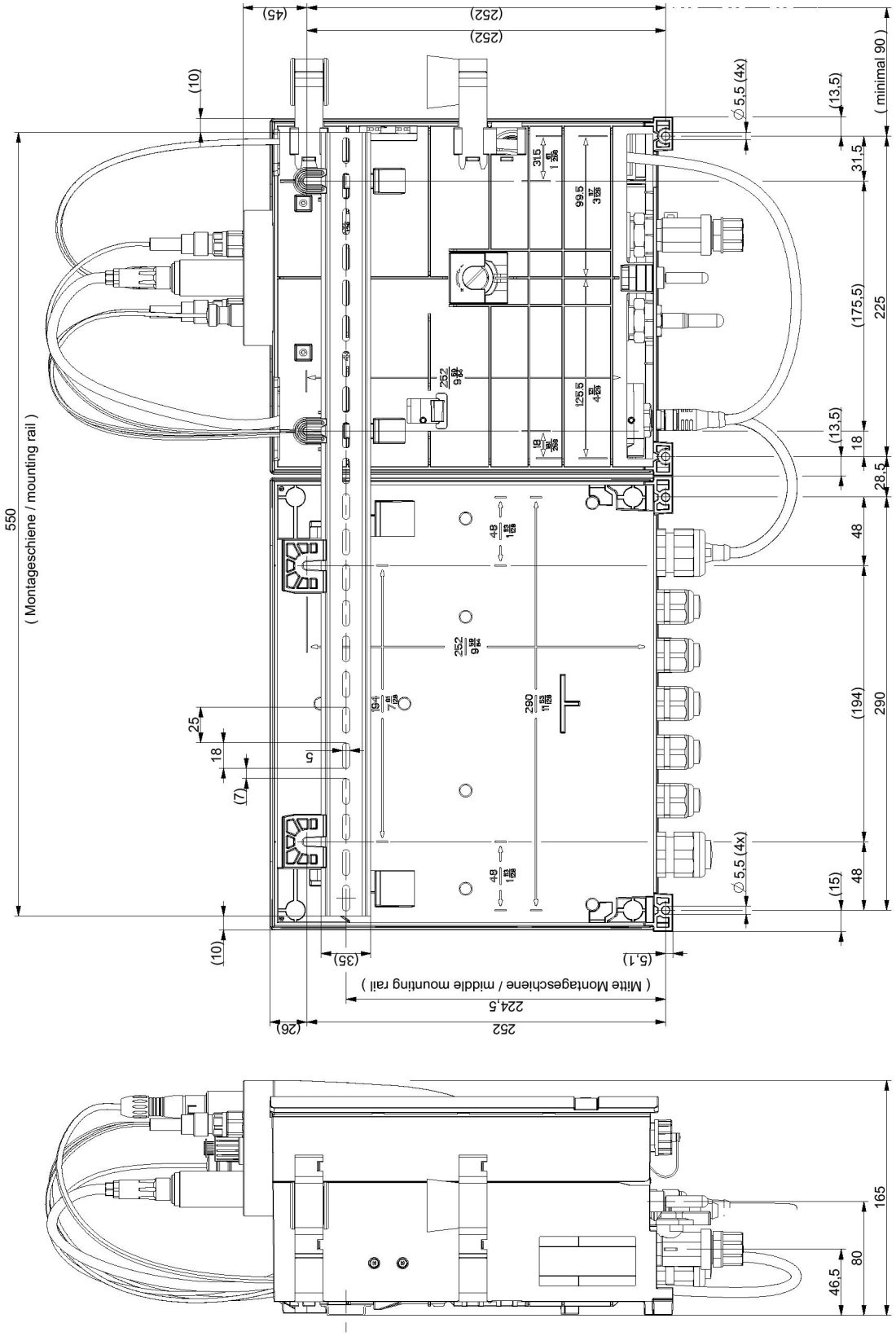
5 Fasten the DEPOLOX® 5 E flow cell to the solid wall at the bottom by the holders using dowels and screws.

Please note

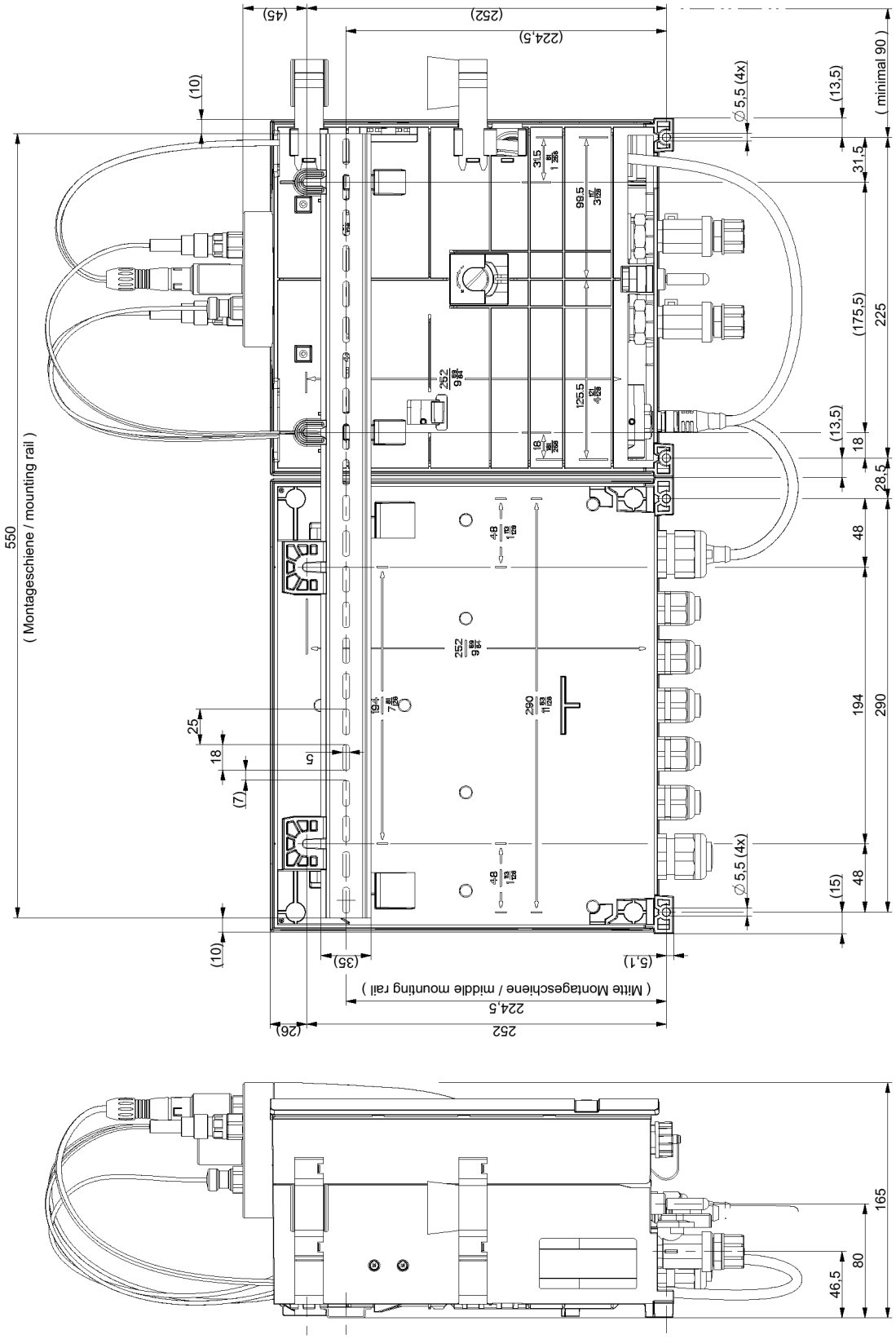
If 700 P electronics module or 700 M electronics module and DEPOLOX® 5 E flow cell are installed in different locations, you must use CAN bus extension cable (optional); see chapter 6.4.2 “CAN bus extension cable”. This must not be longer than 1000 m.

4.4.4 Dimension drawings

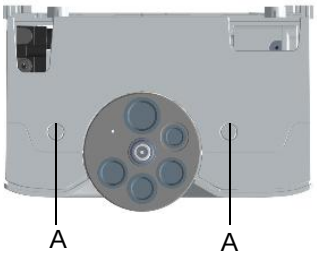
DEPOLOX® 5 E flow cell – non-pressurized version and electronics module (example)



DEPOLOX® 5 E flow cell – pressurized version and electronics module (example)



4.4.5 Removing or fitting the housing cover



1 Remove the housing cover of the DEPOLOX® 5 E flow cell. To do this, press both unlocking buttons on the top of the housing and carefully remove the housing cover forwards.

2 Refit and engage the housing cover of the DEPOLOX® 5 E flow cell. To do this, place the housing cover against at the bottom of the housing and carefully push it upwards until the housing cover engages with the unlock buttons.

Figure 1 Top view of housing cover

A Unlocking buttons

4.4.6 Connecting the sample water inlet

Please note

Do not install water carrying lines made of copper. These would distort the measurements.

When connecting the sample water inlet, observe the following:

- Sample water inlets are classified according to whether they have a hose connection or are fitted with rigid piping.
- The pressure in the sample water inlet must always be within a range of 0.25 to 3.0 bar. The pressure in the sample water inlet must generally be 0.25 bar higher than in the sample water outlet.
- At an admission pressure below 0.25 bar, an optional pressure booster pump must be used. See chapter 4.4.7 – “Example for sample water take-off with a booster pump”.
- If the admission pressure exceeds 3.0 bar, an optional pressure reducing valve must be used. See chapter 4.4.7 – “Example for sample water take-off”.
- To prevent long loop lag times, ensure that the lines in the sample water inlet are as short as possible.
- An external strainer with a mesh width of 0.5 mm is provided for the sample water inlet.

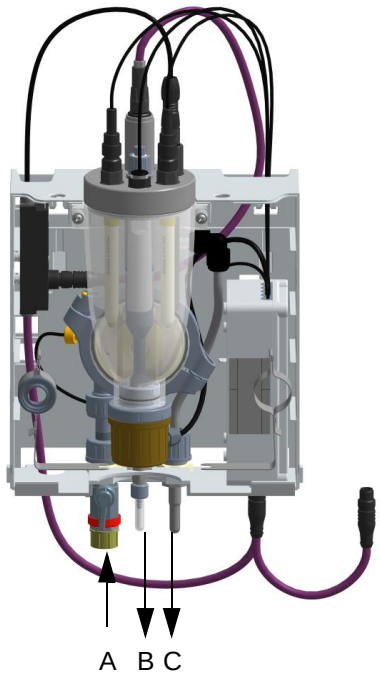


Figure 2 Cross-section of DEPOLOX® 5 E flow cell, non-pressurized

A Sample water inlet with shut-off ball valve
B Sample taking unit (drain on the drain screw)
C Sample water outlet

Sample water inlet with hose connection

Please note

The water-tightness of the hose screw connection is only guaranteed if the following installation instructions are followed!

Proceed as follows:

1 Release the union nut (A) on the hose screw connection.

2 Insert the hose (B) until it hits the hose bushing (D).

3 Push the locking ring (C) out until the union nut (A) engages in the threaded connection.

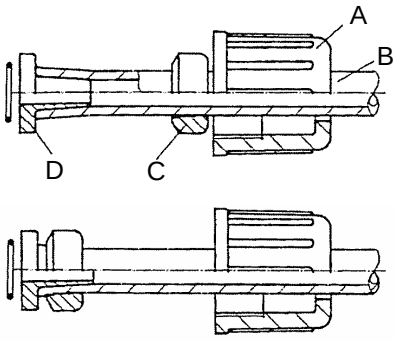


Figure 3 Detail: hose union cutout

A Union nut
B Hose
C Locking ring
D Hose bushing

Overview of hose connections

PVC hose, reinforced, ID x wall thickness	**Ø 4 x 3**	**Ø 6 x 3**	**Ø 10 x 3**
Hose	W2T505524	W2T505525	W2T505334
Hose connecting parts cpl.	W3T167626	W3T167518	W3T167590
consisting of:			
O-ring	W3T172861	W3T172861	W3T169068
Locking ring	W3T161417	W3T161436	W3T159622
Union nut	W3T161502	W3T161502	W3T167297
Hose bushing	W3T172945	W3T161501	W3T167293

PE hose, ID x wall thickness	**Ø 4 x 1**	**Ø 6 x 1**	**Ø 6 x 2**	**Ø 10 x 2**
Hose	W2T507155	W2T505784	W2T505676	W2T505734
Hose connecting parts cpl.	W3T163752	W3T171453	W3T163796	W3T163825
consisting of:				
O-ring	W3T172861	W3T172861	W3T172861	W3T169068
Locking ring	W3T172891	W3T169815	W3T161436	W3T161437
Union nut	W3T161502	W3T161502	W3T161502	W3T167297
Hose bushing	W3T172945	W3T161501	W3T161501	W3T167293

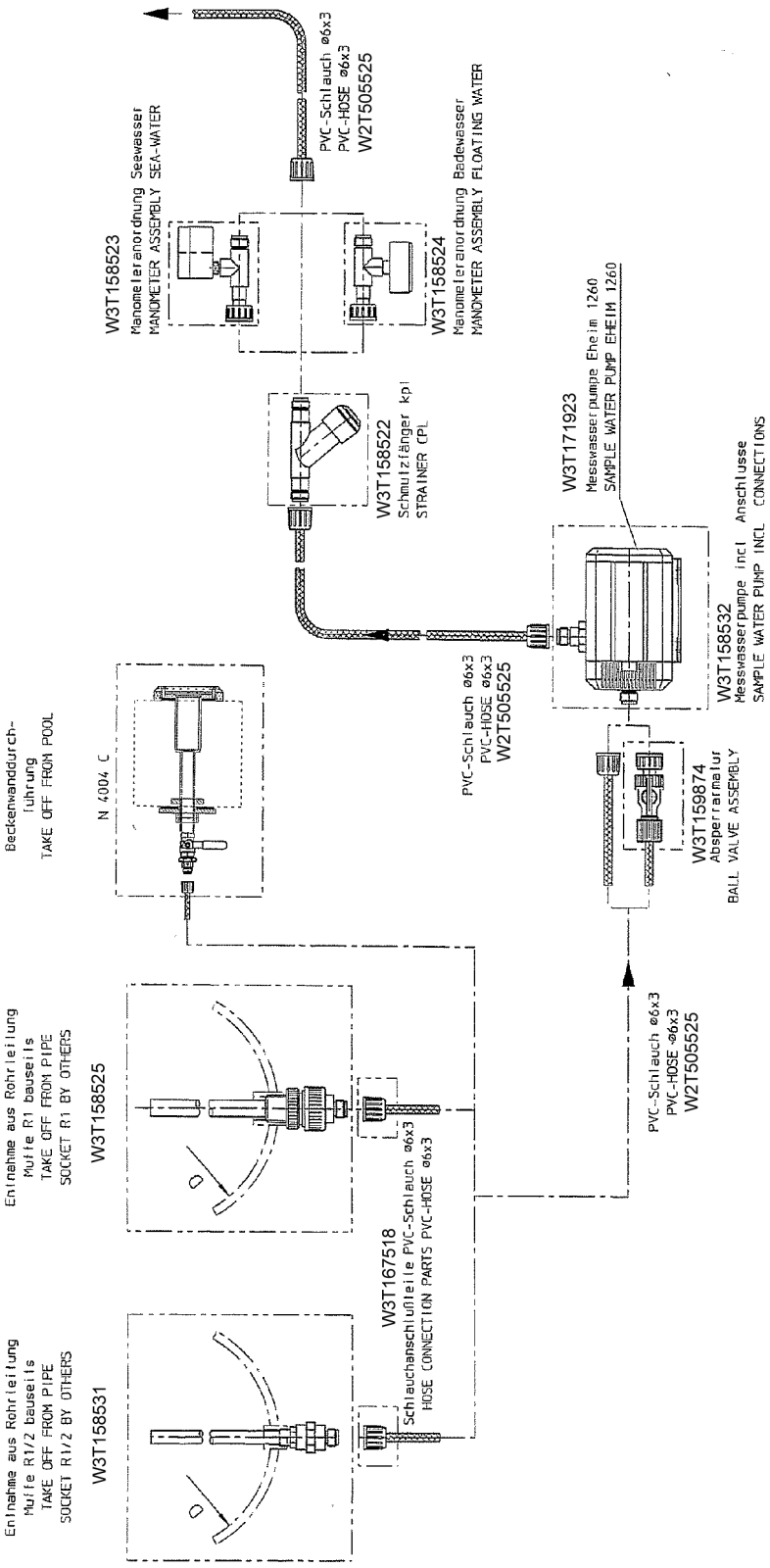
Sample water inlet with rigid pipework

Proceed as follows:

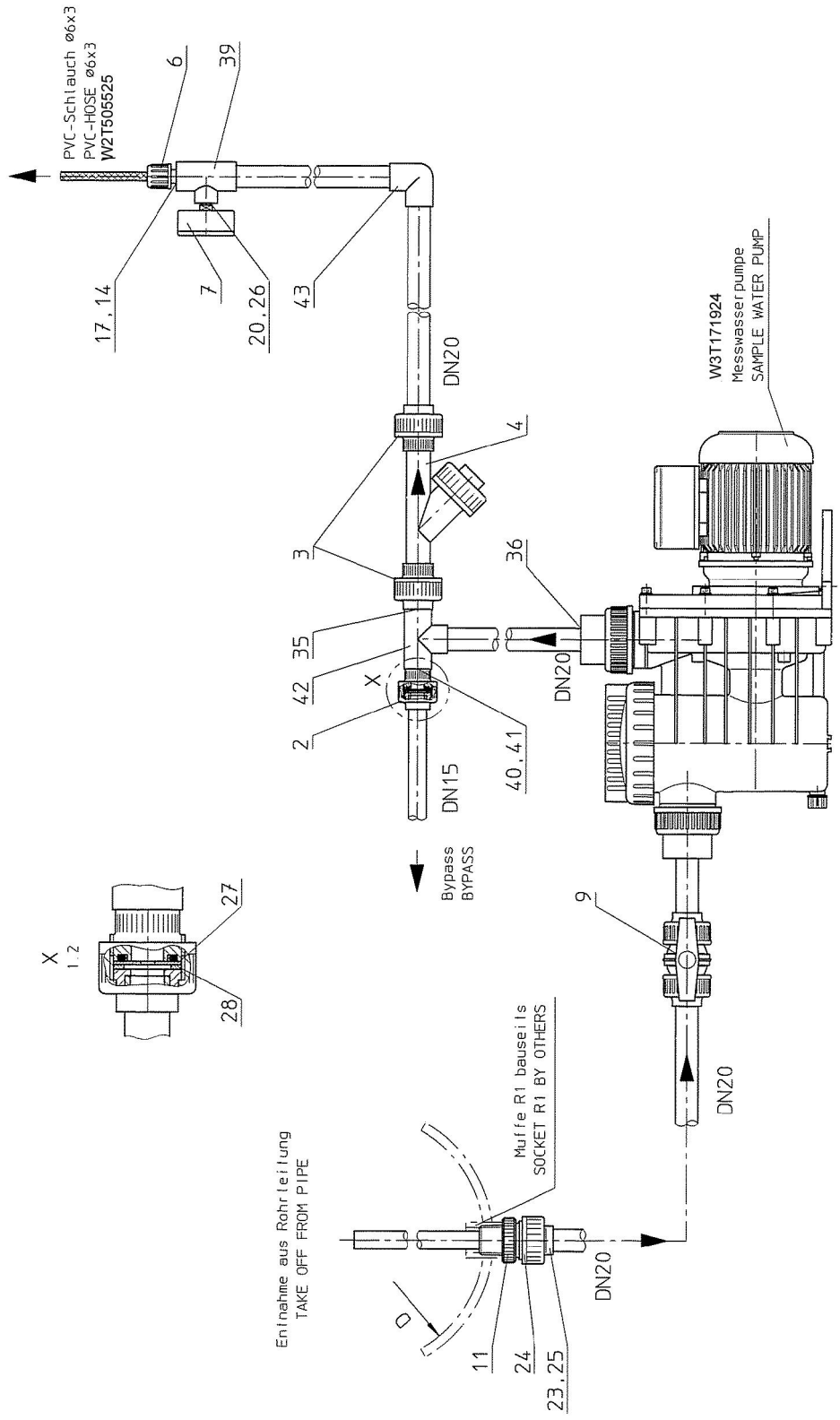
1. Connect the sample water pipework to the (G1/2” A) shut-off ball valve connection thread.
2. Ensure that the sample water pipes are installed so that it is free of mechanical stress.

4.4.7 Sample water take-off options

Example for sample water take-off with a booster pump



Example for sample water take-off



Only operate with sample water inlet

Parts lists

Sample water take-off for fresh water (part no. W3T158528)
Sample water take-off for salt water (part no. W3T158529)

Item	Quantity	Part No.	Designation
2	1	W2T505181	Screw joint
3	2	W2T505182	Screw joint
4	1	W3T171416	Strainer complete
6	1	W3T167518	Hose connection parts
7	1	W3T173160 W3T173198	Pressure gage (fresh water) Pressure gage (salt water)
9	1	W2T505945	Shut-off ball valve
11	1	W3T163670	Sample pipe
14	1	W3T172948	Threaded part
17	1	W2T505600	Reduction
20	1	W3T163500	Reduction nipple
23	1	W2T507288	Insert
24	1	W2T506934	Union nut
25	1	W3T172720	O-ring
26	1	W3T161254	Flat gasket
27	1	W3T171146	Nozzle washer
28	1	W3T172727	Flat gasket
35	1	W3T166090	Pipe segment
36	2	W2T506782	Reducing junction, short
39	1	W2T506527	T-piece
40	1	W3T166089	Pipe segment
41	1	W2T506778	Reducing junction, short
42	1	W2T507525	T-piece
43	1	W2T507535	Elbow bend

4.4.8 Connecting the sample water outlet

Please note

Do not install water carrying lines made of copper. These would falsify the measurements.

Sample water outlet on non-pressurized version

Proceed as follows:

1. On the non-pressurized version, no back-pressure is permitted in the cell body.
2. The sample water outlet must be open. We recommend using a funnel above the outlet.
3. The sample water outlet must be laid in such a way as to prevent siphoning.

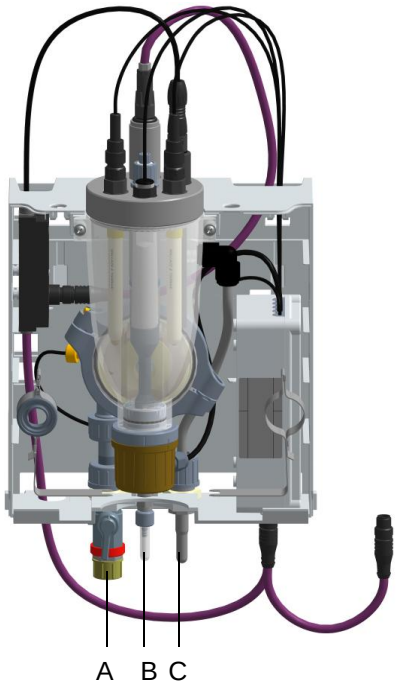


Figure 4 Cross-section of DEPOLOX® 5 E flow cell, non-pressurized

A Sample water inlet with shut-off ball valve
B Sample taking unit (drain on the drain screw)
C Sample water outlet

Sample water outlet on pressurized version

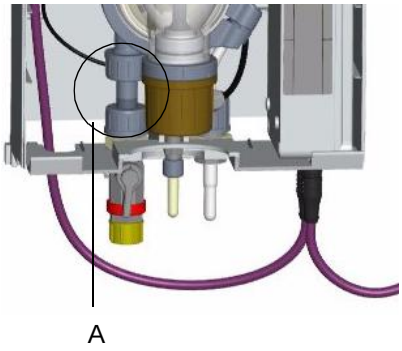
Proceed as follows:

1. On the pressurized version, a maximum back-pressure of 1.5 bar is permitted on the sample water outlet.
2. Ensure that the drain screw (sample taking unit) is always closed.

4.4.9 Installing the fine filter

Please note

A fine filter must only be installed when membrane sensors are employed.



Proceed as follows:

1 Release both knurled nuts (B).

2 Remove the complete filter unit (A).

3 Push the fine filter (D) into the filter unit. Ensure that the O-ring (C) is fitted correctly.

4 Fit the complete filter unit (A). Ensure that it is in the correct position (top/bottom).

5 Tighten the knurled nuts (B).

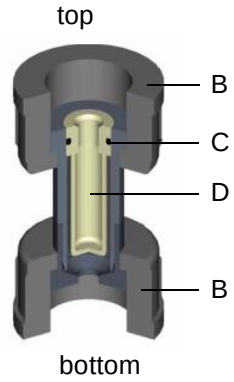


Figure 5 Detail: DEPOLOX® 5 E flow cell, non-pressurized

Figure 6 Filter unit cross-section

A Entire filter unit
B Knurled nut
C O-ring
D Fine filter

4.4.10 Removing the felt ring

To keep the diaphragm moist and prevent crystallization in the electrolyte solution there is a moist felt washer in the gap between electrolyte tank and electrode when the unit is in storage.

Attention!

Before initial startup, the felt washer for moistening the membranes must be removed.

Proceed as follows:

1. Extract the knurled nut (A) from the cover of the electrolyte tank.
2. Remove the entire electrode unit from the cell body from below.
3. Remove the felt washer (B) between electrolyte tank and electrode.
4. Refit the entire electrode unit in the cell body. With the locating pin, observe the exact position in the cell body.
5. Push the entire electrode unit upwards.
6. Refit the knurled nut on the electrolyte tank.

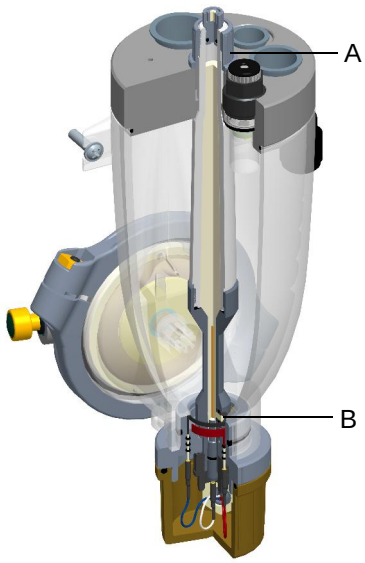


Figure 7 Cross-section of cell body, non-pressurized version (example knurled nut)

A Knurled nut
B Felt washer

4.4.11 Removing and replacing transport caps

Please note

Before initial commissioning of the DEPOLOX® 5 E, the transport cap of the electrolyte tank must be removed and replaced with the enclosed operating cap.

Non-pressurized version

For the non-pressurized version, proceed as follows:

1 Take out the yellow protection cap of the electrolyte tank.

2 Replace the transport cap with the enclosed operating cap.

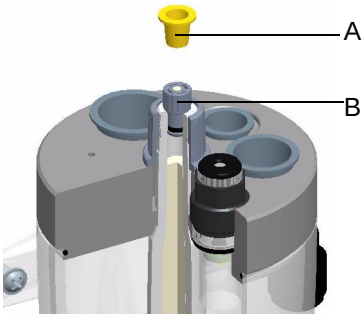


Figure 8 Detail: cell body cover, non-pressurized version

A Protection cap (yellow)
B Stopper (with white venting rod)

Pressurized version

Attention!

During operation, the cap must always be in place.

For the pressurized version, proceed as follows:

1 Extract the knurled nut.

2 Remove the long transport cap from the electrolyte tank and replace with the short operating cap (enclosed).

3 Fit the knurled nut.

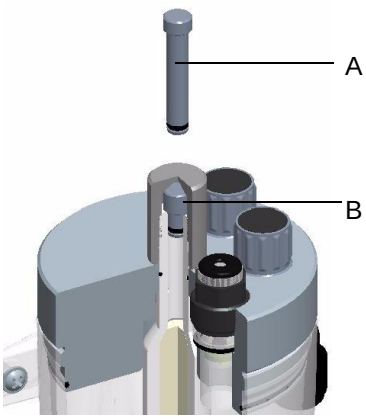


Figure 9 Detail: cell body cover, pressurized version

A Transport cap (long)
B Stopper (short)

4.4.12 Filling electrode cleaning sand

The electrode cleaning sand (part no. W3T158743) is supplied in a plastic bottle, the cap of which serves as a measuring beaker.

Proceed as follows:

1 Close the shut-off ball valve on the sample water inlet.

2 On the pressurized version, close the shut-off ball valve on the sample water outlet.

3 On the non-pressurized version, take out a plug or sensor from the cell body cover.

4 On the pressurized version, remove the protection cap or sensor on the cell body cover.

5 Fill half a cap from the plastic bottle with cleaning sand and pour it into the cell body through a sensor mounting hole (approx. 1/3 cm^3 of cell sand).

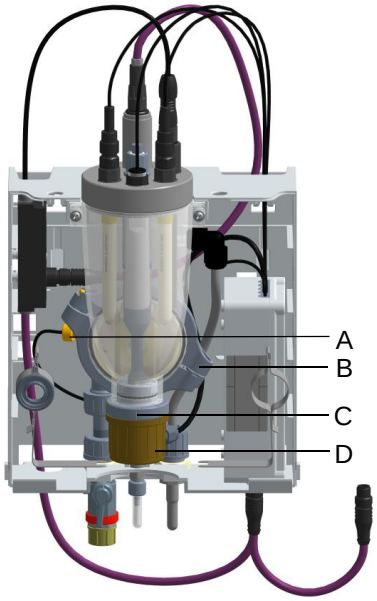
6 Make sure that the opening and the thread are clean; if necessary rinse with distilled water.

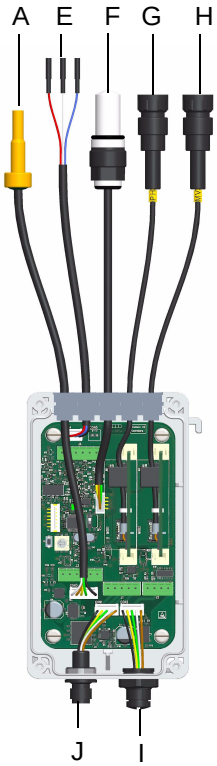
7 Insert the plug or a sensor in the cell body cover.

8 Open the shut-off ball valve at the sample water inlet.

9 On the pressurized version, open the shut-off ball valve on the sample water outlet.

4.4.13 Connecting sensors with DFMe electronics module





A Multi-sensor
B Flow control valve
C 3-electrode measuring cell
D Cap
E Sensor cable DFMe-DES
F LED glow stick
G pH sensor cable (optional)
H Redox sensor cable (mV) (optional)
I CAN extension socket (optional)
J CAN connection socket to electronics module

Proceed as follows:

1 Insert the multi-sensor (A) in the flow control valve (B).

2 Connect sensor cable DFMe-DES (E) to the 3-electrode measuring cell (C). To do this, screw cap (D) on the 3-electrode measuring cell (C) counterclockwise up to the mark (see Figure 10, item K) and take it off. Feed the sensor cable through the cap and tighten with the M12 cable union (L). Connect the signal cable, observing the correct colors (see Figure 11 and lower table). Screw in the cap clockwise up to the mark.

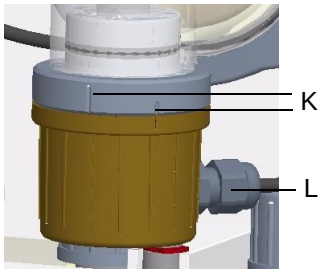


Figure 10 Detail: cap

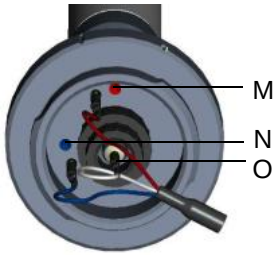


Figure 11 Section of 3-electrode measuring cell

WRK	Working electrode (Figure 11, item M)	Red point	Red cable
CNT	Counter electrode (Figure 11, item N)	Blue point	Blue cable
Ref	Reference electrode (Figure 11, item O)		White cable

3 Insert or screw the LED glow stick (F) into the mounting hole in the cell body cover.

4 Connect the pH- and redox sensor cable plug (G, H) with the pH and redox combined measuring and reference electrode.

5 Plug the CAN connection cable into the CAN connection socket (J) and with connect with 700 P electronics module or 700 M electronics module (CAN socket).

Figure 12 Cross-section of DEPOLOX® 5 E flow cell, non-pressurized version

Figure 13 Cross-section, DFMe electronics module

4.4.14 Fitting the sens (optional)

Please note

The membrane sensors, combined measuring and reference electrodes and electrodes must be prepared accordingly. Please follow the appropriate instructions for the sensors! On the pressurised version it is not possible to install a membrane sensor.

Depending on requirements, insert or screw in the sensors into the mount hole on the cover of the cell body.

Please note

With the pressurized version, the sensors must be screwed in or secured to prevent them from being pushed out.

Proceed as follows:

1 On the non-pressurized version, remove the cap from the mounting hole on the cell body cover.

2 On the pressurized version, unscrew the protection cap.

3 Take the pH and redox combined measuring and reference electrode out of the KCl tank with stand.

Please note

Keep the KCl tank with stand for later use or storage.

4 With the conductivity sensor, remove the blind plug and O-ring.

5 Insert or screw the prepared sensors into the corresponding mounting hole in the cell body cover.

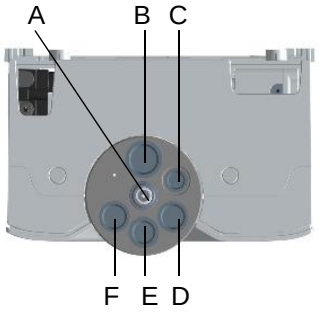


Figure 14 Non-pressurized version

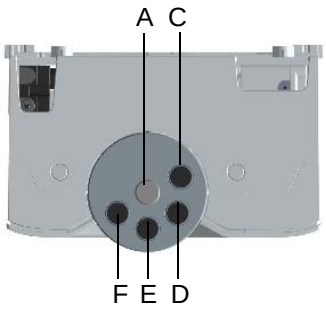


Figure 15 Pressurized version

A 3-electrode measuring cell (already installed)
B Membrane sensor for total chlorine TC2 CAN or TC2-S CAN
C Conductivity sensor
D Redox combined measuring and reference electrode
E LED glow stick
F pH combined measuring and reference electrode

4.4.15 Installing calibration aids

Two calibration clips are installed in the housing cover. These are inserted on the side at the back of the main housing.

The clips with plastic inserts for sensor is pushed into the upper catch (A).

The second holding bracket holds the calibration solution in a bag or cup. For the solution in the bag, position the holding bracket in the upper position of the lower holding device (B). For the cup, use the lower position (C).

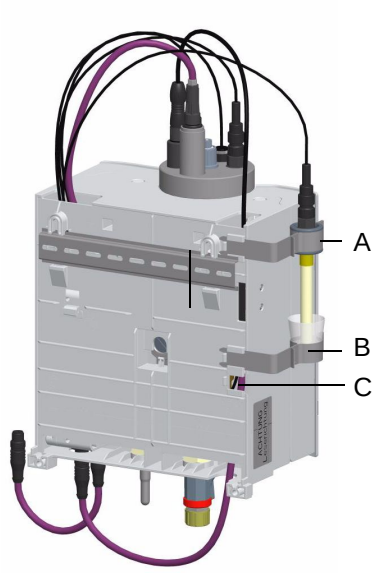


Figure 16 Rear of DEPOLOX® 5 E flow cell, pressurized

A Upper holding device
B Position of holding device for bag
C Position of holding device for cup

4.5 Commissioning

After the 700 P electronics module or 700 M electronics module and DEPOLOX® 5 E flow cell and sensors are installed, you can perform the initial startup. For the procedure, see instruction manual “700 P electronics module” or “700 M electronics module” and the corresponding instructions for the sensors.

4.6 Shutting down

Attention!

If the installation site of DEPOLOX® 5 E flow cell and the sensors is not frost-free, the system must be taken out of operation in good time! See also instruction manual „700 P electronics module” or “700 M electronics module” and the corresponding instructions for the sensors.

4.6.1 Emptying DEPOLOX® 5 E flow cell

Proceed as follows:

1 Switch off the power supply.

2 Drain the sample water inlet and outlet line.

3 Remove the housing cover of the DEPOLOX® 5 E flow cell.

4 Empty the cell body through the sample taking unit opening.

5 Remove the cleaning sand.

6 Remove and empty filter unit and check valve housing; see chapter 5.9 “Cleaning flow rate monitor and check valve”.

7 When the remaining water has drained from the flow control valve, refit the filter unit and the check valve housing.

8 Remove the sensors from the mounting hole in the cell body cover and separate from DFMe electronics module.

9 Shutting down the sensors. See appropriate sensor operating instructions.

10 Refit the plug or protection cap in the mounting hole in the cell body cover.

11 Refit and engage the housing cover of the DEPOLOX® 5 E flow cell.

4.6.2 Taking sensors out of operation

Please note

Please follow the appropriate instructions for the sensors!

For the pH or redox combined measuring and reference electrode, proceed as follows:

1 Pull out or unscrew the sensors.

2 Fit the pH or redox combined measuring and reference electrode into the KCl tank and stand with KCl solution.

3 Store the sensors in a frost-free place.

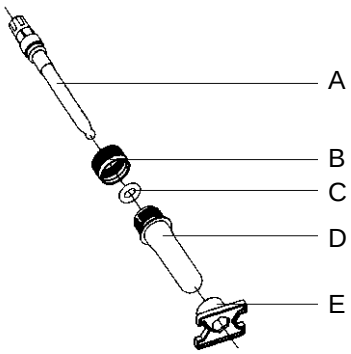


Figure 17 pH and redox combined measuring and reference electrode with stand

A Sensor
B Sealing cap
C O-ring
D Tank
E Stand

4.7 Recommissioning

1 Prepare the sensors. See appropriate sensor instruction manual.

2 Fitting the sensors and connect the sensors with DFMe electronics module. See chapter 4.4.14 “Fitting the sens (optional)” and chapter 4.4.13 “Connecting sensors with DFMe electronics module”.

3 Filling electrode-cleaning sand, see chapter 4.4.12 “Filling electrode cleaning sand”.

4 For recommissioning, see instruction manual “700 P electronics module” or “700 M electronics module”.

5. Maintenance

Warning!

Risk of injury or death!

External voltages can be connected even with the operating voltage switched off.

5.1 Maintenance intervals

Please note

Liability for defects can only be accepted if maintenance work is performed as specified. Adhere to the applicable standards and national and regional regulations.

Activity	Period/Interval	Chapter/ instructions
Check for leakage	daily	Chapter 5.3
Cleaning or replacing the fine filter (with membrane sensors only)	As required	Chapter 5.8
Comparative measurement, calibrate if necessary	Acc. to standard	See instruction manual for electronics module.
Checking the electrode cleaning sand	Weekly	Chapter 5.4
Replacing the electrode cleaning sand	Every six months	Chapter 5.4
Check electrolyte level	Regularly	Chapter 5.5
Check diaphragms	Depending on sample water quality	Chapter 5.6
Replacing diaphragms	As required (depending on sample water quality), but at least once a year	Chapter 5.6
Replacing reference electrode	As required, but at the latest after two years' operation	Chapter 5.7

5.2 Maintenance parts kit

Please note

The parts required for the servicing are included in the maintenance parts kits. There are maintenance parts kits for wear parts for 1 year and for 4 years.

5.2.1 Non-pressurized version

Part No.	Designation
W3T170065	Maintenance parts kit, annual maintenance
W3T170071	Maintenance parts kit, every 4 years

5.2.2 Pressurized version

Part No.	Designation
W3T158875	Maintenance parts kit, annual maintenance
W3T170072	Maintenance parts kit, every 4 years

5.3 Checking for leakage

Check the DEPOLOX® 5 E flow cell, including all screw connections, for leakage every day. Repair any leakage points immediately!

Please note

Ascending air bubbles in the cell body influence the measuring accuracy. The cause must be determined and remedied.

5.4 Checking electrode cleaning sand

Every week, check if there is sufficient electrode cleaning sand in the cell body. The cleaning sand must be swirled around in the bottom part of the cell body. The electrode cleaning sand is necessary for cleaning the electrode of the 3-electrode measuring cell and wears with time. Replace if necessary. See chapter 5.7 “Replacing or cleaning electrode cleaning sand, electrolyte solution, reference electrode and diaphragms”.

5.5 Checking electrolyte solution level

Check whether the electrolyte solution is filled approx. 3 cm above water level (narrowing of the KCL container) and replenish if necessary.

Proceed as follows:

1 Remove the plug in the upper part of the electrolyte tank.

2 Inject the electrolyte. Use the syringe in the accessory kit.

5.6 Checking diaphragms

The two diaphragms (A) in the electrolyte tank form the connection between the reference electrolytes and the sample water. They cannot be cleaned. The diaphragms should be white in color. Any discoloration is an indication that they are clogging and should be replaced.

If the sample water quality is poor (e.g. high iron content), the diaphragms become soiled. This influences the measuring accuracy. The two diaphragms in the electrode case must therefore be replaced regularly.

If sample water quality is very good, the diaphragms can remain installed for up to a year, after which they must be replaced. See chapter 5.7 “Replacing or cleaning electrode cleaning sand, electrolyte solution, reference electrode and diaphragms”.

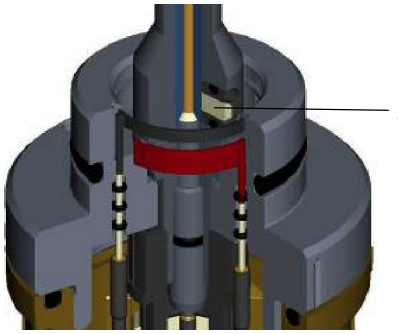


Figure 1 Cross-section through electrolyte tank

A Diaphragms

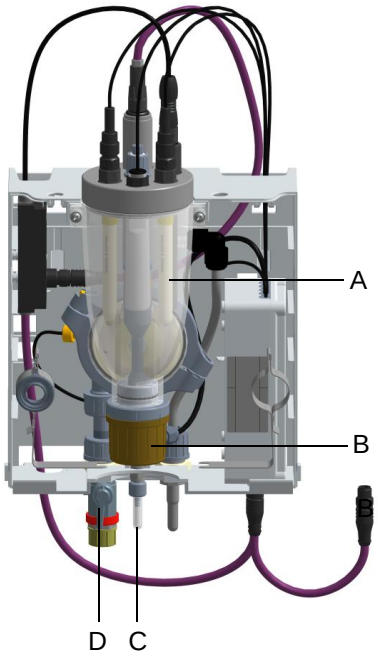
5.7 Replacing or cleaning electrode cleaning sand, electrolyte solution, reference electrode and diaphragms

Please note

When replacing the cleaning sand, check also the electrolyte solution, the reference electrode, the diaphragms, the fine filter, the flow switch and the check valve. Replace or clean if necessary.

Please note

Steps 1 to 14, 22, and 25 to 34 apply only to replacement and cleaning of the electrode cleaning sand.



Proceed as follows:

1 Switch off the power supply.

2 Close the shut-off ball valve (D) at the sample water inlet.

3 On the pressurized version, close the shut-off ball valve at the sample water outlet.

4 Open the drain screw on the sample taking unit (C) and empty the cell body. To do so, hold a collection vessel under it and temporarily loosen a plug or sensor to allow air to flow in.

5 When the cell body (A) is empty, close the drain screw once more.

6 Remove the housing cover of the DEPOLOX® 5 E flow cell.

7 Remove the sensors from the mounting hole in cell body cover and keep them in a safe place. See appropriate sensor operating instructions.

8 Separate the cable gland from DFMe electronics module. Hold the cable while doing this as it must not be allowed to twist.

9 Unscrew cap (B) to the 3-electrode measuring cell counterclockwise up to the mark and take it off. See chapter 4.4.13 “Connecting sensors with DFMe electronics module”.

10 Remove the signal cables (red, blue, white).

Replacing electrolyte solution

11 Unscrew the upper knurled nut from the electrolyte tank.

12 Take off or unscrew the cell body cover.

13 Remove the electrolyte tank complete with electrode support from the cell body.

Rinsing out cleaning sand

14 Rinse the cleaning sand out of the electrode mount with distilled water.

15 Unscrew the knurled nut from the electrode mount and pull the electrolyte tank out of the electrode mount.

16 Pull the electrolyte tank upwards out off the electrode support.

17 Pull the plug out of the electrolyte tank.

Emptying electrolyte

18 Turn the electrolyte container upside down and drain the KCI electrolytes by lightly shaking it.

Replacing reference electrode

19 Replace the reference electrode. To do this, screw the reference electrode out of the electrolyte tank. Lightly moisten the O-ring and screw a new reference electrode into the electrolyte tank.

Replacing diaphragms

20 Remove both diaphragms from the electrolyte tank using a suitable tool (e.g. tweezers).

21 Push new diaphragms into the electrolyte tank. Lightly moisten the O-ring before fitting.

22 Reinsert the electrolyte tank into the electrode support.

Filling electrolyte

23 Fill the tank with fresh electrolyte solution (approx. 3 cm above the water level or up to the narrow section of the KCI tank).

Please note

Observe the use-by date of the electrolyte solution!

24 Insert the plug into the electrolyte tank.

25 Reinsert the electrode mount complete with electrolyte tank into the cell body. The cell body's locating pin must engage in the corresponding hole in the electrode mount.

26 Screw the upper knurled nut back onto the electrolyte tank.

27 Reconnect the signal cable, observing the correct colors. See chapter 4.4.13 "Connecting sensors with DFMe electronics module".

28 Fit the cap (B).

29 Fill in cleaning sand. See chapter 4.4.12 “Filling electrode cleaning sand”.

30 Insert or screw on the sensor and connect with DFMe electronics module.

31 Refit and engage the housing cover of DEPOLOX® 5 E flow cell.

32 Open the shut-off ball valve (D) at the sample water inlet.

33 On the pressurized version, open the shut-off ball valve on the sample water outlet.

34 The cell body (A) refills with sample water.

35 Re-establish the power supply.

Please note

After topping up or replacing cleaning sand, the electrode current may increase slightly for about three hours. Do not calibrate during this time. Recalibrate after each cell sand replacement. The calibration must be checked after one day.

Please note

After 2 to 3 hours running-in time, perform a chlorine calibration. If necessary, repeat the chlorine calibration after 24 hours. See section Calibration in instruction manual “700 P electronics module” of “700 M electronics module”. An initially rotating air bubble at the bottom of the cell body does not affect the measurement.

5.8 Cleaning or replacing the fine filter

The fine filter must be cleaned or replaced to protect the membrane sensor's delicate membrane against soiling or damage and to prevent clogging.

Proceed as follows:

1 Switch off the power supply.

2 Drain the sample water inlet and outlet line.

3 Remove the housing cover of the DEPOLOX® 5 E flow cell.

4 Release both knurled nuts (A).

5 Remove the complete filter unit.

6 Remove the fine filter (C). To do this, screw the M6 screw into the fine filter and pull the fine filter out of the filter unit.

7 Rinse the fine filter with water, replace if necessary.

8 Push the fine filter into the filter unit. Ensure that the O-ring (B) is fitted correctly.

9 Fit the complete filter unit. Ensure that it is in the correct position (top/bottom).

10 Tighten the knurled nuts (A).

11 Refit and engage the housing cover of the DEPOLOX® 5 E flow cell.

12 Reconnect the sample water inlet and outlet lines.

13 Re-establish the power supply.

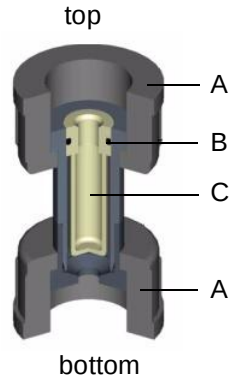


Figure 2 Filter unit cross-section

A Knurled nut
B O-ring
C Fine filter

5.9 Cleaning flow rate monitor and check valve

Proceed as follows:

1 Switch off the power supply.

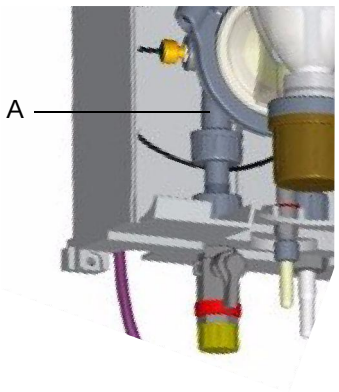
2 Drain the sample water inlet and outlet line.

3 Remove the housing cover of the DEPOLOX® 5 E flow cell.

4 Dismantle the filter unit.

5 Carefully pull the complete non-return ball valve housing (A) down and out.

6 Turn the non-return ball valve housing upside down and catch the flow ball (B) or if the ball is jammed, release it with a slight knock.



7 Use a suitable blunt tool to push out the ball seat (D) and glass ball (C) against the direction of flow.

8 Clean the empty check valve housing, flow ball, ball seat and glass ball with distilled water.

9 During reassembly, make sure that the ball seat and ball are correctly positioned.

10 To help push the assembled check valve housing back into the control valve, slightly lubricate the gaskets with the supplied Unisilikon grease.

11 Check that the non-return ball valve housing is correctly positioned through the guide lugs on the housing.

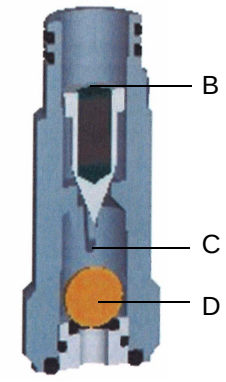
12 Fit the filter unit again.

13 Refit and engage the housing cover of the DEPOLOX® 5 E flow cell.

14 Reconnect the sample water inlet and outlet lines.

15 Re-establish the power supply.

top



bottom

Figure 3 Detail: installation location of check valve housing
Figure 4 Cross-section of check valve-housing

A Check valve housing (overall)
B Flow cone
C Spherical seat
D Glass ball

5.10 Cleaning

Do not use aggressive cleaning agents (e.g., alcohol, abrasive cleaners)! We recommend a damp cloth moistened with a commercially available neutral detergent.

6. Retrofit kits, spares and accessories

6.1 Retrofit kits

Sensor measuring modules

DEPOLOX® 5 E flow cell (module type D01) provides the option of retrofitting sensor measuring modules.

Part No.	Designation
W3T320090	Sensor measuring module DFMe Total chlorine TC2 CAN with CAN bus extension cable 1 m
W3T331062	Sensor measuring module DFMe Total chlorine TC2-S CAN with CAN bus extension cable 1 m (only in combination with 700 P electronics module)
W3T320088	Sensor measuring module DFMe pH with plug-in card and calibration solution
W3T320089	Sensor measuring module DFMe Redox with plug-in card and calibration solution
W3T320091	Sensor measuring module DFMe Conductivity LF325 with cable and calibration solution 60 ms/cm
W3T320092	Sensor measuring module DFMe Conductivity LF325 with cable and calibration solution 600 µS/cm

6.2 Installing retrofit kits

6.2.1 Sensor measuring modules and module SiDiSens Retrofitting conductivity measurement

Proceed as follows:

1 Isolate the 700 P electronics module or 700 M electronics module from its power supply. See instruction manual “700 P electronics module” or „700 M electronics module”.

2 Remove the housing cover of the DEPOLOX® 5 E flow cell.

3 Take out all sensors from the mounting hole in the cell body cover and unplug the cable gland from DFMe electronics module. Hold the cable while doing this as it must not be allowed to twist.

4 Keep the sensors in a safe place (see instruction manual for sensors).

5 Disconnect CAN connection cable between DFMe electronics module and 700 P electronics module or 700 M electronics module.

6 Remove DFMe electronicselectronics module from the DEPOLOX® 5 E flow cell housing. To do this, release the fixing screw on the underside of DFMe electronics module.

7 Unhook DFMe electronics module from the mounting hook (D - Figure 2) of DEPOLOX® 5 E flow cell. To do this, raise DFMe electronics module and carefully unhook it from the mounting hook.

8 Open the housing of DFMe electronics module. To do this, release the four cover screws of DFMe electronics module.

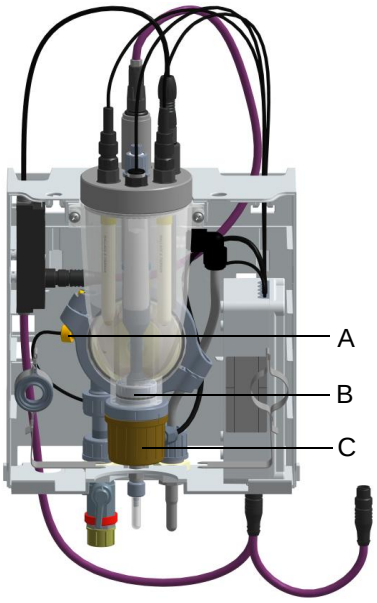
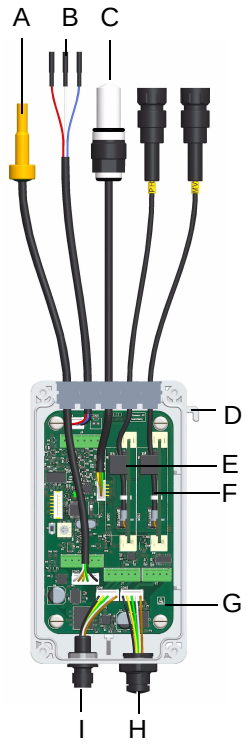


Figure 1 DEPOLOX® 5 E flow cell, non-pressurized (cover removed)

A Multi-sensor
B 3-electrode measuring cell
C Cap



9 Insert the optional sensor measuring module cards in the provided slots. See chapter 6.3.3 “DFMe electronics module”.

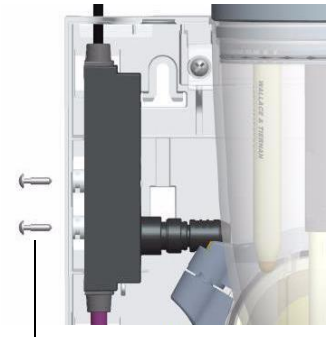
10 When installing the SiDiSens LF module and/or the membrane sensor, the CAN extension socket (H - Figure 2) must also be retrofitted. To do this, break out the indent on the housing underside of DFMe electronics module and fit the CAN extension socket (H - Figure 2). Check that all gasket inserts are correctly mounted.

11 Fit the housing cover of DFMe electronics module and secure with the four cover screws. Tighten the housing screws to a maximum torque of 0.7 Nm (± 0.15 Nm).

12 Hook DFMe electronics module by the mounting hook (D - Figure 2) onto DEPOLOX® 5 E flow cell and secure on the underside with the securing screws.

Figure 2 Cross-section, DFMe electronics module

A Multi-sensor
B Sensor cable Cl_2 free
C LED glow stick
D Mounting hook
E pH sensor module
F Redox sensor module
G Motherboard DFMe with Measurement input Cl_2
H CAN extension socket
I CAN connection socket to 700 P electronics module or 700 M electronics module



Plastic self-tapping screw (10 mm)

13 Install the SiDiSens LF module on the left side in the flow cell and secure with the enclosed plastic self-tapping screws (W2T807965 - 10 mm) in position M - Figure 3 (mounting recess).

Please note

Prior to the installation of the SiDiSens module, please ensure that you use the correct plastic self-tapping screws. Use only the plastic self-tapping screws A2 (W2T807965 - 10 mm) when installing the SiDiSens module. Please distinguish between the plastic self-tapping screws for installing the flow cell and those used for the SiDiSens module. The screws should not be confused.

14 Plug in the CAN sensor cable of the SiDiSens LF module at position M - Figure 3. The M12 terminating resistor must be screwed on CAN socket (N - Figure 4).

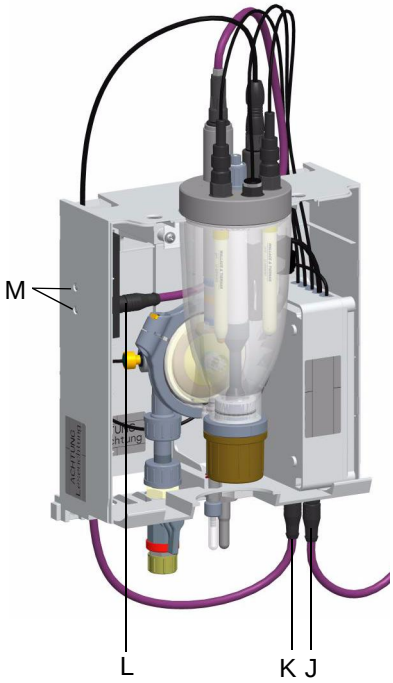
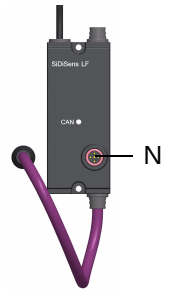


Figure 3 DEPOLOX® 5 E flow cell, non-pressurized (cover removed)

J CAN sensor cable connection
K SiDiSens LF connection
L Membrane sensor connection
M Mounting recess



15 The membrane sensor is connected either at the CAN socket (N - Figure 4) on conductivity module SiDiSens connected directly via the CAN extension socket (K - Figure 3) on DFMe electronics module.

16 Refit and engage the housing cover of the DEPOLOX® 5 E flow cell.

Figure 4 Conductivity module SiDiSens

P CAN socket for connecting the membrane sensor

6.2.2 Overview of CAN connection

The image below shows the CAN connection.

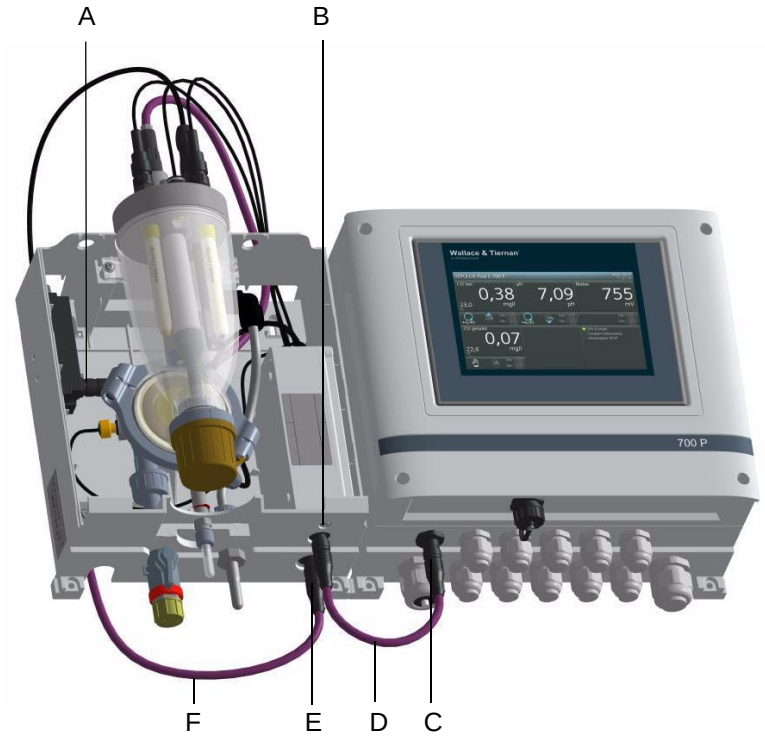


Figure 5 Cross-section DEPOLOX® 5 E flow cell with 700 P electronics module

A CAN connection at SiDiSens LF module for connection of Membrane sensor or terminating resistor M12 of the module SiDiSens LF
B Securing screw, DFMe electronics module
C CAN socket for connection of CAN connection cable of the DEPOLOX® 5 E flow cell or DFMe electronics module
D CAN connection cable
E CAN extension socket
F CAN connection cable for SiDiSens conductivity module or membrane sensor

6.3 Spare parts

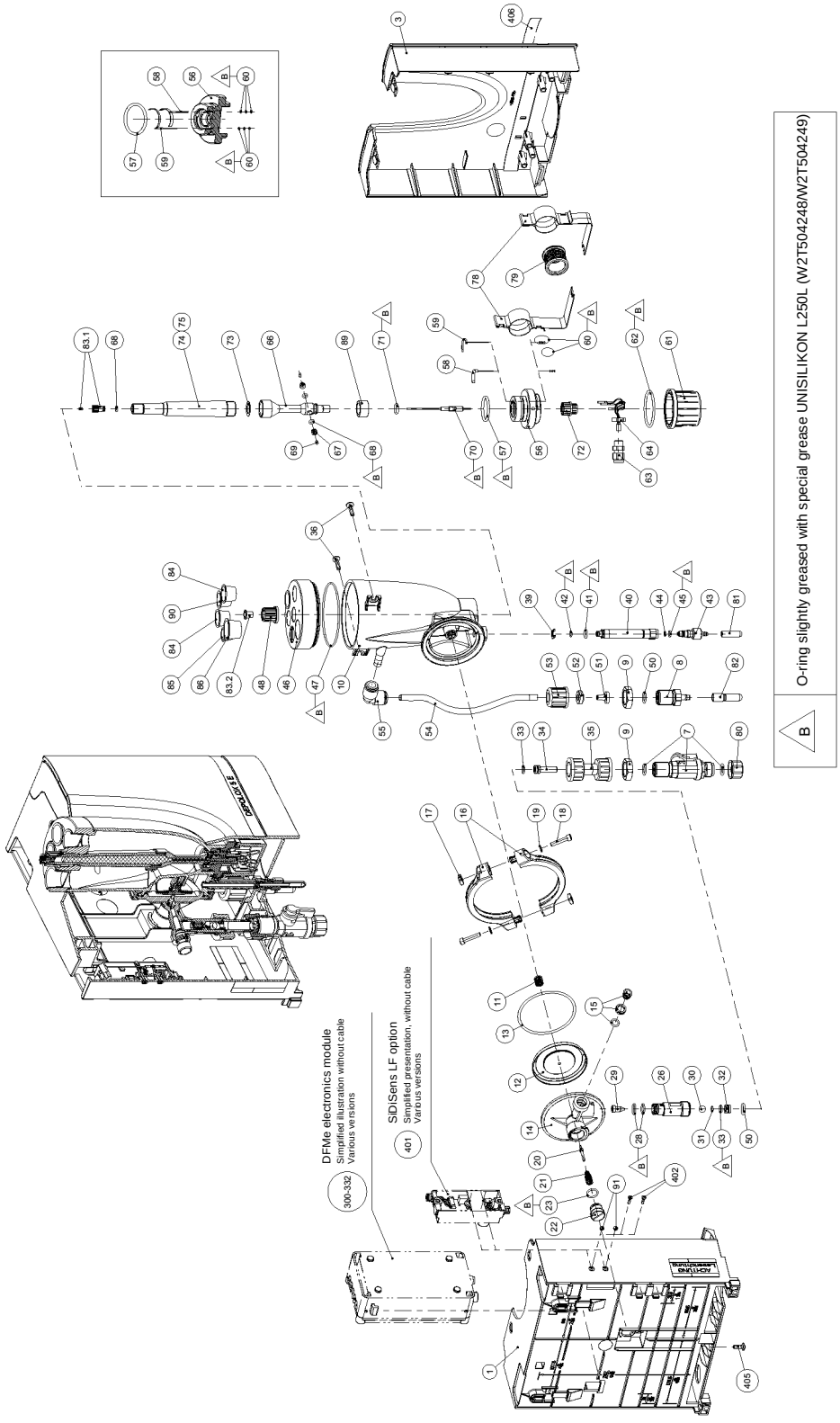
Please note

For reasons of safety, only use original spare parts. Please contact our customer service if you need any spare parts.

6.3.1 DEPOLOX® 5 E flow cell (module type D01)

Part No.	Designation
W3T350215 	DEPOLOX® 5 E flow cell (module type D01) non-pressurized
W3T350216 	DEPOLOX® 5 E flow cell (module type D01) pressurized

Drawing DEPOLOX® 5 E flow cell – non-pressurized version

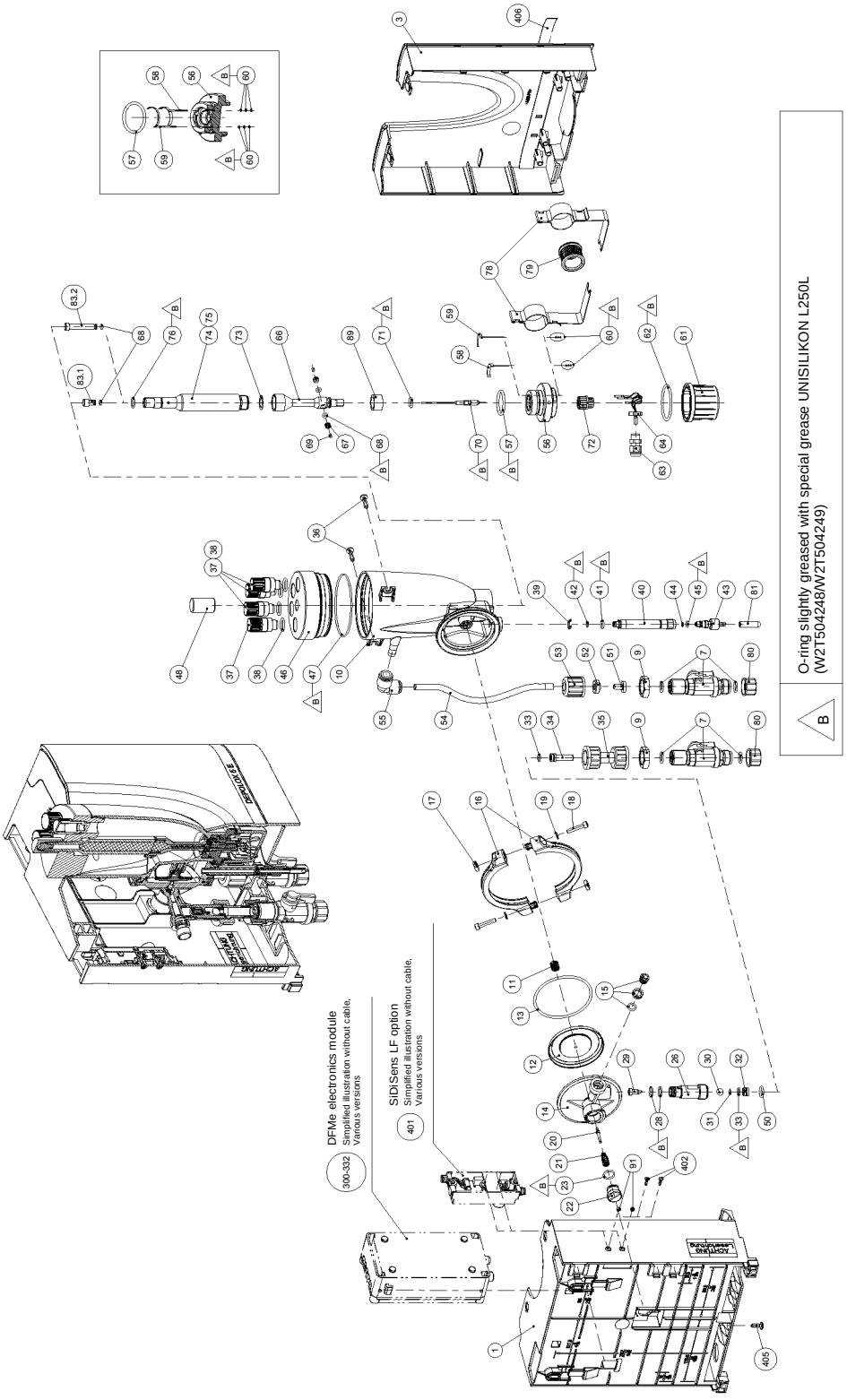


Part list DEPOLOX® 5 E flow cell – non-pressurized version

Item	Part No.	Designation
1	W3T247776	Main housing
3	W3T247777	Housing cover
7	W3T166170	Shut-off valve
8	W3T158593	Discharge nozzle
9	W2T507615	Flat nut
10	W3T158561	Cell body
11	W3T164226	Compression spring
12	W3T158569	Membrane unit
13	W3T160654	O-ring
14	W3T158595	Control valve body
15	W2T504209	Plastic cartridge
16	W3T160649	V profile clamp
17	W3T158567	Square nut
18	W2T504659	Cheese-head screw
19	W2T506019	Washer
20	W3T158572	Valve pin
21	W3T172795	Compression spring
22	W3T158573	Adjusting screw
23	W3T160357	O-ring
26	W3T160648	Check valve housing
28	W3T161396	O-ring
29	W3T169827	Float with magnet
30	W3T172946	Ball
31	W3T172949	O-ring
32	W3T159707	Insert
30-33	W3T163739	Spherical set cpl.
29-33	W3T158603	Check valve unit cpl. with float cone
33	W3T172975	O-ring
35	W3T158602	Filter housing
33-34	W3T166194	Fine filter cpl. with O-ring
36	W2T505463	Panh. tension screw
39	W3T172041	Securing ring
40	W3T158576	Outlet drain pipe
41	W3T172997	O-ring
42	W3T164597	O-ring
43	W3T158575	Drain screw
44	W3T166160	EPDM flat gasket
45	W3T172556	O-ring
39-45	W3T166171	Sample taking unit
46	W3T320060	Cell body cover
47	W3T160657	O-ring
48	W3T165266	Knurled nut
50	W3T172861	O-ring
51	W3T161501	Hose bushing
52	W3T169815	Locking ring
53	W3T161502	Union nut
50-53	W3T171453	Hose connection parts

Item	Part No.	Designation
54	W3T158601	Hose
55	W2T505093	Angle-reducing connector
56	W3T166209	Electrode mount
57	W3T168875	O-ring
58	W3T163795	Working electrode
59	W3T167461	Counter electrode
60	W3T168904	O-ring
56-60	W3T166210	Electrode mount cpl. with electrode
61	W3T158562	Sealing cap
62	W3T168868	O-ring
63	W2T504177	Cable union
64	W3T160549	Hex nut
66	W3T159653	Electrode housing
67-69	W3T159870	Diaphragm compl.
70	W3T169295	Reference electrode
71	W3T161424	O-ring
72	W3T165267	Knurled nut
73	W3T161464	Flat gasket
74	W3T165565	KCl electrolyte kit, 100ml
75	W3T172885	Reservoir, non-pressurized version
78	W3T166169	Clip, coated
79	W3T172045	Electrode mount
80	W3T161561	Screw cap
81	W3T168162	Protective cap
82	W3T164588	Protective cap
83.1+68	W3T159961	Plug cpl. with O-ring
83.2	W3T161537	Protection plug
84	W3T169029	Protection plug
85	W3T169044	Protection plug
86	W3T164574	Protection plug
89	W3T161452	Felt washer, transport fitting
90	W3T161453	Protection plug
300-332	-	DFMe electronics module
401	W3T183616	Conductivity measurement module SiDiSens
402	W2T807965	Plastic self-tapping screw A2 (10 mm)
405	W2T807968	Plastic self-tapping screw
406	W3T309477	Product strip DFM
420	W2T507548	Type plate
Accessories	W3T158743	Electrode cleaning sand, 25 g
Accessories	W3T158600	Measuring beaker, 5 off
Accessories	W3T171453	Hose connection parts ID6xWdg1
Accessories	W3T167518	Hose connection parts ID6xWdg3
Accessories	W3T171786	Adapter PVC-U
Accessories	W3T173182	Fastening kit
Accessories	W3T170063	Accessories kit

Drawing DEPOLOX® 5 E flow cell – pressurized version

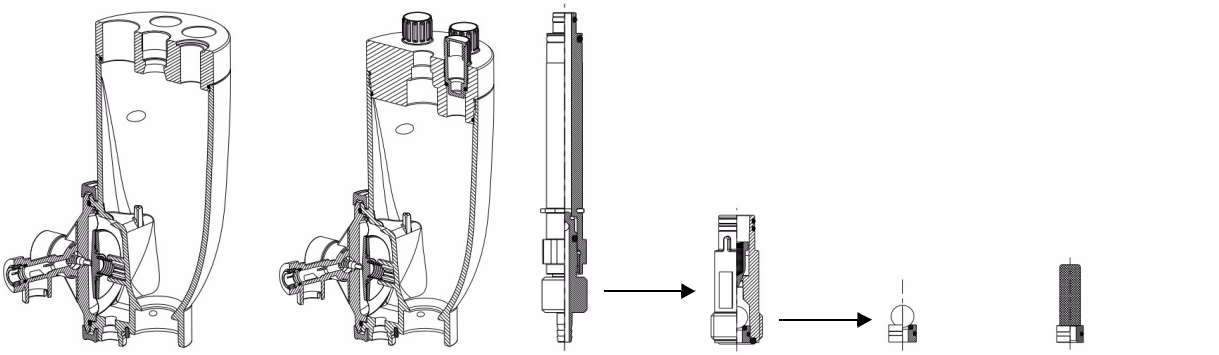


Part list DEPOLOX® 5 E flow cell – pressurized version

Item	Part No.	Designation
1	W3T247776	Main housing
3	W3T247777	Housing cover
7	W3T166170	Shut-off valve
9	W2T507615	Flat nut
10	W3T158560	Cell body
11	W3T164226	Compression spring
12	W3T158569	Membrane unit
13	W3T160654	O-ring
14	W3T158595	Control valve body
15	W2T504209	Plastic cartridge
16	W3T160649	V profile clamp
17	W3T158567	Square nut
18	W2T504659	Cheese-head screw
19	W2T506019	Washer
20	W3T158572	Valve pin
21	W3T172795	Compression spring
22	W3T158573	Adjusting screw
23	W3T160357	O-ring
26	W3T160648	Check valve housing
28	W3T161396	O-ring
29	W3T169827	Float with magnet
30	W3T172946	Ball
31	W3T172949	O-ring
32	W3T159707	Insert
30-33	W3T163739	Spherical set cpl.
29-33	W3T158603	Check unit cpl. with float cone
33	W3T172975	O-ring
35	W3T158602	Filter housing
33-34	W3T166194	Fine filter, cpl.
36	W2T505463	Plastic self-tapping screw
37	W3T161450	Plug
38	W3T168859	O-ring
39	W3T172041	Securing ring
40	W3T158576	Outlet drain pipe
41	W3T172997	O-ring
42	W3T164597	O-ring
43	W3T158575	Drain screw
44	W3T166160	EPDM flat gasket
45	W3T172556	O-ring
39-45	W3T166171	Sample taking unit
46	W3T320102	Cell body cover
47	W3T160657	O-ring
48	W3T171088	Knurled nut
50	W3T172861	O-ring
51	W3T161501	Hose bushing
52	W3T169815	Locking ring
53	W3T161502	Union nut

Item	Part No.	Designation
50-53	W3T171453	Hose connection parts
54	W3T158601	Hose
55	W2T505093	Angle-reducing connector
56	W3T166209	Electrode mount
57	W3T168875	O-ring
58	W3T163795	Working electrode
59	W3T167461	Counter electrode
60	W3T168904	O-ring
56-60	W3T166210	Electrode mount cpl. with electrode
61	W3T158562	Sealing cap
62	W3T168868	O-ring
63	W2T504177	Cable union
64	W3T160549	Hex nut
66	W3T159653	Electrode housing
67-69	W3T159870	Diaphragm compl.
70	W3T169295	Reference electrode
71	W3T161424	O-ring
72	W3T165267	Knurled nut
73	W3T161464	Flat gasket
74	W3T165565	KCL electrolyte kit, 100ml
75	W3T171171	Reservoir, pressurized version
76	W3T161396	O-ring
78	W3T166169	Fastening clip, coated
79	W3T172045	Electrode mount
80	W3T161561	Screw cap
81	W3T168162	Protective cap
83.1	W3T159726	Plug
83.1+68	W3T163746	Plug cpl. with O-ring
83.2	W3T159757	Plug
83.2+68	W3T159992	Plug cpl. with O-ring
89	W3T161452	Felt washer, transport cap
300-332		DFMe electronics module
401	W3T183616	Conductivity measurement module SiDiSens
402	W2T807965	Plastic self-tapping screw A2 (10 mm)
405	W2T807968	Plastic self-tapping screw
406	W3T309477	Product strip DFM
420	W2T507548	Type plate
Accessories	W3T158743	Electrode cleaning sand QK
Accessories	W3T158600	Measuring beaker, 5 off
Accessories	W3T165565	KCl electrolyte kit
Accessories	W3T171453	Hose connection parts ID6xWdg1
Accessories	W3T167518	Hose connection parts ID6xWdg3
Accessories	W3T171786	Adapter PVC-U
Accessories	W3T173182	Fastening kit
Accessories	W3T170064	Accessories kit

6.3.2 Cell body DEPOLOX® 5 E



W3T322432
Cell body, complete,
Non-pressurized version

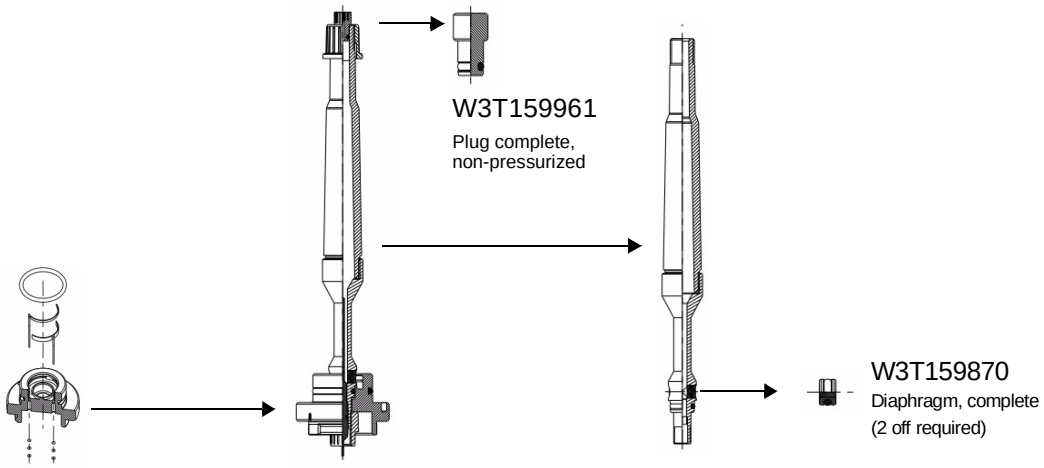
W3T322435
Cell body, complete,
Pressurized version

W3T166171
Sample taking unit

W3T158603
Check valve unit
with float cone

W3T163739
Ball seat, complete
PVC/EPDM

W3T166194
Fine filter with O-ring
V2A/EPDM



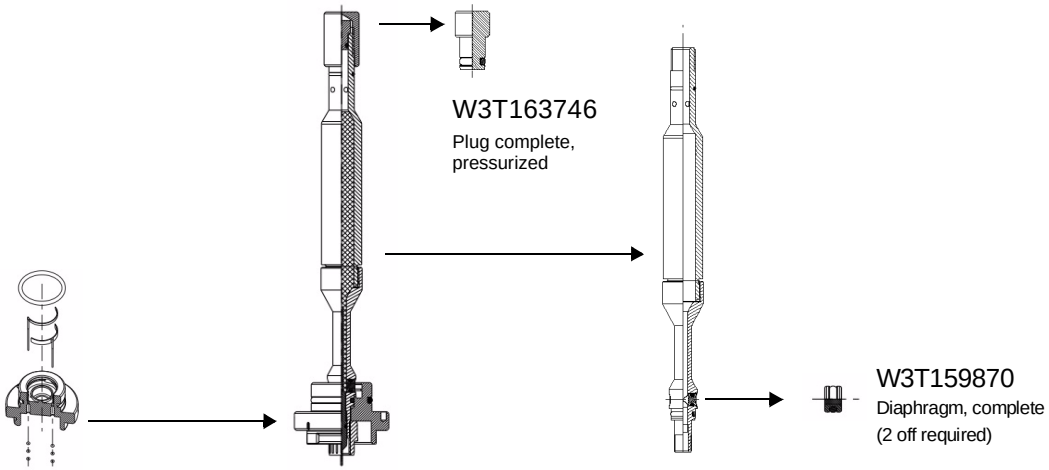
W3T159961
Plug complete,
non-pressurized

W3T159870
Diaphragm, complete
(2 off required)

W3T166210
Electrode mount
Complete, with electrode

W3T162579
Electrode unit
Complete, non-pressurized

W3T159824
Electrode housing non-pressurized



W3T163746
Plug complete,
pressurized

W3T159870
Diaphragm, complete
(2 off required)

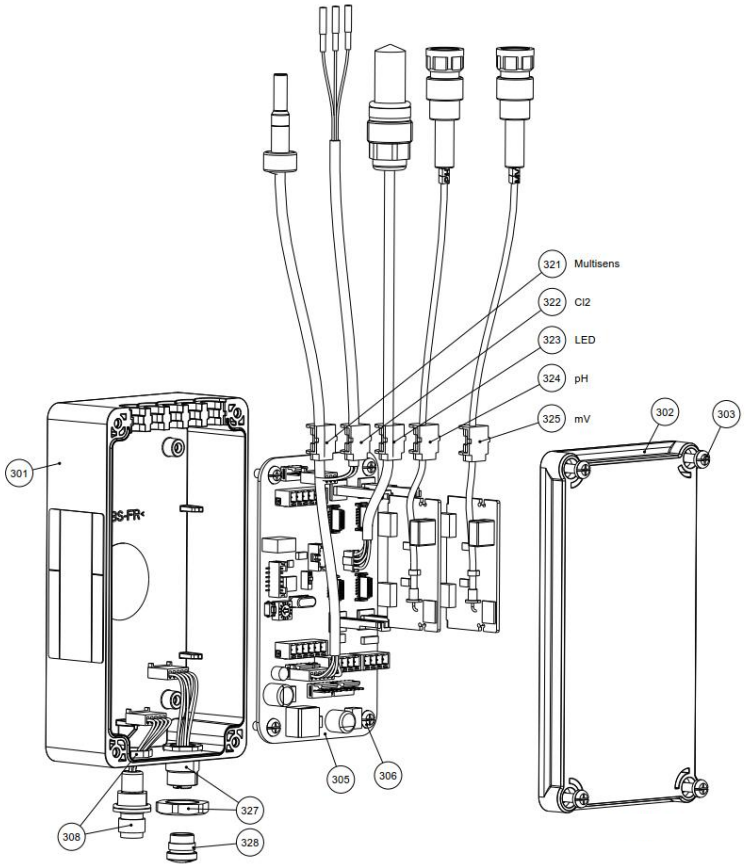
W3T166210
Electrode mount
Complete, with electrode

W3T162580
Electrode unit
Complete, pressurized

W3T159825
Electrode housing, pressurized

6.3.3 DFMe electronics module

Explosion drawing



Part list

Item	Part No.	Designation
301	W3T262803	Main housing DFMe
302	W3T256343	Housing cover DFMe
303	W2T807967	Plastic self-tapping screw A2
305	W3T320085	Spare PCB, DFMe board DES
306	W2T504397	Plastic self-tapping screw d4x10
308	W3T263401	DFMe connection - M12 plug
321	W3T271603	Multi-sensor DFMe
322	W3T271602	Sensor cable DFMe - DES
323	W3T277062	LED glow stick complete; DFMe-LED
324	W3T320081	Spare part sensor card; DFMe-pH
325	W3T320082	Spare part sensor card; DFMe-mV
327	W3T308952	DFMe connection - M12 socket
328	W3T206059	Protective cap for jack M12x1, IP67
332	W2T507548	Type plate 68x35
901	W3T320611	Sealing kit; LED; pressurized

6.3.4 3-electrode measuring cell

Part No.	Designation
W3T332402	Sensor cable DFMe-DES-D5
W3T164482	KCl tank with stand and 5 ml KCl solution
W3T160410	Electrolyte solution 3 mole/l KCl, 250 ml
W3T158743	Electrode cleaning sand QK
W3T158600	Measuring beaker (5 pcs)

6.3.5 LED glow stick

Part No.	Designation
W3T277062	LED glow stick complete; DFMe - LED

6.3.6 Instruction manual

Article No.	Description
W3T321511	Instruction manual 700 P electronics module, German
W3T321512	Instruction manual 700 P electronics module, English
W3T321513	Instruction manual 700 P electronics module, French
W3T372098	Instruction manual 700 M electronics module, German
W3T372099	Instruction manual 700 M electronics module, English
W3T372100	Instruction manual 700 M electronics module, French
W3T332381	Instruction manual DEPOLOX® 5 E flow cell, German
W3T332382	Instruction manual DEPOLOX® 5 E flow cell, English
W3T332383	Instruction manual DEPOLOX® 5 E flow cell, French

6.4 Accessories

6.4.1 Sensors

pH combined measuring and reference electrode

Part No.	Designation
W3T169297	pH combined measuring and reference electrode
W3T320081	Spare sensor cable; DFMe-pH
W3T165076	Buffer solution pH 7.00, bottle 250 ml
W3T165084	Buffer solution pH 4.65, bottle 250 ml
W3T161181	Buffer solution pH 7.00, bottle 12.5 ml
W3T161189	Buffer solution pH 4.65, bottle 12.5 ml
W3T164482	KCl tank with stand and 5 ml KCl solution
W3T160410	Electrolyte solution 3 mole/l KCl, 250 ml
W3T158600	Measuring beaker (5 pcs)

Redox combined measuring and reference electrode

Part No.	Designation
W3T169298	Redox combined measuring and reference electrode (platinum version)
W3T320082	Spare sensor cable; DFMe-mV
W3T165048	Calibration solution 478 mV, bottle 250 ml
W3T161182	Calibration solution 478 mV, bag 12.5 ml
W3T164482	KCl tank with stand and 5 ml KCl solution
W3T160410	Electrolyte solution 3 mole/l KCl, 250 ml
W3T158600	Measuring beaker (5 pcs)

Conductivity sensor LF325

Part No.	Designation
W3T172052	Conductivity sensor LF325
W3T183616	Conductivity measurement module SiDiSens
W3T166180	Sealing kit LF325, pressurized
W3T161187	Calibration solution 60 mS/cm, bottle 1000 ml
W3T161179	Calibration solution 600 µS/cm, bottle 1000 ml
W3T158600	Measuring beaker (5 pcs)

Total chlorine membrane sensor

Part No.	Designation
W3T272889	Total chlorine membrane sensor TC2 CAN
W3T331061	Total chlorine membrane sensor TC2-S CAN (only in combination with 700 P electronics module)
W2T504980	CAN bus extension cable 1 m for total chlorine membrane sensor
W3T164339	Spares kit (incl. lapping paper, hose clip and O-ring)
W3T171792	Membrane cap
W3T171793	Electrolyte solution ETC1 for total chlorine TC2 CAN
W3T171793	Electrolyte solution for total chlorine TC2-S CAN (only in combination with 700 P electronics module)

6.4.2 CAN bus extension cable

Part No.	Designation
W2T504979	CAN bus extension cable 0.3 m
W2T504980	CAN bus extension cable 1.0 m
W2T504981	CAN bus extension cable 2.0 m
W2T504982	CAN bus extension cable 5.0 m
W2T504850	CAN bus extension cable 10.0 m

7. Declarations and certificates

7.1 Declaration of Conformity

EVOQUA WATER TECHNOLOGIES

EG-Konformitätserklärung
EC Declaration of Conformity
Déclaration CE de conformité

No. MAE1563

Ausgabe/*issue*/**édition** 05

Hersteller/*Manufacturer*/**Constructeur:**	Evoqua Water Technologies GmbH
Anschrift/*Address*/**Adresse:**	Auf der Weide 10, D-89312 Günzburg
Produktbezeichnung: *Product description:* **Description du produit:**	Durchfluss-Modul DEPOLOX Pool E (D01), Durchfluss-Modul DEPOLOX 5 E (D01), Durchfluss-Modul Strantrol Pool E (D01), Durchfluss-Modul Blu-Sentinel Pro (D01) *Flow block assembly DEPOLOX Pool E (D01), Fow block assembly DEPOLOX 5 E (D01), Flow block assembly Strantrol Pool E (D01), Flow block assembly Blu-Sentinel Pro (D01)* **Module de la cellule de mesure DEPOLOX Pool E (D01), Module de la cellule de mesure DEPOLOX 5 E (D01), Module de la cellule de mesure Strantrol Pool E (D01), Module de la cellule de mesure Blu-Sentinel Pro (D01)**

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender europäischer Richtlinien überein:
The product described above in the form as delivered is in conformity with the provisions of the following European Directives:
Le produit désigné est conforme, dans la version que nous avons mise en circulation, avec les prescriptions des directives européennes suivantes :

2014/30/EU	Richtlinie des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit. *Directive of the European Parliament and of the Council of 26 February 2014 on the approximation of the laws of the Member States relating to electromagnetic compatibility.* **Directive du Parlement européen et du Conseil du 26 février 2014 relative au rapprochement des législations des Etats membres concernant la compatibilité électromagnétique.**
2014/35/EU	Richtlinie des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen. *Directive of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.* **Directive du Parlement européen et du Conseil du 26 février 2014 concernant le rapprochement des législations des Etats membres relatives au matériel électrique destiné à être employé dans certaines limites de tension.**

CE-Kennzeichnung / *CE marking* / **Marquage CE**: 2017

Ersteller : SR
Ausgabe : 13.05.2014
Dokument: VD130-1_CE_Konformitätserklärung.doc

Evoqua Water Technologies GmbH
Auf der Weide 10
89312 Günzburg
Deutschland

Tel.: +49 (8221) 904-0
Fax: +49 (8221) 904-203
www.evoqua.com

Seite 1 von 2

Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung der in der Nachweisdokumentation aufgelisteten Normen.
Evidence of conformity to the Directives is assured through the application of the standards listed in the relevant documentation.
La conformité avec les directives est assurée par le respect des normes listés dans la documentation téchnique correspondante.

Benannte Person für technische Unterlagen:
Authorized person for the technical file:
Personne désignée pour la documentation technique:

Name / *name* / **nom:** Evoqua Water Technologies GmbH

Adresse / *address* / **adresse:** Auf der Weide 10, D-89312 Günzburg

Günzburg, den / *the* 2017-07-25

Evoqua Water Technologies GmbH

i.V. Klaus Andre — Unterschrift / *signature* / **signature**

Klaus Andre
Technischer Leiter / *Director Engineering*

i.V. Helmut Fischer — Unterschrift / *signature* / **signature**

Helmut Fischer
Leiter QM / *Quality Manager*

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Beschaffenheits- oder Haltbarkeitsgarantie nach §443 BGB. Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but does not imply any warranty for properties. The safety documentation accompanying the product shall be considered in detail..
La présente déclaration atteste de la concordance avec les directives citées, elle n'offre cependant pas de garantie quant à la nature ou la durabilité selon l'article 443 du code civil allemand. Les consignes de sécurité de la documentation du produit fournie sont à respecter.

Dokument: VD130-1_CE_Konformitätserklärung.doc Seite 2 von 2

7.2 Certificate of CSA

Certificate of Compliance

Certificate: 70027582 **Master Contract:** 226676

Project: 70138021 **Date Issued:** 2017-07-14

Issued to: **Evoqua Water Technologies GmbH**
Auf der Weide 10
Gunzburg, 89312
GERMANY

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

C US

Issued by: Jean-Philippe Laplante
Jean-Philippe Laplante

PRODUCTS

CLASS - C363106 - ELECTRICAL MEASUREMENT AND TEST EQUIPMENT

CLASS - C363186 - ELECTRICAL EQUIPMENT FOR MEASUREMENT USE-Certified to US Standards

Water management system, Models:

Main units: W3Ta E01 b; rated: 100-240Vac, 50/60Hz, 48W or 24Vdc, 30W /
W3Ta E02; rated: 100-240Vac, 50/60Hz, 24W **or** 24Vdc, 15W;
all models: 6A max rating including external loads supplied from the mains input circuit of the main units via cord outlets or permanently wired

Flow-through units: W3Tc D01 / W3Tc D02, supplied by the main units.

(Where a, b & c are alphanumeric placeholders (different length; including blanks) for non-safety-critical properties and configurations like user interface design and water analysis functions)

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Certificate: 70027582 **Master Contract:** 226676
Project: 70138021 **Date Issued:** 2017-07-14

Notes:

1. The above models are permanently connected or non-detachable cord (model dependent) Equipment Class I, Pollution Degree 2, Overvoltage category II
2. Mode of operation: Continuous
3. Environmental Conditions: Extended: 0 to 50°C, 2000m max, maximum 80% RH non-condensing.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 61010-1-12	-	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements
UL Std. No. 61010-1 (3rd Edition)	-	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

CONDITIONS OF ACCEPTABILITY

1. The input pressure for the water management system shall be externally limited to 3 bars (300kPa).
2. The equipment shall be installed to the mains supply system using a disconnecting device with the off-position clearly marked and a 6A back-up fuse must be used in the main supply line (for permanently connected only)
3. Relay connections to external devices shall be connected using 5A fuses as overcurrent protection (model E01 only)
4. This product has not been evaluated for rigid conduit installation. The product shall not be installed using conduits.
5. Equipment is only to be installed by authorized qualified electricians.
6. Maintenance of equipment (including fuse and battery replacements) is only to be performed by authorized qualified electricians.
7. Equipment is not to be used with flammable liquids.

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CSA Group

Supplement to Certificate of Compliance

Certificate: 70027582 **Master Contract:** 226676

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
70138021	2017-07-14	CSA c/us report update for alternate construction (new models E02 & D02) on a Water management system, Models: W3Ta E01 b, W3Ta E02 with flow-through modules: W3Tc D01 / W3Tc D02
70095602	2016-10-19	CSA c/us report update for alternate construction (relay) and model naming changed on a Water management system, Models: W3Txxxxxx-E01 / W3Txxxxxx-D01
70027582	2015-07-09	CSA (c/us) certification of a pool management system for water treatment based on the acceptance of CB test report.

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8. Index

Wallace & Tiernan® Products worldwide

Australia
+61 3 8720 6597
info.au@evoqua.com

Canada
+1 905 944 2800
canadainfo@evoqua.com

China
+86 10 57076305
sales.cn@evoqua.com

France
+33 1 41 15 92 20
wtfra@evoqua.com

Germany
+49 8221 9040
wtger@evoqua.com

Singapore
+65 6830 7165
sales.sg@evoqua.com

UK
+44 300 124 0500
info.uk@evoqua.com

USA
+1 856 507 9000
wt.us@evoqua.com

Wallace & Tiernan®
an EVOQUA brand

EVOQUA
WATER TECHNOLOGIES

Auf der Weide 10, 89312 Günzburg, Germany

+49 (8221) 904-0 www.evoqua.com

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