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INSTRUCTION MANUAL

OilGuard PR 30

Probe for determining traces of oil in water

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1 General user information

1.1 Terms used in this document (glossary)

Please refer to our website for specialist terms: www.sigrist.com/en/glossary/

1.2 Purpose of the Instruction Manual

This Instruction Manual provides the user with helpful information about the entire life cycle of the OilGuard PR 30 and its peripheral devices. Before commissioning the instrument, you should be completely familiar with the Instruction Manual.

1.3 Target group of the documentation

The Instruction Manual is intended for all persons who are responsible for the operation and maintenance of the instrument.

1.4 Additional documentation

DOC. NO.	TITLE	CONTENT
16639E	Brief Instructions	The most important functions and the servicing schedule.
16640E	Reference Manual	More sophisticated menu functions and worksteps for advanced users.
16644E	Data Sheet	Descriptions and technical data about the instrument.
16641E	Service Manual	Repair and conversion instructions for service engineers.
16642X	Declaration of Conformity	Compliance with the underlying directives and standards.

1.5 Copyright provisions

1.6 Document storage location

This document is part of the product. It should be stored in a safe place and always be close at hand for the user.

1.7 Order document

The most recent version of this document can be downloaded at www.sigrist.com (first time registration required).
It can also be ordered from a SIGRIST representative in your country (→ Instruction Manual “Customer service information”).

1.8 Proper use

The OilGuard PR 30 and its peripherals are designed for measuring oil traces in water.

1.9 User requirements

The instrument may be operated only by trained technical personnel who have read and understood the content of the Instruction Manual.

1.10 Declaration of conformity

Current technological principles were followed in designing and manufacturing the instrument. They comply with the applicable guidelines concerning safety and duty to take due care.

CE

EU: The measuring instrument meets all applicable requirements within the European Union (EU) for carrying the CE mark.

Please refer to the separate declaration of conformity for details. Section 1.4

1.11 Use restrictions

EXPLOSION HAZARD!

Operation in an inappropriate environment.

Use in explosive areas can cause explosions, which can lead to the death of persons in the vicinity.

- It is not permitted to operate the instrument in explosion hazardous areas or rooms.
- It is not permitted to use the instrument with explosive sample substances.

1.12 Dangers when not used properly

DANGER!

Operation when not used properly.

Improper use of the instrument can cause injuries to persons, process-related consequential damage and damage to the instrument and its peripherals.

In the following cases the manufacturer cannot guarantee the protection of persons and the instrument and therefore assumes no legal responsibility:

- The instrument is used in a way not included in the described area of application.
- The instrument is not properly mounted, set up or transported.
- The instrument is not installed and operated in accordance with the Instruction Manual.
- The instrument has been operated with accessory parts which SIGRIST-PHOTOMETER AG has not expressly recommended.
- Improper changes to the instrument have been performed.
- The instrument has not been operated within the specifications, in particular concerning pressure and temperature.
- The instrument is exposed to vibrations, shocks or other mechanical forces.

1.13 Meaning of the safety symbols

All **danger symbols** used in this document are explained below:

DANGER!

Danger due to electrical shock that may result in serious bodily injury or death.

Non-observance of this notice may lead to electrical shocks and death.

EXPLOSION HAZARD!

Danger due to explosion that may result in serious bodily injury or death.

Non-observance of this notice may cause explosions resulting in serious property damage and death.

WARNING!

Warning about bodily injury or hazards to health with long-term effects.

Non-observance of this warning may lead to injuries with possible long-term effects.

UV RADIATION

Danger due to UV radiation.

Non-observance of this warning can lead to permanent damage to the eyes and skin.

CAUTION!

Notice about possible material damage.

Non-observance of this notice may cause material damage to the instrument and its peripherals.

1.14 Meaning of the pictograms

All **pictograms** used in this document are explained below:

	Additional information about the current topic.
	Practical procedures when working with the OilGuard PR 30.
	Manipulations on the touchscreen.
	The screenshot is an example and may differ from current device.

2 Instrument overview

2.1 Overview of a measuring point

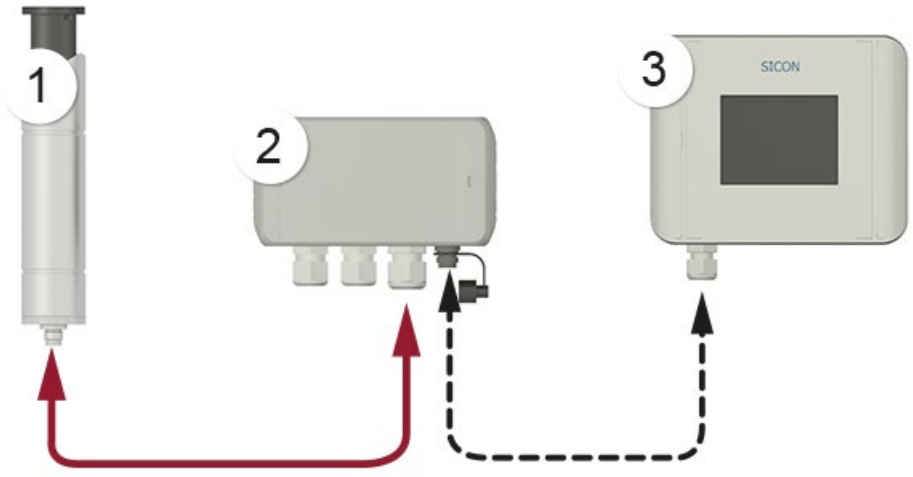


Figure 1: Overview of a measuring point

①	OilGuard PR 30 probe including 10 m cable	②	Conn-R junction box (optional)
③	SICON-C portable control unit (optional) The SICON-C can be connected to the Conn-R junction box.		

2.2 Designation of the components

2.2.1 Designation of the OilGuard PR 30

The photometer is fitted with the following rating plate:

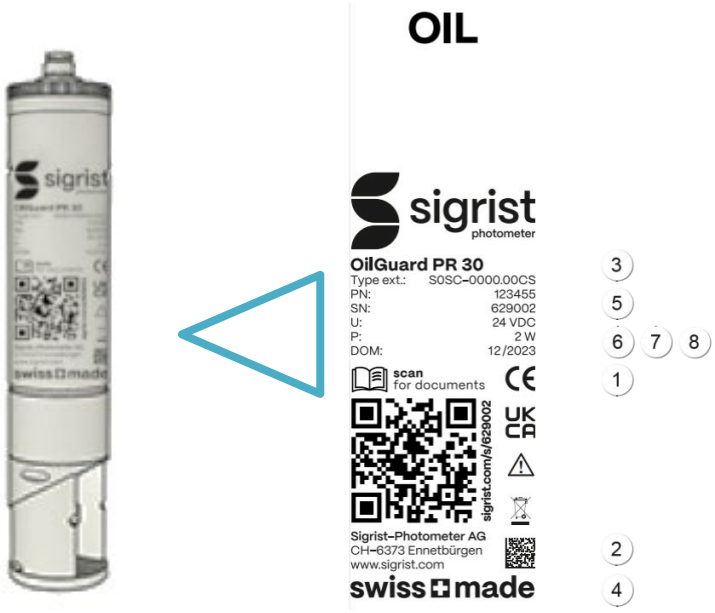


Figure 2: Rating plate on OilGuard PR 30

①	▪ CE mark ▪ Observe the Instruction Manual ▪ Observe the disposal information	②	Manufacturer
③	Product name	④	Country of manufacture
⑤	Serial number	⑥	Date of manufacture
⑦	Service voltage	⑧	Power

2.2.2 Designation of the Conn-R junction box

The Conn-R junction box is fitted with the following rating plate:

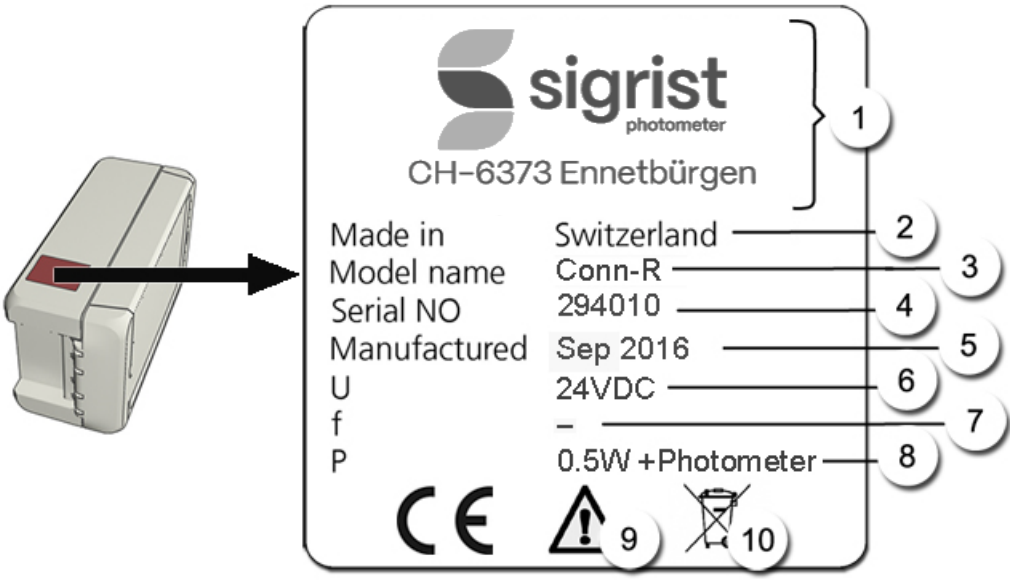


Figure 3: Rating plate on Conn-R junction box

①	Manufacturer	②	Country of origin
③	Product name	④	Serial number
⑤	Date of manufacture	⑥	24 VDC service voltage
⑦	Frequency range	⑧	Power
⑨	Observe the Instruction Manual	⑩	Observe the disposal information

2.2.3 Designation of the SICON-C

The SICON-C portable control unit is fitted with the following rating plate:

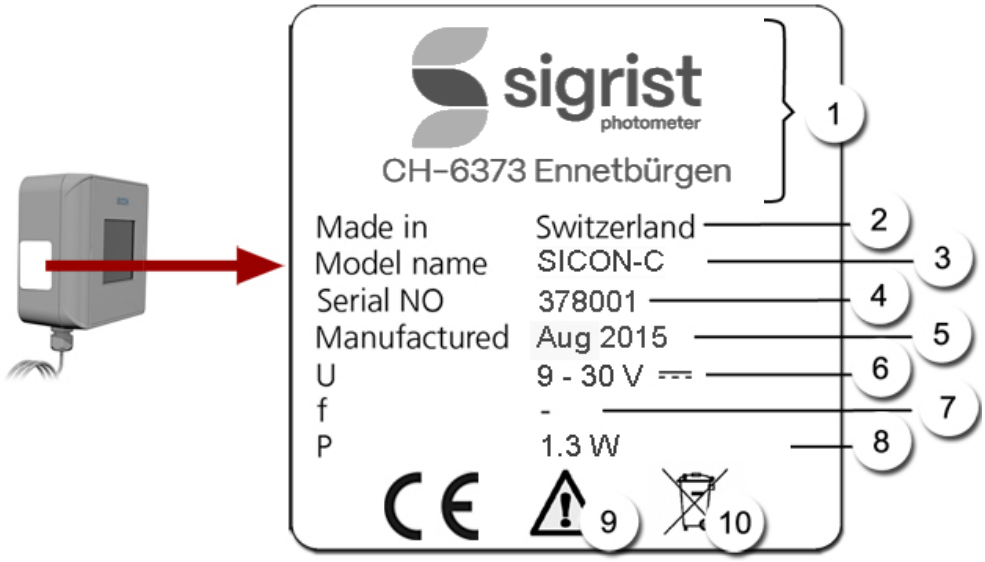


Figure 4: Rating plate on SICON-C

①	Manufacturer	②	Country of origin
③	Product name	④	Serial number
⑤	Date of manufacture	⑥	Service voltage
⑦	Frequency range	⑧	Power
⑨	Observe the Instruction Manual	⑩	Observe the disposal information

2.3 Scope of supply

The scope of supply can be found in the sales documents. The accessories are available online: https://www.sigrist.com/en/Oil-in-Water-Analyzers/OilGuard-PR-30/Parts

2.4 Technical data

Fluorescence measurement	**Values**
Measuring principle	Fluorescence measurement
Measurement span	0.0 .. 500 µg/L (ppb) with 16 EPA-PAH calibration
Sample medium	Water
Wavelength	Excitation: 280 nm (EN 62471 risk group 3 – high risk) Detection: 300-400 nm

OilGuard PR 30	**Values**
Resolution	0.01 µg/L (ppb) with 16 EPA-PAH calibration
Reproducibility	± 3 % of measuring range with 16 EPA-PAH
Repeatability	± 0.5 % of measuring range with 16 EPA-PAH
Service voltage	24 VDC ± 10 %
Power consumption	2 W
Outputs	1 x current output 0/4 .. 20 mA (maximum burden 600 Ω – minus pole to ground on service voltage) 2 x digital outputs (24 V, high side, max. 25 mA)
Pressure	1 MPa (10 bar)
Flow speed	Max. 3 m/sec.
Sample temperature	0 .. 60 °C
Ambient temperature	0 .. 60° C
Ambient humidity	0 .. 100 %
Weight	0.5 kg
Dimensions	Ø 40 mm x 197 mm (with connector 300 mm)
Protection class	IP68 (connector IP67)
Material	Stainless steel 1.4571 Sapphire window Absorber: PPSU

SICON (M, C)	Values
Service voltage	24 VDC ± 10 %
Display	¼ VGA with touchscreen Resolution: 320 x 240 pixels with 3.5" diagonal
Outputs/inputs (not for SICON-C)	Outputs: ▪ 4 x 0/4 .. 20 mA, galvanically isolated up to max. 50 V relative to ground and max. 500 Ω burden. ▪ 7 x digital outputs up to max. 30 VDC, freely configurable, 1 output as de-energized closed relay. Inputs: ▪ 5 x digital inputs up to max. 30 VDC, freely configurable.
Interfaces (not for SICON-C)	Ethernet, microSD-card (for logging, SW-update, diagnostics), Modbus TCP. Optional: Modbus RTU, Profibus-DP, Profinet IO or HART, Cur-rent output 4-way module and Current input 4-way module
Protection class	IP66
Weight	Approx. 0.6 kg
Dimensions	160 x 157 x 60 mm
Housing material	ABS

Adapter	Values
PE fitting	Material: PE100 / 1.4404 Max. pressure: 10 bar at 35 °C / 4 bar at 60 °C Max. temperature: 60 °C
Pipe flange	Material: 1.4404 Max. pressure: 10 bar Max. temperature: 60 °C
Submerge tube	Material: PE80 / PE100 Max. temperature: 60 °C
VARINLINE® adapter	Material: 1.4404 Max. pressure: 10 bar Max. temperature: 60 °C
Extractable assembly	Material: 1.4408 / 1.4404 / Brass / PA / POM Max. pressure: 10 bar Max. temperature: 60 °C

Conn-R junction box	Values
Service voltage	24 VDC ± 10 %
Power consumption	0.5 W + photometer
Outputs	▪ 2 x relay outputs 230 VAC, 4 A ▪ 1 x current output (from photometer)
Protection class	IP66
Weight	0.32 kg
Dimensions	151 x 107 x 61 mm
Housing material	PC

3 General safety points

3.1 Dangers when properly used

DANGER!

Damaged instrument or cabling.

Touching damaged cables may lead to electrical shocks or death.

- The instrument may be operated only when the cables are undamaged.
- The instrument may be operated only if it has been properly installed or repaired.

DANGER!

Dangerous voltage inside the instrument.

Touching live components inside the instrument may lead to electric shocks resulting in death.

- The instrument must not be operated when the housing is removed or opened.

DANGER!

Damage to the instrument due to incorrect service voltage.

If the instrument is connected to an incorrect service voltage, the instrument can be damaged.

- The instrument may be connected only to voltage sources as specified on the rating plate.

DANGER!

Manipulations on pressurized pipes.

Improper manipulations on a pressurized pipe can lead to the sample escaping under pressure, resulting in injuries, damage to the instrument and material damage on site.

- Always consult the Instruction Manual before making any manipulations to pipes.
- It is absolutely essential that manipulations to a extractable assembly are made according to the Instruction Manual.
- On all other installation versions, the medium line must be emptied before removing the instrument.

DANGER!

Missing Instruction Manual after the instrument changes hands.

Operating the instrument without knowledge of the Instruction Manual may lead to injuries to persons and damage to the instrument.

- If the instrument changes hands, always include the Instruction Manual.
- If the Instruction Manual is lost, you can request a replacement.
  Registered users can download the current version at www.sigrist.com.

CAUTION!

Escaping water from leaks on the instrument or water connections.

Escaping water can lead to flooding of the room and material damage to the building and fittings.

- Check that there are no leaks.

CAUTION!

Moisture and condensation on electronic components during operation.

Damage may occur if moisture enters the inside of the OilGuard PR 30.

CAUTION!

Penetration of moisture as well as condensation on the electrical components during servicing duty.

If moisture enters the instrument, the OilGuard PR 30 can be damaged.

- Work inside the instrument may be performed only in a dry room and at room temperature. The instrument should be at operating or room temperature (avoid condensation on optical and electrical surfaces).

CAUTION!

The use of aggressive chemicals when cleaning.

Use of aggressive chemicals can cause damage to instrument components.

- Do not use aggressive chemicals or cleaning agents when cleaning.
- Should the instrument come in contact with aggressive chemicals, clean it thoroughly with a neutral cleaning agent.

3.2 Danger due to UV radiation

UV RADIATION!

The OilGuard is equipped with a UV LED with an emission wavelength of 280 nm. According to the standard IEC/EN 62471 (Photobiological safety of lamps and lamp systems), this LED is classified in Risk Group 3 (High Risk).

Exposure of longer than 3 seconds can lead to permanent damage to the eyes and skin.

- The UV LED is only accessible when the housing is open. The OilGuard is equipped with an automatic cut-off device that puts the LED out of operation when the housing is open.
- Switch off the OilGuard when carrying out servicing duties, or wear UV goggles and gloves.

3.3 Residual risk

WARNING!

According to the risk assessment of the applied safety directive DIN EN 61010-1, there remains the risk of the displayed measuring values being incorrect. This risk can be reduced with the following measures:

- Use an access code to prevent unauthorized persons from changing parameters.
- Change the password when using the optional WLAN module.
- Perform the specified servicing duties.

3.4 Warning and danger symbols on the instrument

WARNING!

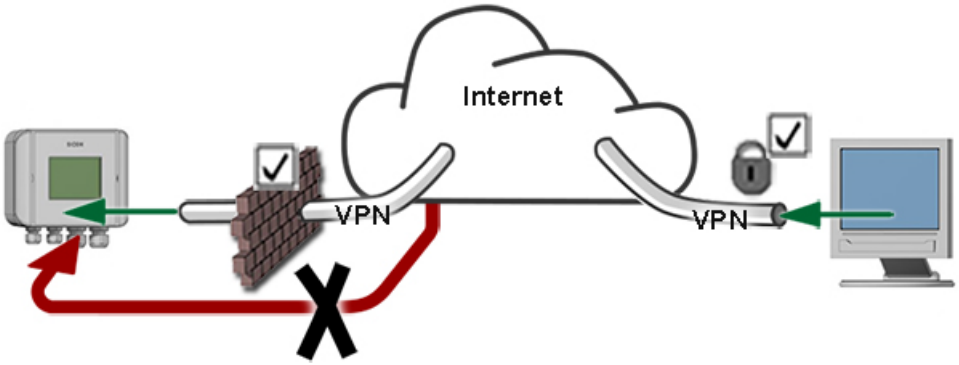
There are no warning or danger symbols on the instrument.

Users must ensure that they observe the safety measures as specified in the Instruction Manual at all times when working with the instrument and its peripheral equipment, even if no warning or danger symbols are attached to the instrument.

The following sections must be internalized:

- Section 1.11
- Section 1.12
- Section 1.13
- Section 3.1
- Section 3.2
- Observe safety pointers when performing the described procedures.
- Observe local safety pointers.

3.5 Preventing undesirable online access attempts



WARNING!

SIGRIST instruments are equipped with an integrated web user interface and Modbus TCP interface, thus offering state-of-the-art administration and control possibilities. However, if these are connected directly to the Internet, then any Internet user can in principle access your instrument and change the configuration.

Please note the following points to prevent this:

- Never connect the instrument directly to the Internet.
- Operate it behind a firewall and block access to the instrument.
- Only connect to branch offices via VPN.
- Change the standard password on commissioning.
- Always keep up to date with the latest changes regarding Internet security so that you can react promptly in the event of alterations.
- Install the latest updates immediately (also for the router and firewall).

4 Mounting

4.1 Basic information for mounting the OilGuard PR 30

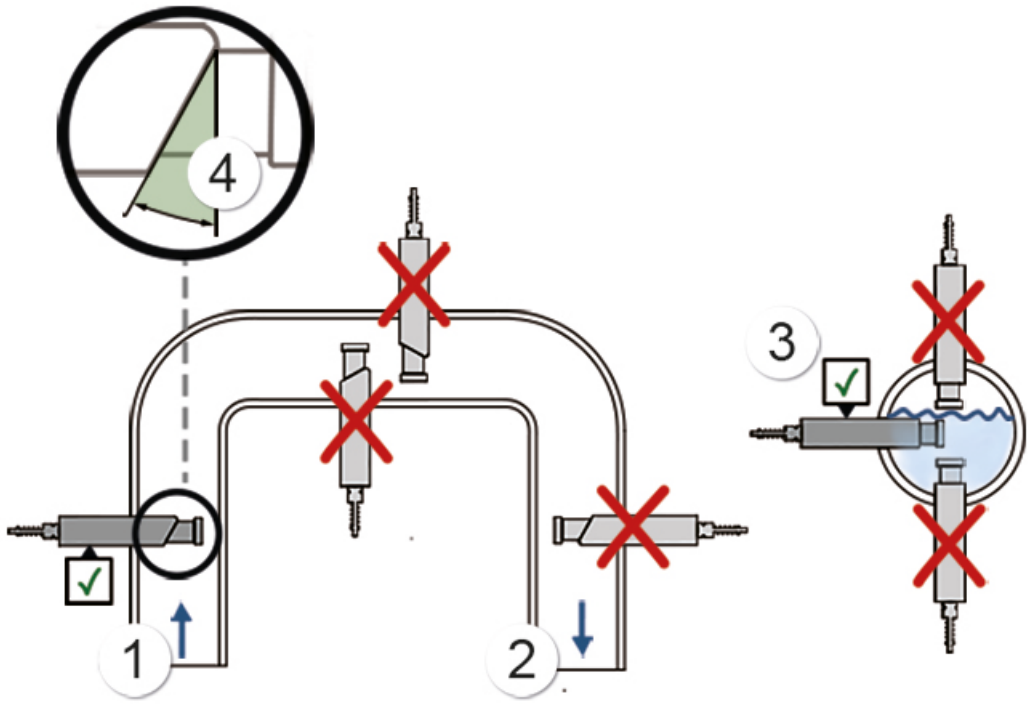


Figure 5: Mounting directions

The following points must be observed when mounting the OilGuard PR 30:

- The photometer should be mounted in positions where there is a uniform flow. This is usually the case in the standpipe (pos. 1). The photometer can also be installed in pipes that run horizontally (pos. 3).
- Do not mount the photometer in the downpipe (pos. 2).
- The photometer must be mounted in the line at least 0.5 meters away from inspection glasses and other unwanted light sources.
- The angled edge (pos. 4) of the sensor head must always be positioned against the flow direction (arrow) (pos. 1).
- Do not mount the photometer in locations where bubbles may form.
- Do not mount the photometer downstream of pressure reduction, as cavitation may form here.

4.2 Mounting the PE fitting

For mounting on the pipe, the PE100 screw-in fitting (pos. 3) must be welded onto the pipe-T-piece (pos. 2) beforehand according to the **AquaScat_S_PE-MB** drawing. Mounting of the PE fitting can be made according to the **AquaScat_S_PE-MB** dimensional drawing.

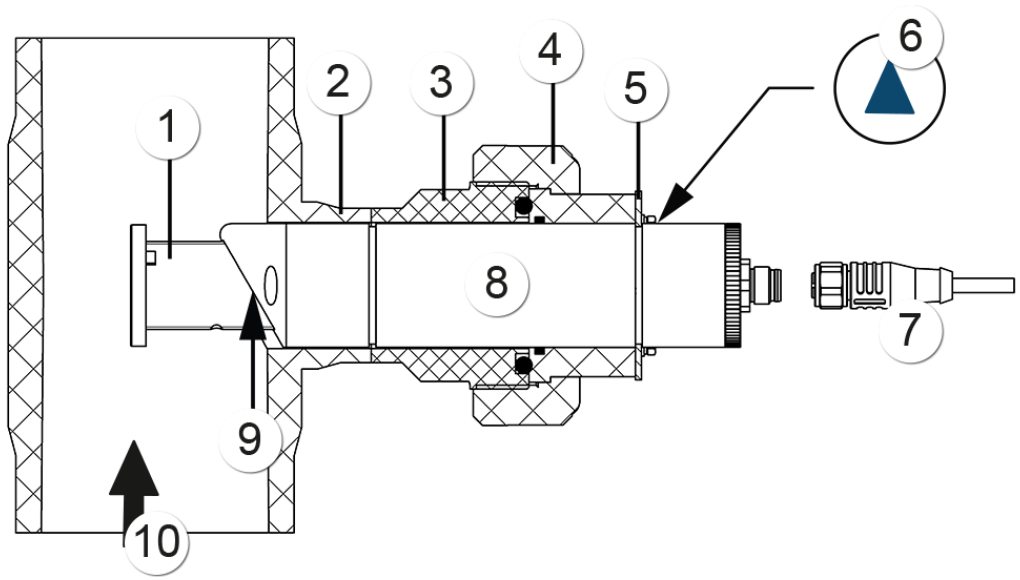


Figure 6: Overview of a measuring point with connection via PE fitting

①	Absorber	②	Pipe-T-piece for connection to sample line, provided by the customer
③	PE100 screw-in fitting	④	Union nut
⑤	Fastening plate	⑥	The marking on the rating plate shows the position of the angled edge (pos. 9).
⑦	M12 connector, female	⑧	OilGuard PR 30
⑨	The angled edge of the sensor head must be positioned against the flow direction.	⑩	Flow direction of the sample

4.3 Mounting the pipe flange

For mounting on the pipe, a T-piece (pos. 2) with pipe flange must be welded onto the pipe beforehand according to the **AquaScat_S_RF-MB** drawing.
Mounting of the OilGuard PR 30 can be made according to the **AquaScat_S_RF-MB** dimensional drawing.

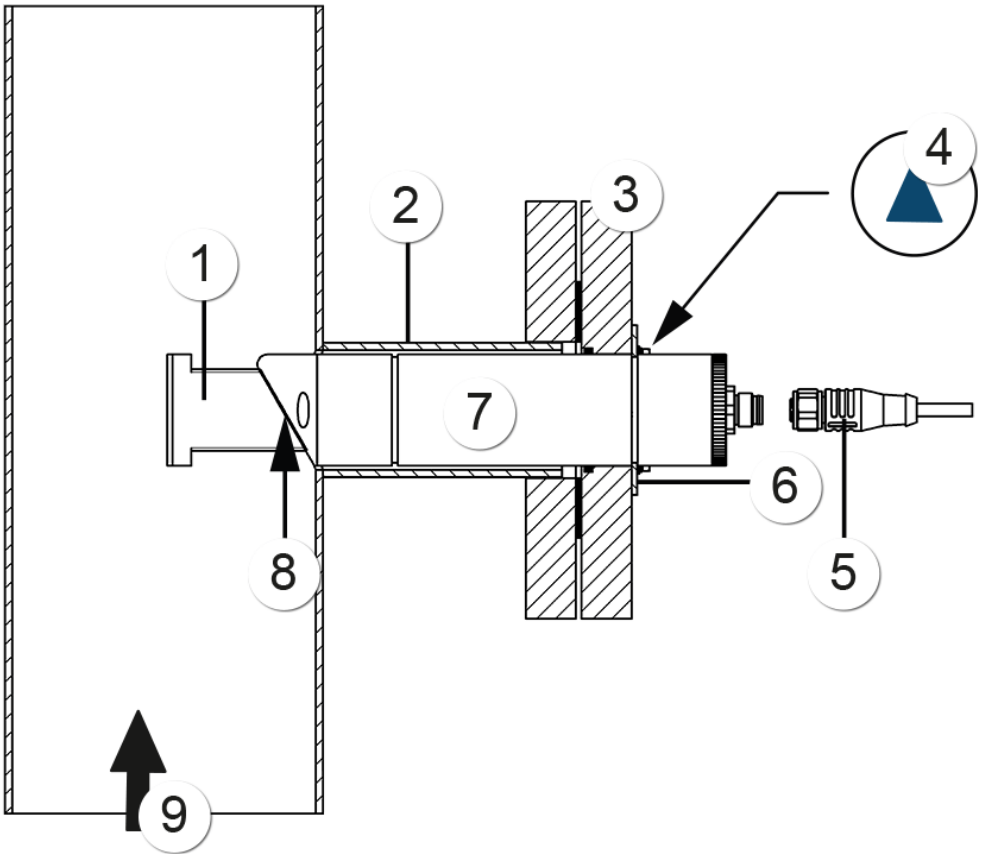


Figure 7: Overview of a measuring point with connection via pipe flange

①	Absorber	②	T-piece with pipe flange DN 40, PN 40, provided by the customer, for fastening the OilGuard PR 30
③	Pipe flange DN 40, PN 40	④	Marking on the rating plate (shows the position of the angled edge (pos. 8)
⑤	M12 connector, female	⑥	Fastening plate for OilGuard PR 30
⑦	OilGuard PR 30	⑧	The angled edge of the sensor head must be positioned against the flow direction.
⑨	Flow direction of the sample		

4.4 Mounting the extractable assembly

4.4.1 Extractable assembly: Mounting the probe in a vertical pipe

A 2" threaded coupling (pos. 2) must be welded onto the pipe beforehand according to the **AquaScat_S_WA-MB** drawing.
Before mounting the extractable assembly, remove the probe as detailed in Section 9.5 (step 1 to 8). The extractable assembly must be sealed on the 2" threaded coupling and positioned so that the handle of the shut-off valve (pos. 3) is at the top. The probe can then be reinstalled as detailed in Section 9.5 (step 10 to 17).
Insert the outlet hose (pos. X) in the hose coupling and connect the end of the hose with the drain.

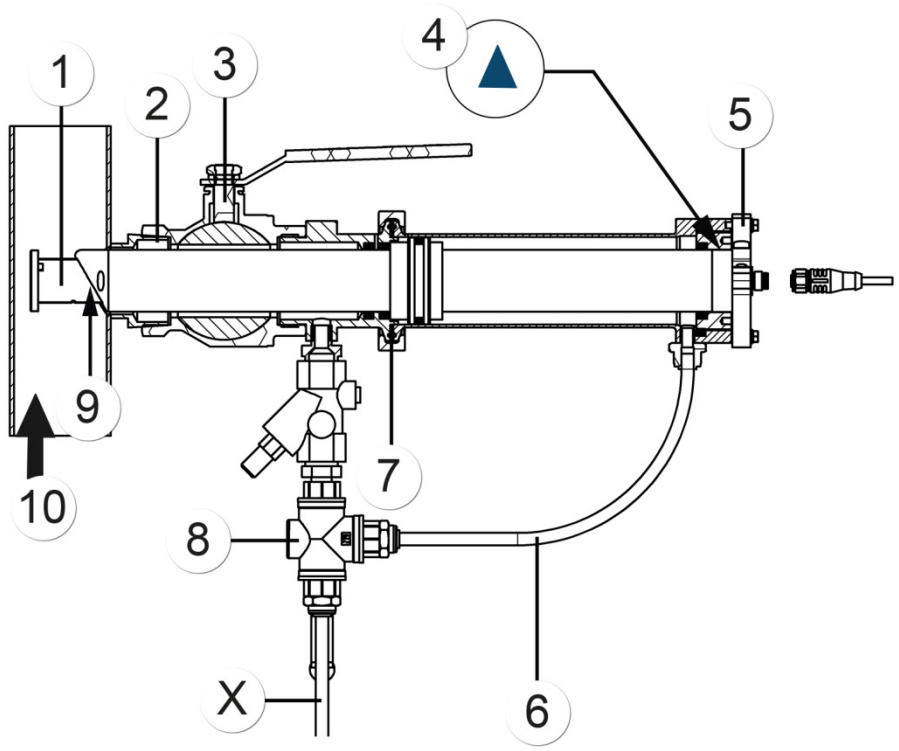
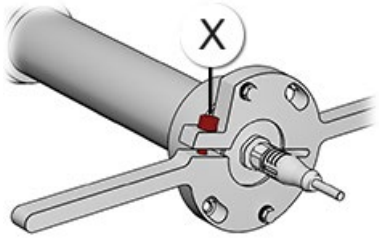
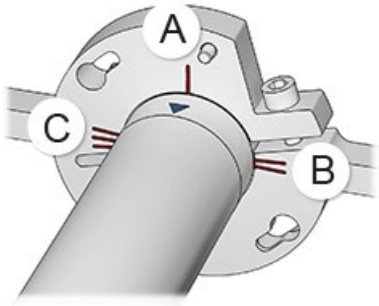
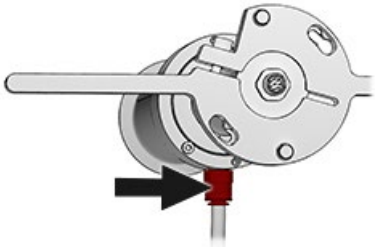
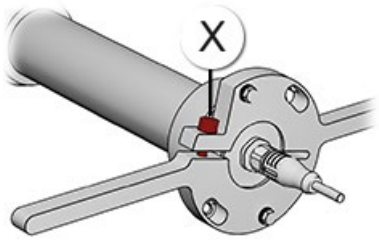


Figure 8: Overview of a measuring point with extractable assembly

①	OilGuard PR 30 (absorber)	②	2" threaded coupling
③	Shut-off valve	④	Marking on the rating plate (shows the position of the angled edge (pos. 9))
⑤	Handle	⑥	Hose for pressure compensation
⑦	Tri-Clamp	⑧	Changeover valve
⑨	The angled edge of the sensor head must be positioned against the flow direction.	⑩	Flow direction of the sample

4.4.2 Extractable assembly: Mounting the probe in a horizontal pipe

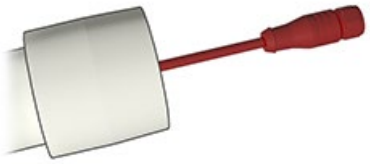
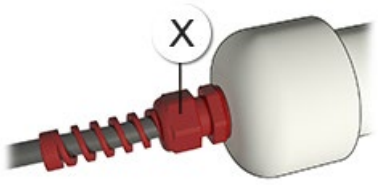
On horizontal pipes, the handle on the probe must be turned by 90°. This can be done as follows:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Loosen the screw (X) so that the handle can be turned easily.	
2.	Align the handle to the marking on the probe according to the current installation situation. The following three markings are found on the handle: ▪ A: Vertical line, flow from below ▪ B: Horizontal line, flow from right ▪ C: Horizontal line, flow from left	
3.	Fasten the handle in place by tightening the screw (X) on the probe.	
4.	Rotate the complete assembly until the hose connection (arrow) is pointing downwards.	
5.	Rotate the handle into the horizontal position and ensure the screw (X) is finally positioned at the top.	
6.	Reinstall the probe into the extractable assembly as detailed in Section 9.5 (step 10 to 17).	

,

4.5 Mounting the submerge tube

4.5.1 Preparations for mounting the submerge tube

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	If any pipe extensions are present, then attach these to the submerge tube.	
2.	Feed the connection cable through the submerge tube.	
3.	Connect the cable to the OilGuard PR 30 and firmly tighten the screw connection.	
4.	Insert the OilGuard PR 30 in the submerge tube.	
5.	Pull the cable through the cable gland on the end cap.	
6.	Attach the end cap to the submerge tube.	
7.	Tighten the cable until it is tensioned and fasten in place by tightening the cable gland (X).	

4.5.2 Installing the submerge tube

Mount the entire unit according to the **AquaScat_S_T-MB** drawing.
The following points must be observed when mounting the submerge tube:

- The angled edge of the sensor head (pos. 6) must always be finally positioned against the flow direction of the sample so that the measuring cell can be well ventilated and no turbulence can build up.
- The supplied pipe clamp (pos. 4) can be used to fasten the submerge tube in place.
- The OilGuard PR 30 must be protected against light.

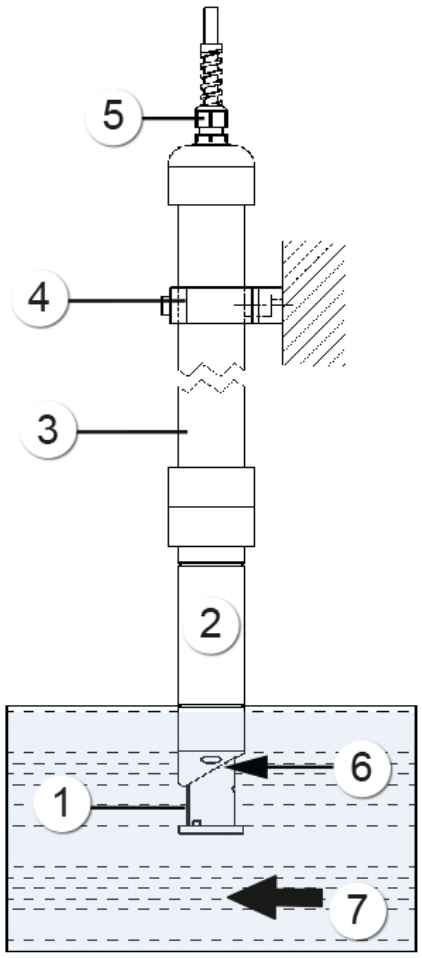


Figure 9: Overview of a measuring point with submerge tube

①	Absorber	②	OilGuard PR 30
③	Submerge tube	④	Clamp for submerge tube
⑤	Cable gland	⑥	Angled edge must be against the flow direction
⑦	Flow direction of the sample		

4.6 Mounting in the VARINLINE® housing

Mounting must be made according to the **AquaScat_S_V-MB** dimensional drawing.

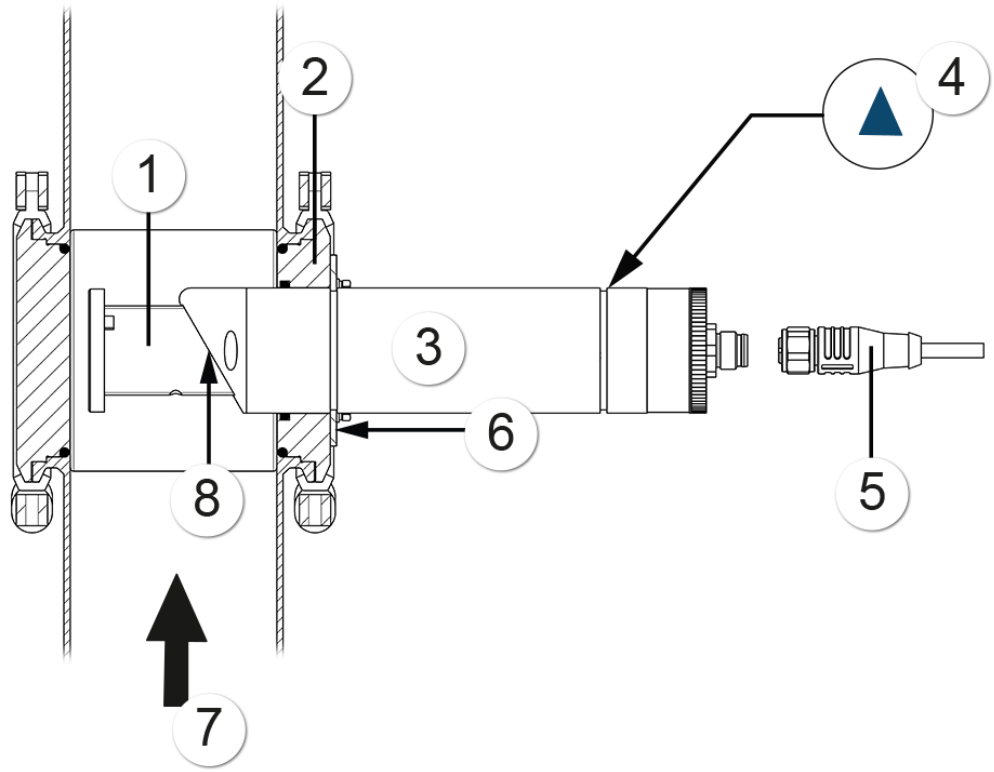


Figure 10: Overview of a VARINLINE® measuring point

①	Absorber	②	VARINLINE® adapter
③	OilGuard PR 30	④	Marking on the rating plate (shows the position of the angled edge (pos. 8))
⑤	M12 connector, female	⑥	Fastening plate for OilGuard PR 30
⑦	Flow direction of the sample	⑧	The angled edge of the sensor head must be positioned against the flow direction.

4.7 Mounting the submerge tube version with special cable

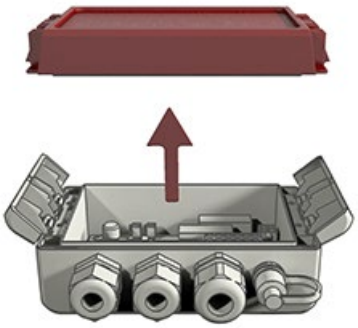
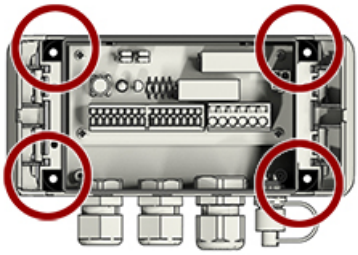
The submerge tube version with special cable can only be used together with a SICON.

The length of the special cable must be selected so that the OilGuard PR 30 is always completely immersed in the water (well).

The following points must be observed when mounting the submerge tube:

- The OilGuard PR 30 must be protected against exposure to light.
- The water to be measured must be free from air bubbles.
- There must be no turbulence in the water in the immediate vicinity of the immersion probe (e.g. caused by suction pumps).
- The immersion zone of the probe should be positioned so that there is no risk of damages to the probe as a result of collisions.
- The immersion depth of the probe must be selected so there is sufficient clearance to the bottom (sludge and sediment on the bottom).
- Check that the cable gland on the probe is securely mounted (protection against water penetration).
- Oil components must be well mixed with the water. A shallow immersion depth is recommended.

4.8 Mounting the Conn-R junction box

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Open both flaps at the same time. When both flaps are open, the cover is not fixed in place and can fall out.	
2.	Remove the cover from the housing on the Conn-R junction box.	
3.	Fasten the junction box onto the wall using the bores (circles) according to the **VD_Conn-R-MB** dimensional drawing.	

4.9 Mounting the SICON (M)

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Open the shutters.	
2.	Fasten the control unit to the wall using four M4 x 10 hexagon socket screws.	

5 Electrical installation

5.1 Safety pointers for electrical installation

DANGER!

Connecting the service voltage.

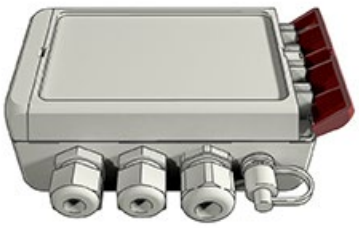
Improper connection of the service voltage can be potentially fatal. The system may also be damaged. Local regulations for electrical connection must be observed at all times.

Further, the following basic principles must be observed:

- Because the system has no main switch, a suitable disconnection device (switch, plug) should be installed near the service voltage. It must be designated and easily accessible.
- The system must not be charged with voltage until the installation is completed and all covers are mounted.
- If faults cannot be remedied, the system must be put out of operation and protected against inadvertent operation.

5.2 Installing the Conn-R junction box

5.2.1 Opening the Conn-R junction box

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Open the flap on one side. If the junction box should be opened **to the right**, then open the left-hand flap. If the junction box should be opened **to the left**, then open the right-hand flap.	
2.	Open the Conn-R junction box.	

5.2.2 Overview of the Conn-R junction box

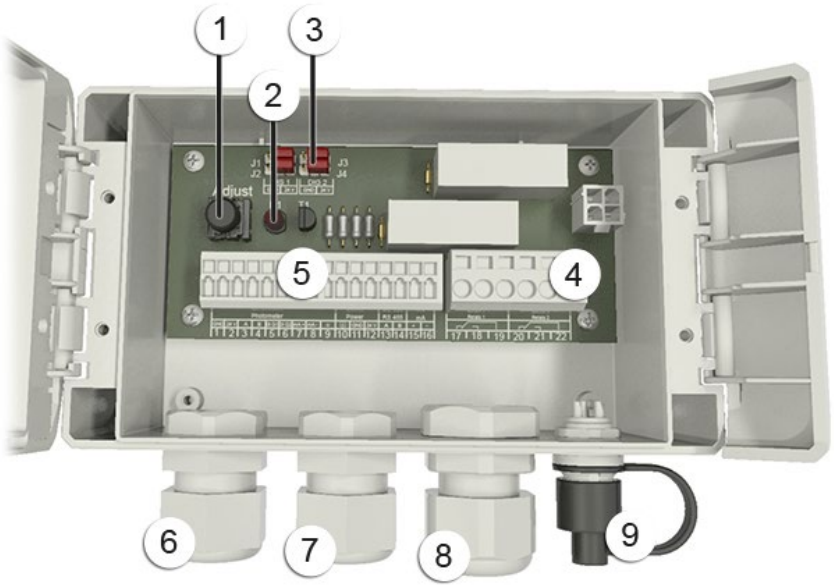


Figure 11: Conn-R junction box when open

①	Key for recalibration Section 9.6 ℹ This key is only active if no SICON-C is connected.	②	Information LED D1 The flash code is described on the Section 7.2
③	Pin headers J1 .. 4 fitted with jumpers ⚠ To connect an OilGuard PR 30, jumpers must be fitted to the two right-hand pins on the pin headers J1.. J4.	④	Terminal strip for relay outputs
⑤	Terminal strip for connecting the photometer, the power supply and the customer connections Section 5.2.4	⑥	Cable gland for cables measuring 4 to 8 mm
⑦	Cable gland for cables measuring 4 to 8 mm	⑧	Cable glands for cables measuring 8 to 13 mm
⑨	Instrument socket for connecting the SICON-C		

5.2.3 Connecting the OilGuard PR 30 to the Conn-R junction box

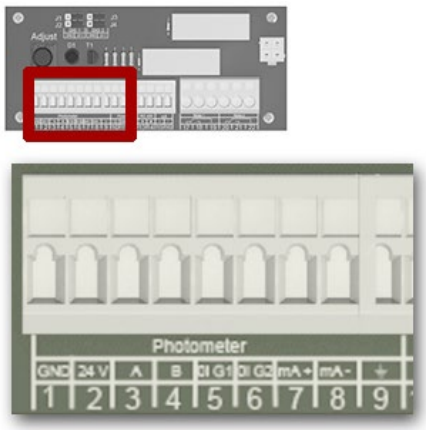


Figure 12: Standard terminals from the photometer

An 8-pin connector of type M12 x 1 with A-coding is used as standard. A shielded device cable must be used for connection to the junction box. The following table can be used when connecting an OilGuard PR 30 to the Conn-R junction box.

Description	**Connector pin (male) AQ S** 	**Wire color for device cable (art. no. 120444)**	**Conn-R**	**Remarks**
Supply GND	1	white	1	
24 VDC power supply	2	brown	2	24 V ± 10%
RS-485 A	7	blue	3	Serial interface for SICON (M)
RS-485 B	5	gray	4	
Digital output 1	6	pink	5	Switches against 24 V
Digital output 2	4	yellow	6	Switches against 24 V
Current output +	8	red	7	The minus pole is connected to GND. Max. 600 Ω burden
Current output -	3	green	8	
Shielding		Screen	9	The housing is galvanically isolated relative to ground. The housing can be connected to the ground potential via the shielding

5.2.4 Customer connections on the Conn-R junction box

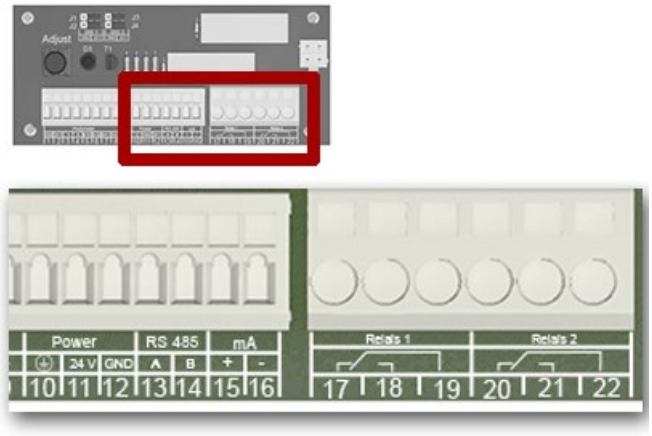
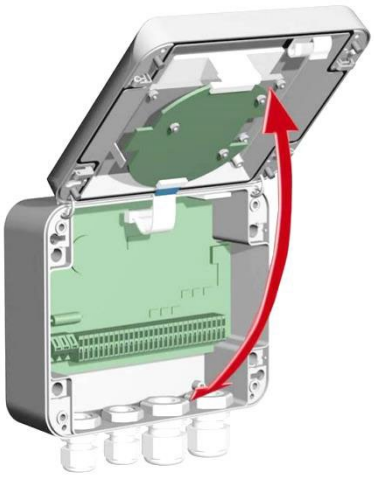
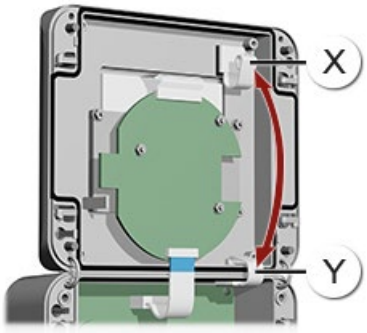


Figure 13: Customer connections on the Conn-R junction box

Name	Conn-R terminals	Description
Ground	10	Connection of the cable shielding and housing to the ground potential. If the probe housing is already connected to earth through the installation, then this connection can be left open.
24 V power supply	11 24 V 12 GND	24 V ± 10%
RS-485	13 A 14 B	Not used
Current output	15 + 16 -	The minus pole is connected to GND. Max. 600 Ω burden
Relay 1	17 NC 18 NO 19 Commun	Max. 230 V / 4 A When using voltages above a low-voltage level, ensure that no bare wires or leads can be touched during installation.
Relay 2	20 NC 21 NO 22 Commun	Max. 230 V / 4 A When using voltages above a low-voltage level, ensure that no bare wires or leads can be touched during installation.

5.3 Installation of the OilGuard PR 30 with SICON (M)

5.3.1 Removing the cover from the SICON (M)

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Open the shutters.	
2.	Loosen the fastening screws on the cover.	
3.	Open the cover.	
4.	Fasten the cover with the cover clamp. To do this, remove the cover clamp from the park position (X) and fasten the cover in position (Y).	

5.3.2 Overview of the opened SICON control unit

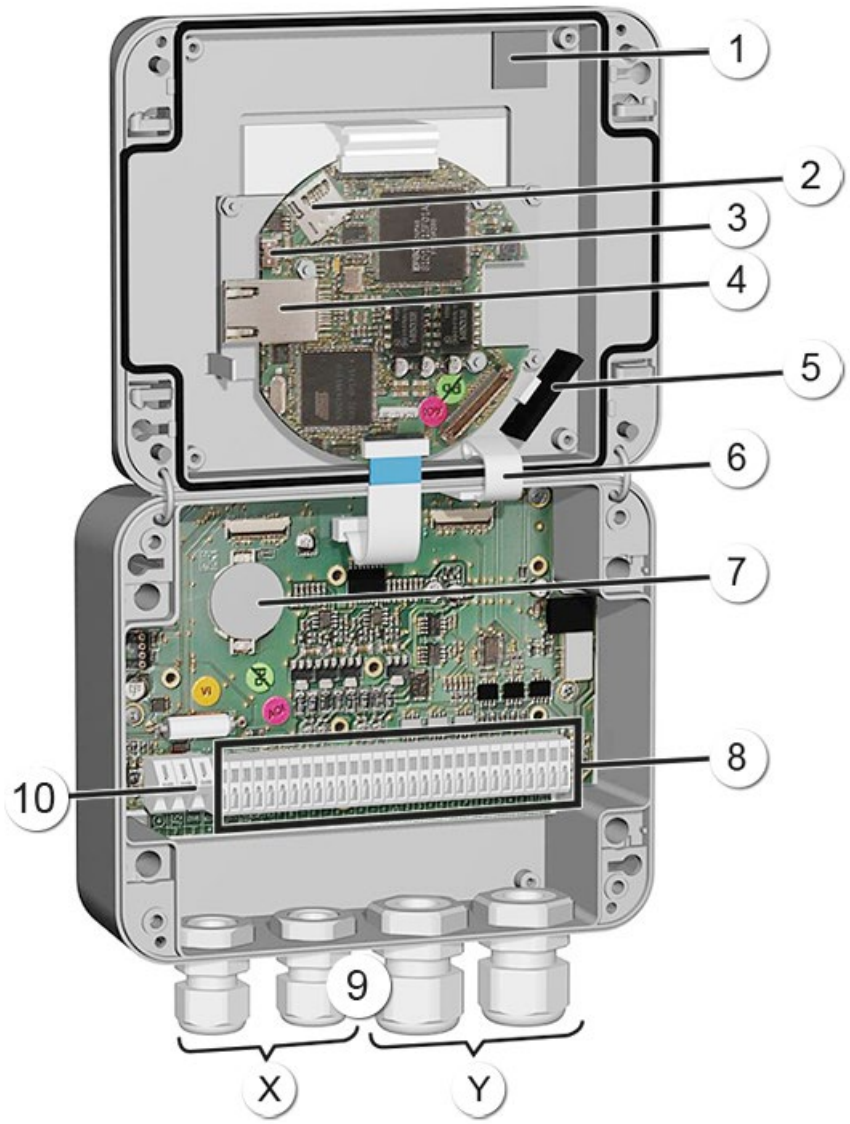


Figure 14: Overview of SICON Standard

①	Park position for cover clamp	②	microSD card (card for log data)
③	USB connection	④	Ethernet connection
⑤	SD card adapter with holder	⑥	Cover clamp in holding position
⑦	Battery	⑧	External connections
⑨	Cable gland X: 4 to 8 mm Y: 8 to 13 mm	⑩	Connections for the service voltage 9 .. 30 VDC

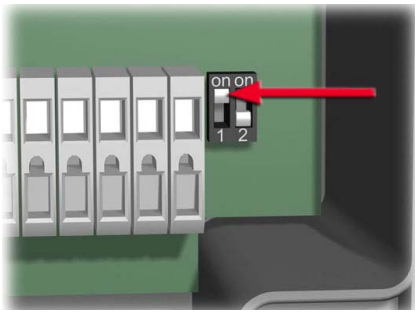
5.3.3 Installing the OilGuard PR 30 on the SICON (M)

DANGER!

Life-threatening voltage inside the instrument.
Connecting electrical lines can be extremely dangerous. Instrument parts may also be damaged. Local regulations for electrical installations must be observed at all times.

Figure 15:SICON (M) terminal block

Open the SICON (M) according to the Section 5.3.1 and establish the electrical connections. The following sequence must be adhered to:

	TERMINAL	MEANING	REMARKS
1.	8 .. 11	Connection to the photometer ⚠ pink / yellow insulate red / green connect	Terminal 8: GND (ground) => white Terminal 9: 24V => brown Terminal 10: A => blue Terminal 11: B => gray
2.	4 .. 7	Connection of the external expansion module (optional)	
3.	12 .. 19	Curr. outputs 1 .. 4	The minus pole is connected to GND. Max. 600 Ω burden
4.	21 .. 27	Digital optocoupler outputs	Terminal 21 is closed de-energized Terminals 22 .. 27 are open de-energized
5.	28 .. 32	Digital inputs	
6.	33 .. 34	Internal power supply for operating signals	DIL switch (1) must be ON.  → Reference Manual
7.	1 .. 3	Service voltage	9 .. 30 VDC

The use of operating signals is described in the Reference Manual.

5.3.4 Installing the submerge version with special cable on the SICON

DANGER!

Life-threatening voltage inside the instrument.

Connecting electrical lines can be extremely dangerous. Instrument parts may also be damaged. Local regulations for electrical installations must be observed at all times.

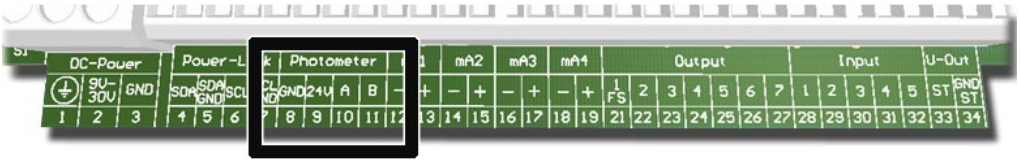


Figure 16: Terminals for submerge version with special cable on SICON

Open the SICON according to the Section 5.3.1and establish the electrical connections. Use the M20 cable gland on the left for connection (Section 5.3.2). The following sequence must be adhered to:

	TERMINAL	MEANING	COLOR
1.	8	GND (ground)	Yellow/green
2.	9	24V	Brown
3.	10	A	Gray
4.	11	B	Black

5.4 Connecting the field bus interfaces (optional)

Information on commissioning the field bus interfaces can be found in the Reference Handbook.

5.4.1 Overview of Modbus RTU and Profibus DP

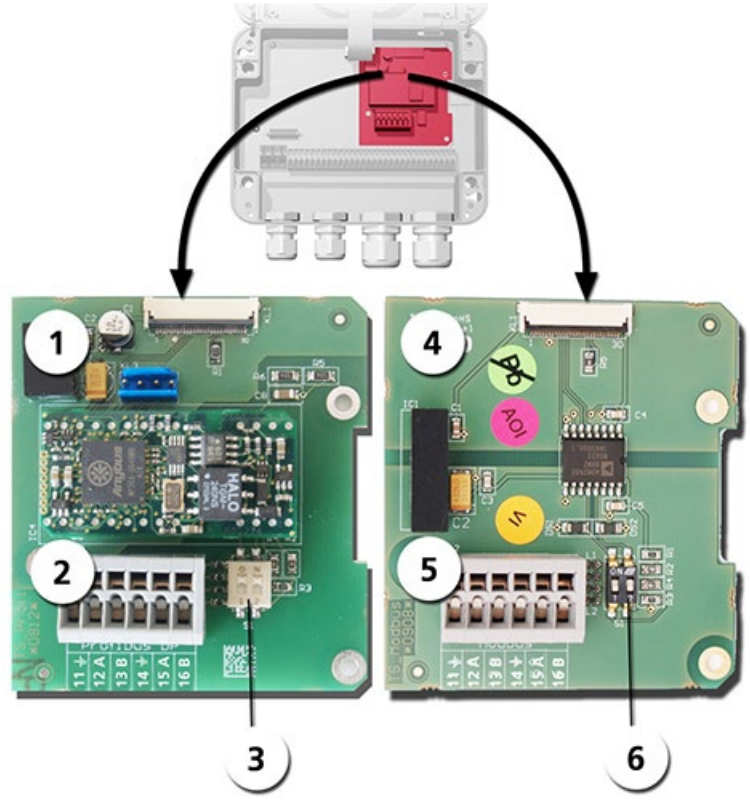


Figure 17: Overview of field bus interfaces

①	Field bus interface (connection printed circuit board) for **Profibus DP**.	④	Field bus interface (connection printed circuit board) for **Modbus RTU**.
②	Profibus DP terminals.	⑤	Modbus RTU terminals.
③	DIL switch for matching resistors. Switches (1 and 2) must be **ON**.	⑥	DIL switch for matching resistors. Switches (1 and 2) must be **ON**.

5.4.2 Connecting the Modbus RTU or Profibus DP

The terminals on the Profibus DP or Modbus RTU module are assigned as follows:

TERMINALS	MODBUS / PROFIBUS	FUNCTIONAL DESCRIPTION
11 ⏚	Ground IN	Connection for cable shielding
12 A	RS 485-A IN	Data connection
13 B	RS 485-B IN	Data connection
14 ⏚	Ground OUT	Connection for cable shielding
15 A	RS 485-A OUT	Data connection
16 B	RS 485-B OUT	Data connection

5.4.3 Overview of Profinet IO

- To connect to the Profinet IO, the Profinet IO module must be integrated in the SICON (M).
- The module has an internal switch and provides two Ethernet ports.
- The cable is connected directly to the RJ45 plug of the Profinet IO module inside the instrument or via external M12 connectors.

⚠ When connecting directly to the RJ45 plug, please note that only plugs with a short and flat design can be used.

- In the **Digi.interf. \ General** menu, the **Modul type** must be set to **Profinet IO**.
- In the **Digi.interf. \ Profinet** menu, the station name, MAC address and connection status are shown. Moreover, it can be defined here whether the data should only be read or be read and written.

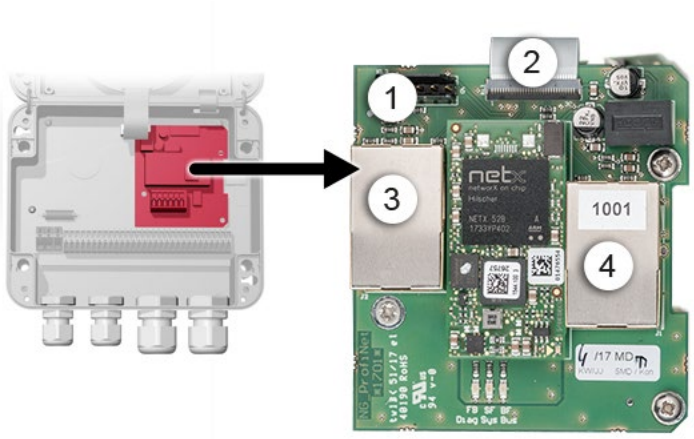


Figure 18: Overview of the Profinet IO module in the SICON

①	Fieldbus interface (connection print) for Profinet IO	②	Connector for SICON
③	Ethernet port 1	④	Ethernet port 2

5.5 Connecting the analog modules (optional)

5.5.1 Overview of 4-way current output

The configuration of the current outputs is described in the Section 8.2.

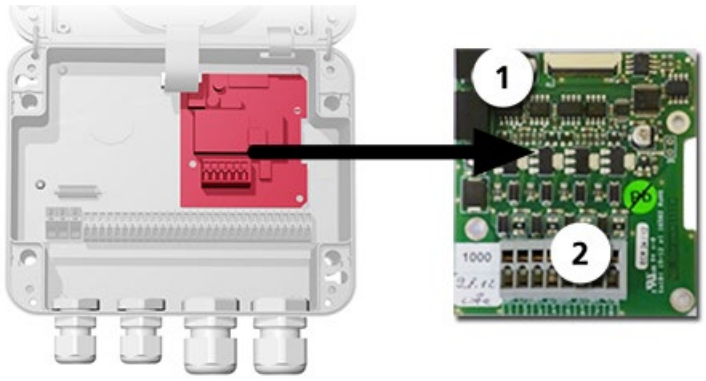


Figure 19: Overview of the 4-way current output module

①	4-way current output	②	Terminals

5.5.2 Connecting the 4-way current output

The terminals of the 4-way current output are configured as follows:

Terminals	4-way current output	Functional description
1	mA 5 -	Current output 5
2	mA 5 +	
3	mA 6 -	Current output 6
4	mA 6 +	
5	mA 7 -	Current output 7
6	mA 7 +	
7	mA 8 -	Current output 8
8	mA 8 +	

The burden on the current outputs can be a maximum of 500 Ohm.

5.5.3 Overview of the 4-way current input

The configuration of the current inputs is described in the Reference Manual.

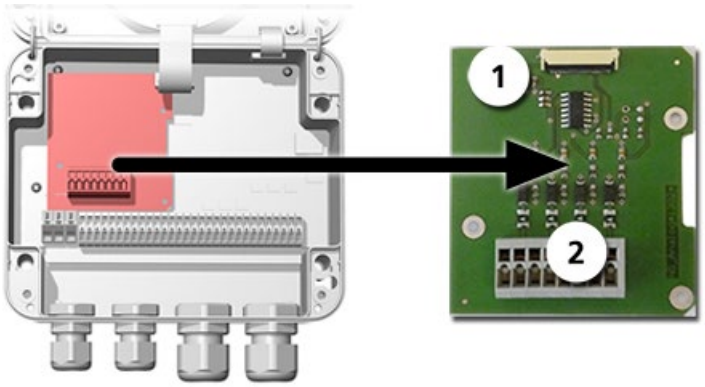


Figure 20: Overview of the 4-way current input module

①	4-way current input	②	Terminals

5.5.4 Connecting the 4-way current input

The terminals of the 4-way current input are configured as follows:

Terminals	4-way current input	Functional description
1	In 1 -	Current input 1
2	In 1 +	
3	In 2 -	Current input 2
4	In 2 +	
5	In 3 -	Current input 3
6	In 3 +	
7	In 4 -	Current input 4
8	In 4 +	

Current inputs 1 .. 4 are intended for connecting external 0/4 .. 20 mA signals. The inputs are not galvanically isolated and the negative inputs are connected to the ground of the instrument. The input resistance is 100 Ohm.

6 Commissioning

The initial start-up of the web user interface via the optional WLAN interface is described in the Reference Manual.

6.1 Commissioning with Conn-R junction box and SICON-C

Proceed with the initial start-up in accordance with the following table:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Ensure that all components are correctly mounted and connected.	Section 4 and Section 5
2.	2.1: Establish the service voltage to the Conn-R junction box (and thus to the photometer).	
	2.2: Plug the SICON-C into the Conn-R junction box according to Section 5.2.2 and wait until the welcome screen appears in the display. The factory setting language is English.	
	2.3: The instrument is ready for measurement.	
3.	Set the language.	Section 8.1
4.	Set the limits.	Section 8.3
5.	Set the current outputs.	Section 8.2
6.	Set the outputs.	Section 8.4
7.	Enter the access code.	Section 8.9
8.	Carry out recalibration.	Section 9.6
9.	Back up the configured data.	Section 8.10

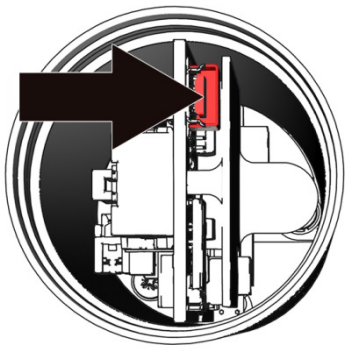
6.2 Commissioning with SICON (M)

Proceed with the initial start-up in accordance with the following table:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Ensure that the photometer and control unit are correctly mounted and connected.	Section 4 and Section 5
2.	2.1: Establish the service voltage. The welcome screen appears on the display. The factory setting language is English. Accordingly, the displayed language during the initial start-up is English.	
	2.2: The instrument carries out an internal functional check.	
	2.3: The instrument is ready for measurement.	
3.	Set the language.	Section 8.1
4.	Set the current outputs.	Section 8.2
5.	Set the limits.	Section 8.3
6.	Set the outputs.	Section 8.4
7.	If an optional Profibus module is present, set the Profibus parameters.	Section 8.5
8.	If an optional Profinet IO module is present, set the Profinet parameters.	Section 8.6
9.	If an optional Modbus module is present, set the Modbus parameters.	Section 8.7
10.	Set the date and time.	Section 8.8
11.	Enter the access code.	Section 8.9
12.	Carry out recalibration.	Section 9.6
13.	Back up the configured data.	Section 8.10

6.3 Commissioning without SICON (M)

Proceed with the initial start-up in accordance with the following table:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Ensure that the photometer is correctly mounted and connected.	Section 4 and Section 5
2.	Establish the service voltage.	
3.	Connect the OilGuard PR 30 to the PC as follows: 3.1: Remove the cover on the OilGuard PR 30.	
	3.2: Connect the USB cable to the OilGuard (arrow) and connect to the PC. The OilGuard PR 30 is automatically detected as a removable disk (Windows operating system).	
	3.3: Depending on the Windows configuration, either a window for the removable disk is opened automatically or Windows Explorer must be started and the removable disk opened manually. The following files are shown: **Info.txt**: Information on the OilGuard PR 30, such as serial number, software version and operating hours. **Config.txt**: Configuration file. **Zero.txt**: File used for initiating zero calibration.	
4.	Carry out configuration as follows: 4.1: Open the **Config.txt** file.	

	WORKSTEP	ADDITIONAL INFO / IMAGES
	4.2: Change the parameters as required. To do this, enter a number after "**=**" and confirm with the Enter button (e.g. 0 for German or 1 for English).	**Language:** 0: German, 1: English Setting the operating language **Current from:** 0.000 Setting the lower value of the current range **Current to:** 1000 Setting the upper value of the current range **Limits, Mode:** 0: Inactive, 1: Exceeded, 2: Undershot. Default = 0 **Limits, Upper limit:** 1.000. Enter the limit with the upper threshold value. **Limits, Lower limit:** 0.900. Enter the limit with the lower threshold value. **Integration:** Integration time of the measuring value from 0 .. 255 seconds. Default = 5 s **Output 1, Invert:** 0: No, 1: Yes Invert: Inverts output 1 (alarm) **Output 2, Invert:** 0: No, 1: Yes Invert: Inverts output 2 (limit) **Factory set.:** 0: No, 1: Yes **Yes** loads the factory setting.
	4.3: Close the file after making your entries. Changes are saved automatically. The window of the removable disk closes and then reopens after a short time.	
	4.4: If configuration was successful, an additional file **Config.OK** appears. If configuration was unsuccessful, an additional file **Config.ERR** appears. The configuration can fail if values outside the permitted range are entered or if text fields have been deleted or changed. In the event of an incorrect configuration, the **Config.txt** file is regenerated automatically and the procedure can be repeated.	
5.	Carry out zero calibration on the AquaScat according to Section 9.6.4.	
6.	Remove the USB connector, replace the desiccant according to Section 9.2and reattach the cover.	If faults occur, please refer to the Reference Manual.

7 Operation

7.1 Operation basics

In this document we describe the practical examples only for the first steps of the menu configuration. All other setting options are described in the Reference Handbook. Operation using the web user interface is described in detail in the Reference Manual.

The instrument has a touchscreen. It is operated by touching with your finger. The navigation elements change color when touched.

CAUTION!

Sensitive touchscreen.

The touch screen can be damaged through improper handling. Damage can be avoided with the following measures:

- Touch the touchscreen only with your fingers and not with sharp objects.
- Use only slight pressure to perform manipulations on the touchscreen.
- Do not use chemicals or solvents to clean the touchscreen.

Not all menus are available when using the SICON-C.

7.2 LED display in the Conn-R junction box

The Conn-R junction box has a red LED display in order to indicate the most important events during measuring operation without SICON-C.

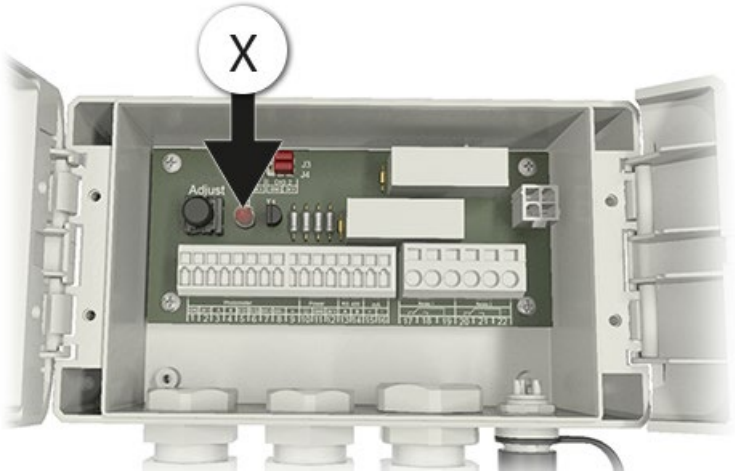
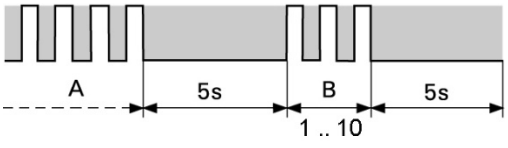


Figure 21: Position of the LED display

The events are indicated on the LED (X) according to the following table:

LED status on the photometer	**Meaning**	**Measure**
LED permanently off	Instrument is switched off or defective.	Switch on the instrument.
LED flashes every 15 seconds	The instrument is in measuring operation without faults.	
LED flashes twice every 15 seconds	The instrument is in measuring operation without faults. The WLAN access point is active.	
LED switches on and off in one-second intervals	Checking unit recording is running.	A: Adjustment flashes in one-second intervals (max. 35 seconds) B: Flash code key: Flashes once = clean Flashes ten times = heavy soiling, adjustment no longer possible 

7.3 Control elements in measuring operation

Figure 22: Control elements in measuring operation

①	**Menu** button Calls up the menu structure. Section 7.4	②	**Valu** button Numerical representation of the measuring values. Section 7.5
③	**Info** button Displays the information screen. Section 7.6	④	**Diag** button Graphical representation of the measuring values. Section 7.7
⑤	**Up arrow** Goes to the previous page.	⑥	**Down arrow** Goes to the next page.

7.4 Menu button

Pressing the **Menu** button and entering the access code takes you to the menu structure. Now the instrument is in service operation. Operator prompting in service operation is described in Section 7.12.

7.5 Valu button

Pressing the **Valu** button displays the measuring values in numerical form. This is described in detail in Section 7.9.

7.6 Info button

When you press the **Info** button, a general overview of the instrument settings appears. These are described below:

7.6.1 Page 1, Info button

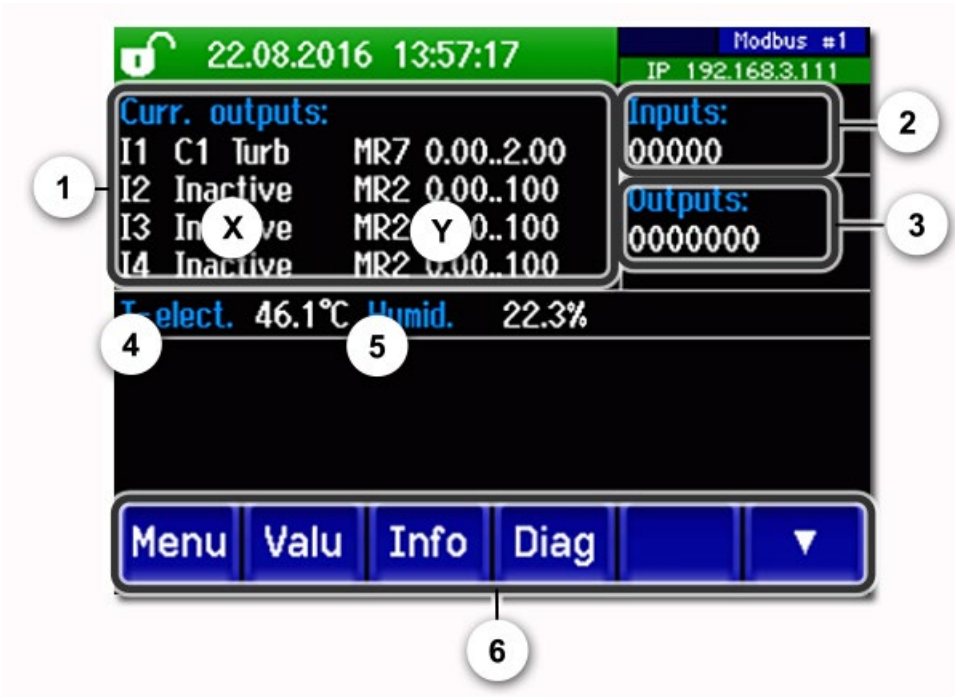


Figure 23: Info screen, page 1

①	Information about the available current outputs X: Source of the current output Y: Measuring range of the current output	②	Status of the inputs → Reference Manual
③	Status of the outputs → Reference Manual	④	Temperature of the electronics
⑤	Humidity inside the housing	⑥	Main menu buttons

7.6.2 Page 2, Info button

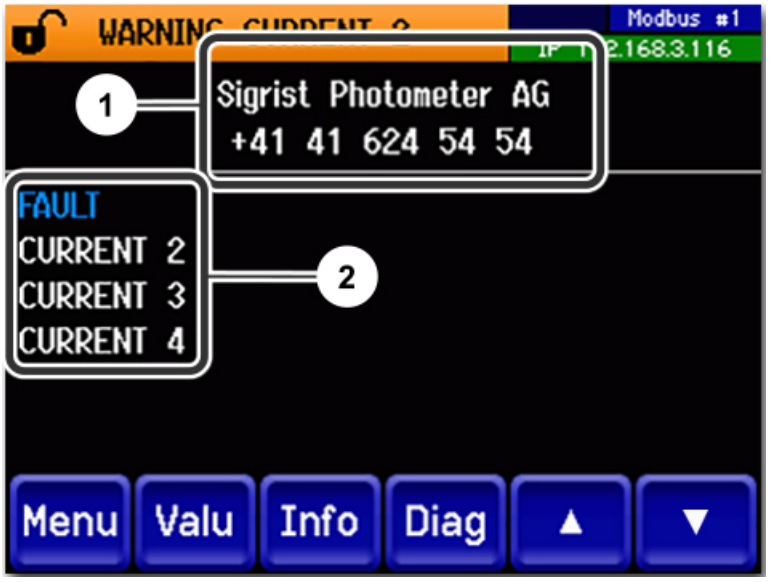


Figure 24: Info screen, page 2

①	Contact information	②	Display of up to 5 pending fault messages

7.7 Diag button (with SICON (M) only)

When you press the **Diag** button, a diagram appears which graphically shows the measuring values over a certain period of time.

Figure 25: Graphic representation of the measuring values

①	Graphic representation of the measuring values The measuring values can be recorded from 3 minutes to 32 days and are graphically represented. The color of the measuring value curves corresponds to the measuring channels on the right side of the display (position 3).	②	Main menu button The logger functions (**Log**) are described in Section 7.8.
③	Measuring channels: Numerical representation of the set measuring channels. ▪ Current measured value (e.g. 0.309 FNU). ▪ Measuring channel with name (e.g. Turb). ▪ Scaling of the Y-axis (e.g. 0.000 to 10.00).		

7.8 Functions of the log screen (with SICON (M) only)

The screen logger works independently of the data logger, which is set in the **Logger** menu and writes to the microSD card.

The screen logger records the data of the last 32 days in one-minute intervals. The data can be called up from the Log menu.
If the instrument is out of operation for more than 32 days, the logger data is restarted. An hourglass is shown for about 1.5 minutes in the graphic display. During this time no logger data is available.

The **Log** button is found only in the main menu in the graphic screen; in the **Valu** screen, the **Diag** button has to be pressed first. When the **Log** button is pressed, the following screen appears:

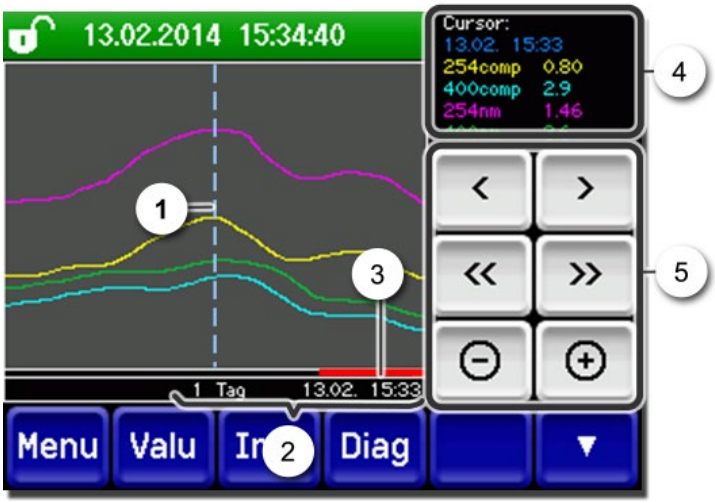


Figure 26: Functions of the Log display

①	The cursor shows the time position which is represented at pos. 4. The cursor position can be changed either by briefly touching with your fingertip or by pressing the </> buttons.	②	Represented time period The following time ranges can be set: 3 min./15 min./1 hour/3 hours/9 hours/1 day/3 days/10 days/32 days
③	The red bar indicates how much of the total time period is currently represented.	④	Measuring value which was measured at the cursor position.
⑤	**</>**: Moves the cursor position. The cursor moves faster when these buttons are held down longer. **<</>>**: Jumps forward or backward by the time period set in point 2. **-/+**: Increases (+) or decreases (-) the screen section around the cursor position.		

In the **Display/General** menu, you can define whether minimum, maximum or mean values are to be displayed. → Reference Manual
Pressing the **Diag** button takes you to the graphical representation.

7.9 Displays in measuring operation

Figure 27: Displays in measuring operation

①	Measuring value(s) For values which are greater than the maximum measuring range, no measuring value is displayed; instead, **** is displayed.	②	Status line In measuring operation, the status line is green and shows the date and time. If faults should occur, warning and fault messages are shown here and the status line changes to orange or red.
③	Interface information ▪ Top left: Logger status ▪ Top right: Modbus, HART, Profinet or Profibus status ▪ Below: Ethernet IP status The following messages are possible: - IP not connected (cable not connected) - IP DHCP running… - IP 169.254.1.1 (example address) Color coding:	④	Channel name with unit The channel names shown in the figure are examples and can be adjusted individually.

Black	Not active / not present
Blue	Activated, in quiescent mode
Green	Active
Red	Fault

7.10 Lock / unlock the touch screen

	MANIPULATION	
1.	Press the lock icon top left.	
2.	Within one second press the key bottom at the outside right. Depending on the initial state, the lock icon changes as follows:  Touch screen unlocked  Touch screen locked	

7.11 Switching to service mode

The system is configured in service operation. The measuring procedure is interrupted and the main menus appear on the display. Service operation is accessed as follows:

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	The main menus appear.	The instrument is now in service operation.

The following applies in service operation:

- * The measuring values remain on the last values on the digital interfaces.
- * Depending on the configuration, the current outputs go to 0/4 mA or remain on the last measuring values.
- The limits are deactivated.
- If an output for service is programmed, it is activated.
- Fault messages are suppressed.

* This does not apply when the **Current outputs\General\For service** parameter is set to **Measure**.

For measuring operation, press the **Meas** button. When switching from service operation to measuring operation, an hourglass appears in the information bar for about 10 seconds. The measuring values are frozen during this time.

7.12 Control components in service mode

7.12.1 Input elements in service mode

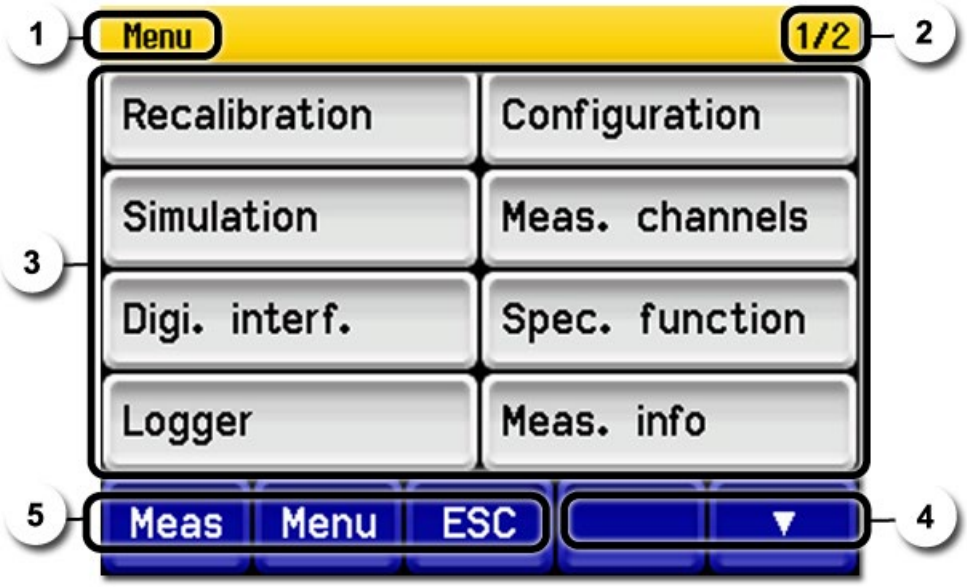


Figure 28: Input elements in service mode

①	Path specification	②	Page number / total number of pages
③	Main menus Instrument-specific menus of the photometer.	④	Next page
⑤	**Meas** button: The instrument changes to measuring operation. **Menu** button: The display goes back to mean menus and remains in service mode. **ESC** button: The display goes back one level in the menu hierarchy until the measuring mode finally is reached.		

7.12.2 Numerical entry

The following screen is for entering numbers and data:

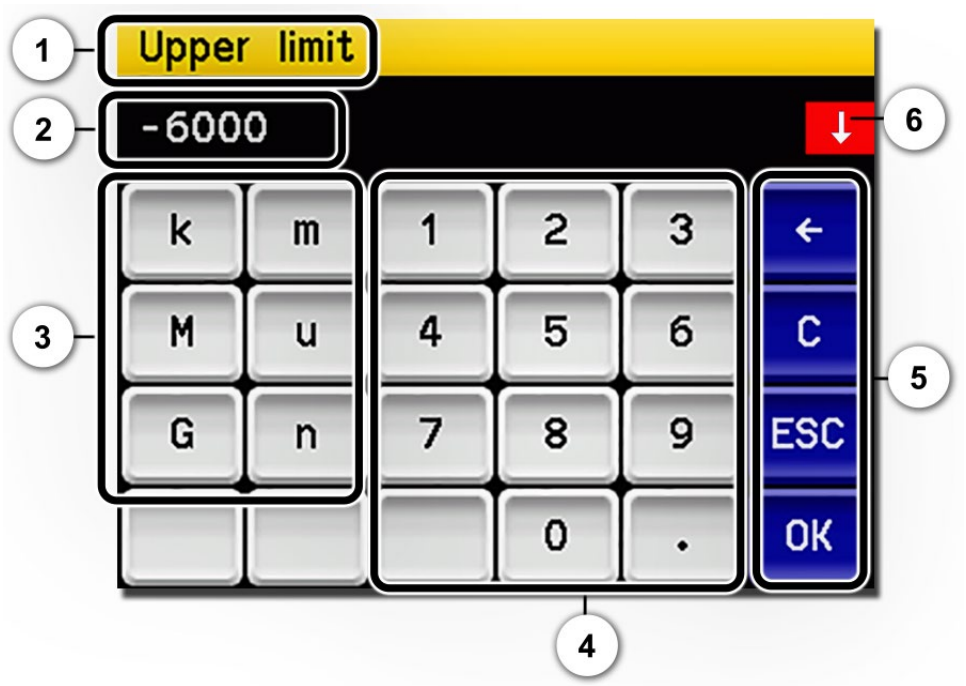


Figure 29: Numerical entry

①	Parameter name	②	Entered values
③	Prefix: For entering very large or very small values. This can be done as follows: 1. Enter value 2. Select SI prefix Function: **n** = 10^{-9}, **u** = 10^{-6}, **m** = 10^{-3}, **k** = 10^{3}, **M** = 10^{6}, **G** = 10^{9}	④	Numerical entry
⑤	**←:** Deletes one digit of the displayed value. **C:** Clears the displayed value. **ESC:** Touching the **ESC** field causes the display to go back one level in the menu hierarchy. The entered value is not saved. **OK:** Confirm entered value.	⑥	If the value entry is too high or too low, a white arrow appears in a red field top right. Arrow points upward: Entry too high Arrow points downward: Entry too low

7.12.3 Single selection of functions

The single selection is identifiable by the **ESC** button below right.

The currently selected function is green. Use the Up/Down arrows to navigate the options in long lists. Use the **ESC** button to cancel the entry.
Pressing a selection item saves the configuration and completes the entry.

Figure 30: Example of single selection

7.12.4 Multiple selection of functions

The multiple selection is identifiable by the **OK** button bottom right:

The currently selected values are green. Use the Up/Down arrows to navigate the options in long lists. Pressing a selection item changes the active status of the corresponding item. Press the **OK** button to save the configuration and complete the entry.

Figure 31: Example of multiple selection

8 Settings

8.1 Setting the operating language

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Configuration** button to access language selection.	If the desired menu does not appear, press the arrow bottom right.
4.	Press language field (circle). The list of all languages appears (factory setting is English).	
5.	Apply the desired language by pressing the corresponding field, or press the **ESC** button to cancel.	
6.	Press the **Meas** button.	The instrument is in measuring operation again.

8.2 Setting the current outputs

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Curr. outputs** button.	If the desired menu does not appear, press the arrow at the bottom right.
4.	Select between **C1 .. n**.	
5.	Select the **Source**.	
6.	Select the **Range**.	MR1 .. MR8 In 1, In 2, Auto 1, Auto 2 → Reference Manual
7.	Press the **Meas** button.	The instrument is in measuring operation again.

The measuring ranges can be reprogrammed (→ Reference Manual). The current settings can be found in the parameter list.

8.3 Setting the limits

The limits have to be configured accordingly so that they are not only displayed, but that the outputs are also switched. Section 8.4

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Limits** button.	If the desired menu does not appear, press the arrow at the bottom right.
4.	Select between **L1 .. n**.	
5.	Define the **Source**.	The following selection is available (when present): ▪ **Turb** ▪ **Humidity**
6.	Define the **Mode**.	The following selection is available: ▪ **Inactive** (limit monitoring of this channel is deactivated). ▪ **Exceeded** (limit active when the set threshold value is exceeded). ▪ **Undershot.** (limit active when the set threshold value is undershot).
7.	Define the upper limit, lower limit, cut-in delay and cut-out delay with the number pad.	Pressing the current number value takes you to the entry mode.
8.	Press the **Meas** button.	The instrument is in measuring operation again.

8.3.1 Upper and lower threshold value of a limit

A maximum of eight limits with upper and lower threshold values can be programmed.

If the operating mode is set to **Exceeded**, then while the upper threshold value is exceeded the limit is active and remains active until the lower threshold value is again undershot.

If the operating mode is set to **Undershot**, then while the lower threshold value is undershot the limit is active and remains active until the upper threshold value is again exceeded.

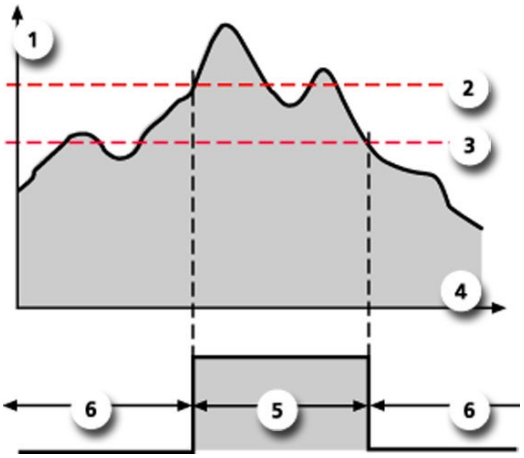


Figure 32: Diagram of limit exceeded

①	Measuring value	②	Upper threshold value
③	Lower threshold value	④	Time
⑤	Limit active	⑥	Limit passive

8.3.2 Reading if limit exceeded or undershot

If a limit event occurs during operation, it has the following effects on measuring operation:

- Threshold value display indicates an unusual state.
- If an output for the corresponding limit channel is programmed, it is switched.

If the message **Limit** appears, the color of the status display changes to **white** and the numbers of the limit channels are listed with their channel numbers in **red** if limits have been exceeded or undershot.
Inactive limits are indicated with "_".

8.4 Setting the outputs

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Inp./outputs** button.	If the desired menu does not appear, press the arrow at the bottom right.
4.	Press the **Outputs** button.	
5.	Select **O1 Inactive .. On Inactive** Output.	
6.	Activate the outputs (multiple selection possible).	Activated outputs are highlighted green. ▪ Invert: Inverts the outputs. ▪ Prio fault ▪ Fault ▪ Warning ▪ Service ▪ Adjustment ▪ Humidity ▪ Cleaning ▪ Limit 1 .. n The other bons named **MR-Out…** are for automatic measuring range switching → Reference Manual.
7.	Press the **Meas** button.	The instrument is back in measuring operation.

8.5 Setting the Profibus DP parameters

This setting only has to be carried out if the optional Profibus module is used.

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Digi. interf.** button.	
4.	Press the **Profibus DP** button.	
5.	In the **Control** menu, select either **Local** or **External**.	▪ **Local:** Values can only be read via Profibus. ▪ **External:** Values can be read and written via Profibus.
6.	Enter the desired number under **Slave no.**.	Values between 1 and 240 are possible.
7.	Press the **Meas** button.	The instrument is in measuring operation again.
8.	To activate the parameters, the instrument must be switched off and then switched on again.	

8.6 Setting the Profinet IO parameters

This setting only has to be carried out if the optional Profinet IO module is used.

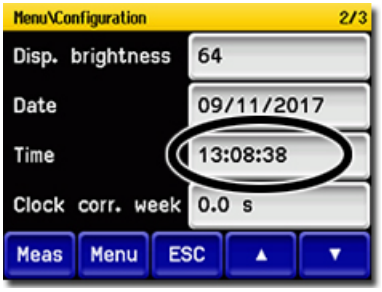
	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Digi.interf.** button.	
4.	Press the **Profinet IO** button.	
5.	In the **Control** menu, select either **Local** or **External**.	▪ **Local:** Values can only be read via Profinet. ▪ **External:** Values can be read and written via Profinet.
6.	If the station name has been changed since starting the program, this can be updated by pressing the **Station name load…** button.	Loading the station name results in a brief interruption in communication.
7.	Press the **Meas** button.	The instrument is in measuring operation again.
8.	To activate the parameters, the instrument must be switched off and then switched on again.	

8.7 Setting the Modbus RTU parameters

This setting only has to be carried out if the optional Modbus module is used.

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Digi. interf.** button.	
4.	Press the **Modbus** button.	
5.	Enter the desired number under **Slave no.**.	Values between 1 and 240 are possible.
6.	Select the **Baudrate** menu.	Values between 4800 and 230400 baud are possible.
7.	Select the **Parity** menu.	The settings **None**, **Even** and **Odd** are possible.
8.	Select the **Stopbit** menu.	1 or 2 Stopbit are possible.
9.	Press the **Meas** button. The parameters are activated.	The instrument is in measuring operation again.

8.8 Setting the date and time

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Configuration** button.	If the desired menu does not appear, press the arrow bottom right.
4.	To enter the time, press the currently displayed time at the **Time** menu item and enter the new time with the number pad. Confirm entry with **OK**.	The time must be entered in the format **hh:mm:ss**. 
5.	To enter the date, press the currently displayed date at the **Date** menu item and enter the new date with the number pad. Confirm entry with **OK**.	The date must be entered in the format selected under the **Date format** menu item. 
6.	Press the **Meas** button.	The instrument is in measuring operation again.

8.9 Setting or changing the access code

You can protect the settings of the instrument against unauthorized manipulations by defining your own access code.

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **Configuration** button.	If the desired menu does not appear, press the arrow bottom right.
4.	Press the button to the right of the **Access code** description text.	
5.	Enter the access code and confirm with **OK**.	
6.	Press the **Meas** button.	The instrument is in measuring operation again.

A forgotten access code can be cleared only by a SIGRIST service engineer.

Enter your personal access code here:

8.10 Backup configured data

These measures can be of use to the service engineers for service purposes.

	MANIPULATION	ADDITIONAL INFO / IMAGES
1.	Press the **Menu** button.	
2.	Set the access code and confirm with **OK**.	Factory setting is **0**.
3.	Press the **System info.** button.	If the desired menu does not appear, press the arrow bottom right.
4.	In the **User -> SD** and **Expert -> SD** sub-menus press the **Copy** function.	The user and expert data are copied to the microSD card. After a successfully completed procedure, acknowledge with the **OK** button.
5.	Press the **Meas** button.	The instrument is in measuring operation again.

9 Servicing

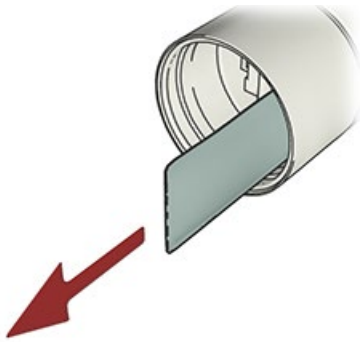
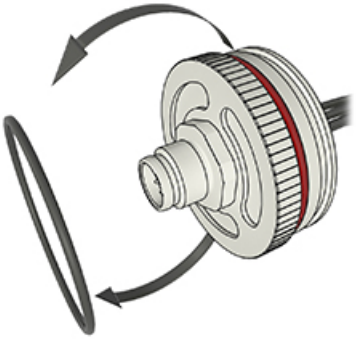
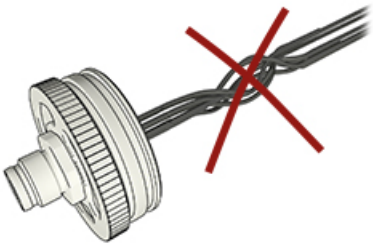
9.1 Servicing schedule

WHEN	WHO	WHAT	PURPOSE
Annually or in the event of a warning	Operator	Replace the desiccant and gaskets Section 9.2 / Section 9.3	Obligatory measure for maintaining measuring accuracy.
As needed	Operator	Clean the OilGuard PR 30 Section 9.4	Obligatory measure for maintaining measuring accuracy. Interval dependent on measuring medium.
Every 3 months or more often (as needed)	Operator	Recalibrate the OilGuard PR 30 Section 9.6	Measure for maintaining measuring accuracy. Interval dependent on measurement surroundings.
Every 3 years or as needed	Technician	Replace the UV-light source	Obligatory measure for maintaining functional efficiency.
Every 10 years or as needed	Operator	Replace the battery in the SICON Section 9.7	Obligatory measure for maintaining functional efficiency.

Table 1: Servicing schedule

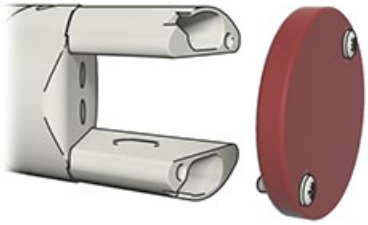
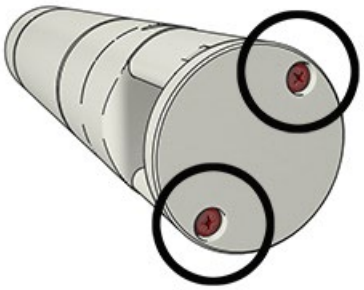
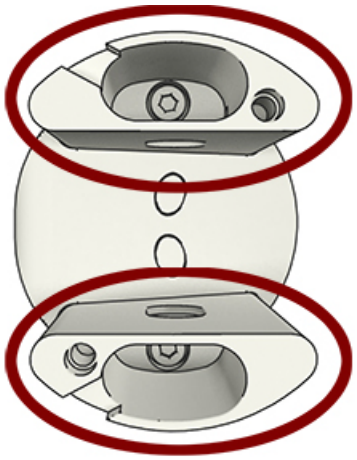
9.2 Replacing the desiccant and gasket on the OilGuard PR 30

The following procedure describes how the desiccant is changed in the OilGuard PR 30:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Interrupt the service voltage to the OilGuard PR 30.	
2.	Unscrew the cover on the OilGuard PR 30. ℹ The cable connection between the cover and instrument remains in place.	
3.	Replace the old desiccant bag with a new one.	
4.	Replace the 35 x 1.5 gasket on the cover. ⚠ In order for the cable between the cover and instrument to remain connected, the gasket should be removed and attached from the outside.	
5.	Screw the cover back onto the OilGuard PR 30. ⚠ In doing so, ensure that the cables are not twisted before screwing the cover into place.	

9.3 Cleaning the OilGuard PR 30

The following procedure describes how to clean the measuring cell and how to check the condition of the OilGuard PR 30:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Stop the sample flow and remove the OilGuard PR 30 from the line according to Section 4. **⚠ It is dangerous to remove the photometer without first emptying the sample pipe:** The instrument must not be removed from an unemptied or partly emptied pipe since this can allow the sample medium to flood out, causing material damage or personal injury as a result.	ℹ If aextractable assembly is used, the sample flow must not be interrupted. **⚠ Danger due to UV radiation.** Use UV goggles and gloves.
2.	Loosen the two screws (circles) and remove the cover from the sensor head. 	
3.	Rinse out the absorber (circles).	

	WORKSTEP	ADDITIONAL INFO / IMAGES
4.	Place the cover back onto the sensor head and fasten in place with the two screws.	⚠ Tighten the screws carefully as plastic threads are used.
5.	Clean the sapphire windows and the surface where they are located with alcohol.	
6.	Carry out recalibration according to Section 9.6.	
7.	Install the instrument according to Section 4 and put it back into operation.	

9.4 Removing and reinserted the OilGuard PR 30 from the extractable assembly

DANGER!

Manipulations on pressurized pipes.

Improper manipulations on a pressurized pipe can lead to the sample escaping under pressure, resulting in injuries, damage to the instrument and material damage on site.

- When making manipulations on the extractable assembly, it is absolutely essential that the following steps are carried out in order.

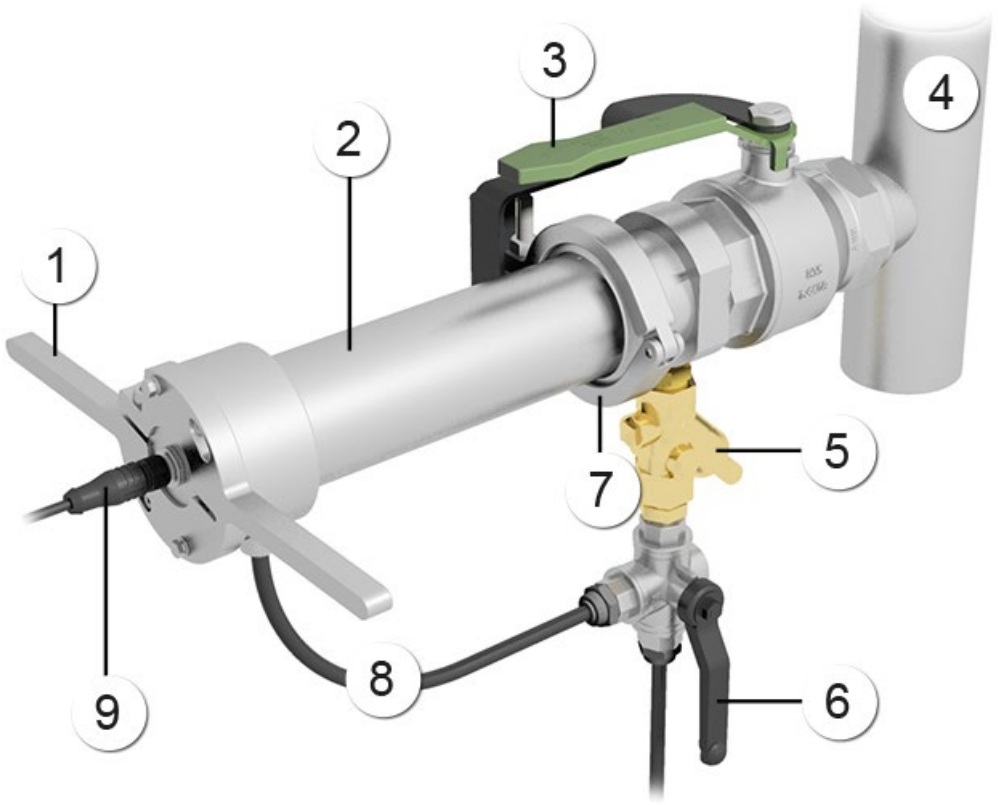
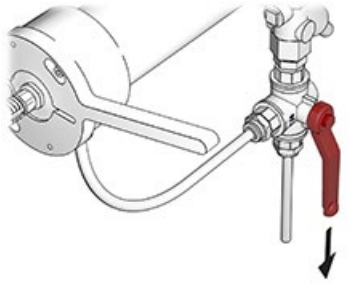
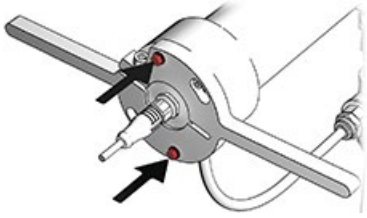
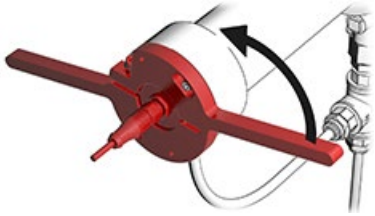
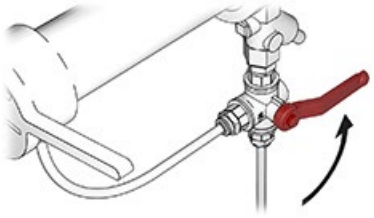
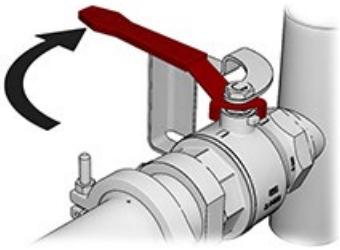
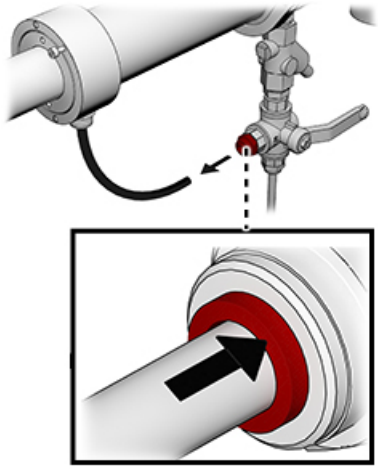
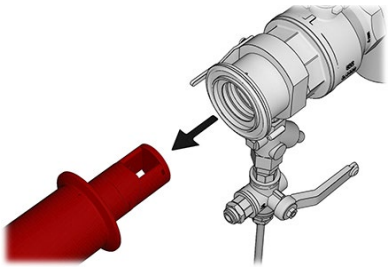
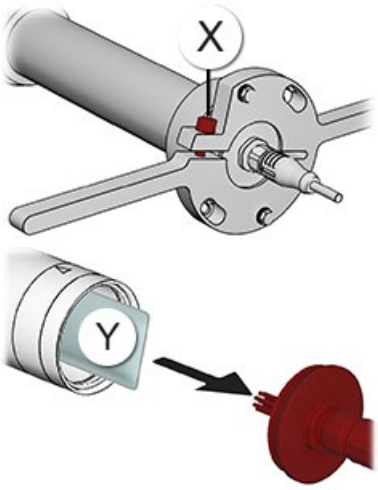


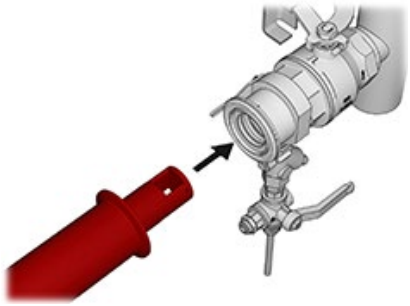
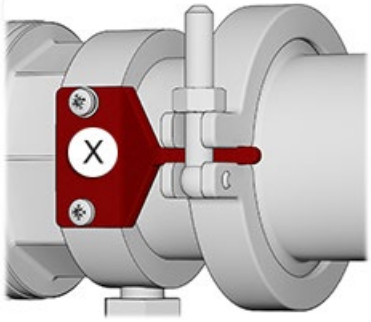
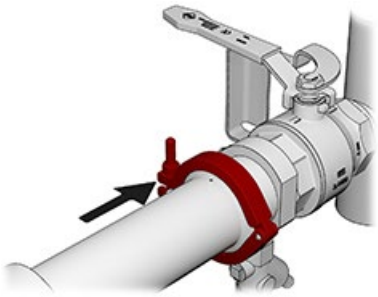
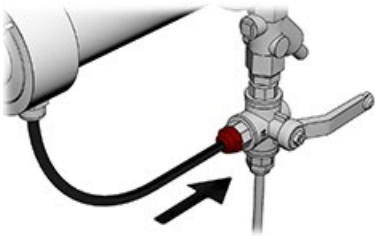
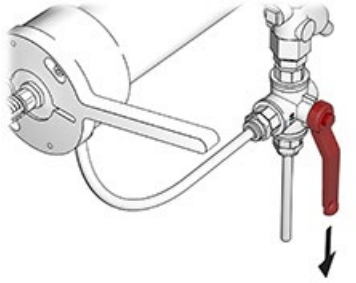
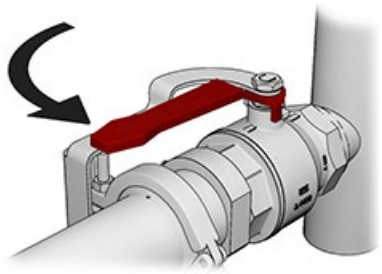
Figure 33: Overview of a measuring point with extractable assembly

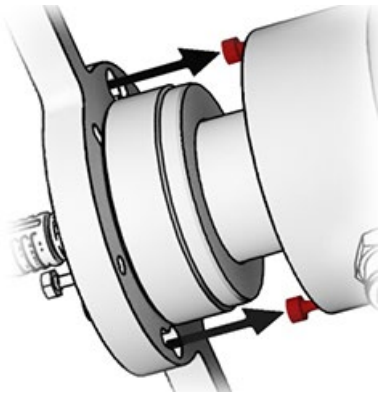
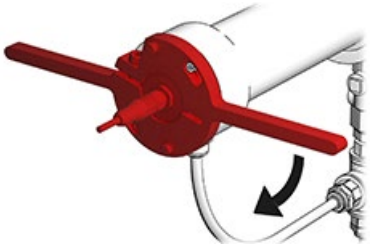
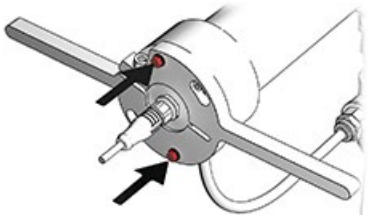
①	Handle	②	Protective pipe
③	Shut-off valve	④	Sample line
⑤	Backflow preventer	⑥	Changeover valve
⑦	Tri-Clamp	⑧	Junction hose (hose for pressure compensation)
⑨	Plug for OilGuard PR 30		

The OilGuard PR 30 can be removed from the extractable assembly and reinserted as follows:

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Ensure that the handle of the changeover valve (Figure 33, pos. 6) is pointing downwards.	
2.	Loosen the two hex bolts (arrows).	
3.	Rotate the handle (Figure 33, pos. 1) counter-clockwise up to the stop (arrow).	
4.	⚠ **Danger due to extending pistons.** Do not stand in front of the extractable assembly. Otherwise, injuries can occur. Stand to the right of the extractable assembly and rotate the changeover valve (Figure 33, pos. 6) counter-clockwise so it points to the right (arrow).	
5.	The OilGuard PR 30 moves out automatically into the servicing position. ℹ If this is not the case, pull the probe out by hand using the handle.	
6.	Close the shut-off valve (Figure 33, pos. 3) (arrow).	

	WORKSTEP	ADDITIONAL INFO / IMAGES
7.	Remove the junction hose (Figure 33, pos. 8) from the coupling on the changeover valve. The junction hose can be removed by applying pressure to the sleeve (arrow) on the hose coupling.	
8.	Loosen the Tri-Clamp (Figure 33, pos. 7) and pull out the probe (arrow).	
9.	Carry out the servicing duties on the OilGuard PR 30. Clean the OilGuard PR 30 according to the Instruction Manual or carry out a recalibration.	
	Proceed as follows to replace the desiccant: 1. Note down which marking (I, II, III) on the handle is aligned to the marking on the probe (blue arrow). 2. Remove the handle by loosening the screw (X). 3. Pull out the cover and replace the desiccant (Y) (bottom figure). 4. Reattach the cover immediately. 5. Align the marking I, II or III to the blue arrow on the probe according to your notes, then tighten the screw (X).	

	WORKSTEP	ADDITIONAL INFO / IMAGES
10.	Reinsert the OilGuard PR 30 into the extractable assembly, paying attention to the alignment of the probe to the flow direction (marking).	
11.	Fasten the Tri-Clamp (Figure 33, pos. 7) (arrow). The Tri-Clamp must be aligned to the positioning plate (X). 	
12.	Insert the junction hose (Figure 33, pos. 8) into the coupling (arrow).	
13.	Rotate the changeover valve (Figure 33, pos. 6) so it points downwards (arrow).	
14.	Open the shut-off valve (Figure 33, pos. 3) (arrow).	

	WORKSTEP	ADDITIONAL INFO / IMAGES
15.	Push the OilGuard PR 30 into the measuring position using the handle (Figure 33, pos. 1) up to the stop. The bores in the handle must be aligned to the screws (arrows).	
16.	Rotate the handle (Figure 33, pos. 1) clock-wise up to the stop (arrow).	
17.	Tighten the two hex bolts.	

9.5 Carrying out recalibration

9.5.1 Overview of recalibration

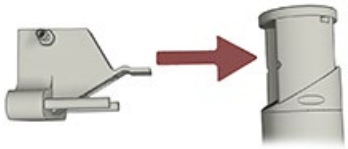
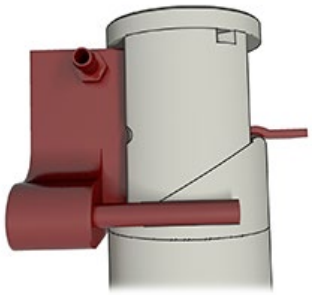
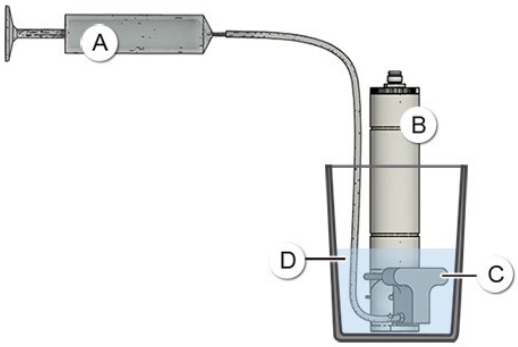
The following components are required for recalibration:

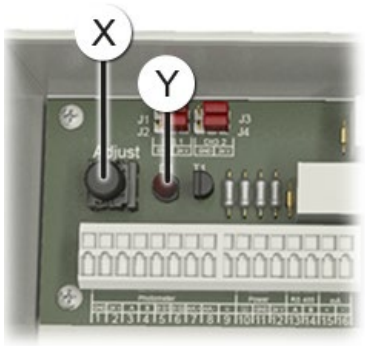
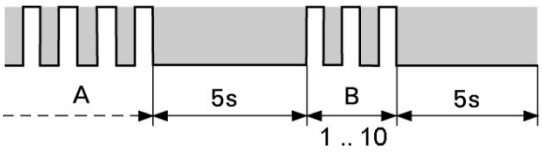
Figure 34: Components used for recalibration

①	OilGuard PR 30 probe	②	Checking unit
③	Vessel with potable water	④	Syringe with hose

9.5.2 Carrying out recalibration with the Conn-R junction box

Recalibrating the photometer can result in deviations from the previous measuring value as the instrument is newly reset to a reference value.

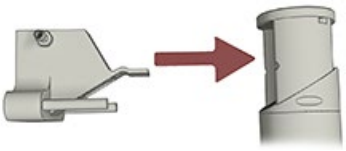
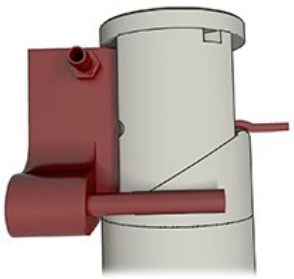
	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Stop the sample flow and remove the photometer from the line according to Section 4. **⚠ Danger when removing the photometer without emptying the medium line beforehand.** The photometer may only be removed from a line that is completely empty. Otherwise, this may lead to flooding and material damage or injuries.	If a retractable assembly is used, the sample flow must not be interrupted.
2.	Clean the photometer according to Section 9.4.	
3.	Check whether the checking unit is clean.	
4.	Insert the checking unit into the sensor head until it snaps into place. 	
5.	Place this unit vertically in a vessel filled with water. 	A: Syringe with hose B: OilGuard PR 30 C: Checking unit D: Vessel filled with clean water
6.	Slowly draw out the syringe (A) until water is drawn in and no more bubbles are visible (figure under step 5). The checking unit must be covered by at least one finger width of water. Wait for 10min (checking unit and probe must have the same temperature).	If the measured value differs from the value indicated on the control unit, it is possible that there is still air in the control unit. In this case, remount the control unit reassemble the control unit and bleed with the syringe again.

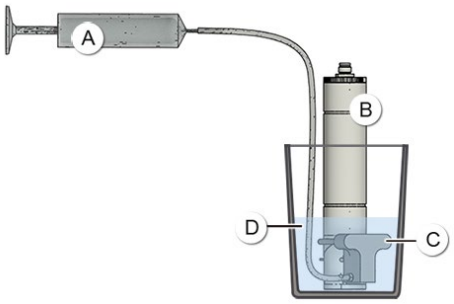
	WORKSTEP	ADDITIONAL INFO / IMAGES
7.	Open the Conn-R junction box according to Section 5.2.1.	
8.	Press the button (X) to start the recalibration. The LED (Y) starts flashing in one-second intervals and the adjustment is carried out.	
9.	**After the adjustment is successful:** The current soiling level is indicated by a flash code on the LED: 1. The LED goes out for five seconds. 2. The flash code indicates the current soiling level. 3. A second phase where the LED goes out for five seconds indicates that the code is finished.  If the LED flashes more than five times, then the soiling level is too high. The OilGuard PR 30 must be cleaned according to the servicing schedule.	A: Adjustment flashes in one-second intervals (max. 35 seconds) B: Flash code key: Flashes once = clean Flashes ten times = heavy soiling, adjustment no longer possible
	Recalibration not successful (flash code 10): The LED flashes again in four-second intervals. In this case, check the points in the following list one after the other: ▪ Cleanliness of the checking unit? ▪ Correct checking unit used? ▪ Soiled sapphire windows in the instrument? In this case, clean the windows as described in Section 9.4and then repeat the procedure. ▪ Clean potable water used? ▪ Is the checking unit correctly locked in place (see step 4)? ▪ Is there still free space between the checking unit and the sapphire window?	

	WORKSTEP	ADDITIONAL INFO / IMAGES
10.	Remove the checking unit from the photometer and dry it. In doing so, ensure that the surface of the glass body is dry.	
11.	Install the instrument according to Section 4 and put it back into operation.	

9.5.3 Recalibration with SICON

Recalibrating the photometer can result in deviations from the previous measuring value as the instrument is newly reset to a reference value.

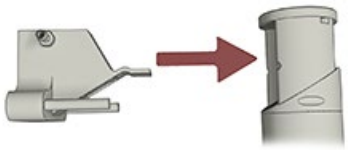
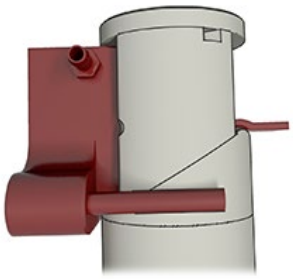
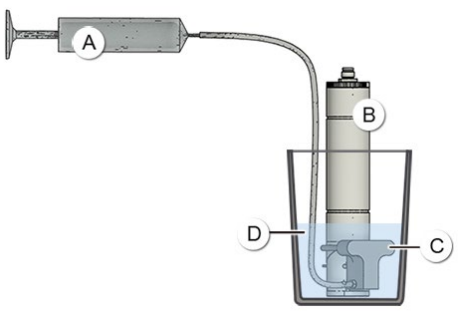
	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Stop the sample flow and remove the photometer from the line according to Section 4. **⚠ Danger when removing the photometer without emptying the medium line beforehand.** The photometer may only be removed from a line that is completely empty. Otherwise, this may lead to flooding and material damage or injuries.	If a retractable assembly is used, the sample flow must not be interrupted.
2.	Clean the photometer according to Section 9.4.	
3.	Check whether the checking unit is clean.	
4.	Insert the checking unit into the sensor head until it snaps into place. 	

	WORKSTEP	ADDITIONAL INFO / IMAGES
5.	Place this unit vertically in a vessel filled with water.  	A: Syringe with hose B: OilGuard PR 30 C: Checking unit D: Vessel filled with clean water
6.	Slowly draw out the syringe (A) until water is drawn in and no more bubbles are visible (figure under step 5). The checking unit must be covered by at least one finger width of water. Wait for 10min (checking unit and probe must have the same temperature).	If the measured value differs from the value indicated on the control unit, it is possible that there is still air in the control unit. In this case, remount the control unit reassemble the control unit and bleed with the syringe again.
7.	Carry out recalibration with SICON (M): 1. Switch the SICON to service operation as described in Section 7.11. 2. Select the **Recalibration** menu and then press **C1**. Check whether the nominal value is correct. 3. Press the **initiate...** button. 4. Recalibration is carried out.	
8.	**Adjustment successful:** If the adjustment was successful, this is confirmed with **Adjustment OK**. Recalibration is now complete.	
	Adjustment not successful: If the adjustment was **not successful**, this is indicated with **Adjust. fault**. In this case, check the points in the following list one after the other: ▪ Cleanliness of the checking unit? ▪ Correct checking unit used? ▪ Soiled sapphire windows in the instrument? In this case, clean the windows as described in Section 9.4and then repeat the procedure. ▪ Clean potable water used? ▪ Is the checking unit correctly locked in place (see step 4)? ▪ Is there still free space between the checking unit and the sapphire window?	

	WORKSTEP	ADDITIONAL INFO / IMAGES
9.	Remove the checking unit from the photometer and dry it. In doing so, ensure that the surface of the glass body is dry.	
10.	Install the instrument according to Section 4 and put it back into operation.	

9.5.4 Recalibration without SICON

Recalibrating the photometer can result in deviations from the previous measuring value as the instrument is newly reset to a reference value.

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Stop the sample flow and remove the photometer from the line according to Section 4. **⚠ Danger when removing the photometer without emptying the medium line beforehand.** The photometer may only be removed from a line that is completely empty. Otherwise, this may lead to flooding and material damage or injuries.	If a retractable assembly is used, the sample flow must not be interrupted.
2.	Clean the photometer according to Section 9.4.	
3.	Check whether the checking unit is clean.	
4.	Insert the checking unit into the sensor head until it snaps into place. 	
5.	Place this unit vertically in a vessel filled with water. 	A: Syringe with hose B: OilGuard PR 30 C: Checking unit D: Vessel filled with clean water

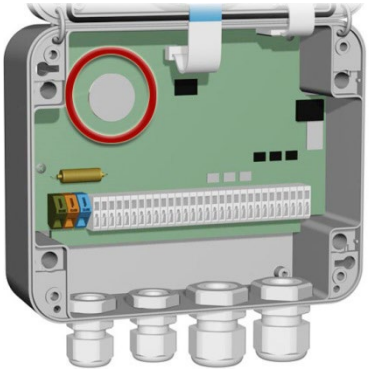
	WORKSTEP	ADDITIONAL INFO / IMAGES
6.	Slowly draw out the syringe (A) until water is drawn in and no more bubbles are visible (figure under step 5). The checking unit must be covered by at least one finger width of water. Wait for 10min (checking unit and probe must have the same temperature).	If the measured value differs from the value indicated on the control unit, it is possible that there is still air in the control unit. In this case, remount the control unit reassemble the control unit and bleed with the syringe again.
7.	Carry out zero calibration: 1. Connect the photometer to the PC according to Section 6.3. 2. Open the **Zero.txt** file. Enter "1" after the "**=**" symbol. (0 for **Adjustment no** or 1 for **Adjustment yes)** 3. Close the file after making your entry. Changes are saved automatically. 4. The window of the removable disk closes, recalibration is made and the window then reopens after a short time.	
	If calibration was successful, an additional file **Zero.OK** appears. If configuration was unsuccessful, an additional file **Zero.ERR** appears after a few seconds. In this case, repeat the calibration and check the points in the following list one after the other: ▪ Cleanliness of the checking unit? ▪ Correct checking unit used? ▪ Soiled sapphire windows in the instrument? In this case, clean the windows and then repeat the procedure. ▪ Clean potable water used? ▪ Is the checking unit correctly locked in place (see step 4)? ▪ Is there still free space between the checking unit and the sapphire window? If the check could not be successfully completed, contact your country representative (Section 11).	
8.	Remove the checking unit from the photometer and dry it. In doing so, ensure that the surface of the glass body is dry.	
9.	Install the instrument according to Section 4 and put it back into operation.	

9.6 Changing the battery in the SICON

DANGER!

Life-threatening voltage inside the instrument.

Connecting electrical lines can be extremely dangerous. Instrument parts may also be damaged. Local regulations for electrical installations must be observed at all times.

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Interrupt the service voltage to the SICON.	
2.	Open the control unit according to Section 5.3.1.	
3.	Remove the battery (circle).	
4.	Insert the new battery.	
5.	Close the control unit.	
6.	Re-establish the service voltage.	
7.	Set date and time.	

10 Troubleshooting

10.1 Pinpointing malfunctions

DETECTABLE MALFUNCTION	ACTION
No reading	▪ Check whether the supply voltage is present.
Error message in the display	▪ Analyze the error message. Section 10.2 to Section 10.4
The reading is wrong	▪ Ensure that the sample to be measured corresponds to the operating conditions. Section 2.4 ▪ Perform adjustment. Section 9.6 ▪ Check whether the photometer and the associated peripherals are correctly mounted. Section 4 ▪ Ensure that the servicing duties have been performed according to the servicing schedule. Section 9.1

Table 2: Pinpointing malfunctions

If the listed measures do not result in the desired results, please consult with customer service. Section 11

10.2 Warning messages and effect on operation

Warnings indicate an unusual state.

WARNINGS	
If a warning occurs during operation, it has the following effects: ▪ The system continues to operate. However, the measuring results must be evaluated with caution. The cause of the warning message should be remedied at the next possible opportunity. ▪ When the cause of the warning has been remedied, it is automatically deleted. ▪ When the **Warning** message occurs, the color of the status display changes to **orange** and the warning text describes the warning in question.	 Example: **WARNING HUMIDITY**

The following warning messages can be displayed:

WARNING	DESCRIPTION	POSSIBLE CAUSES
V IN	The input voltage is outside the permitted range (24 VDC ± 10%).	▪ The service voltage is faulty.
ADJUST FAULT	Recalibration could not be carried out.	▪ The instrument is soiled. ▪ The nominal value for the adjustment does not match the value of the medium.
OVER TEMP	The temperature in the instrument has exceeded 65 °C.	▪ The medium or ambient temperature is too high and defective/no cooling.
HUMIDITY	The relative humidity in the instrument has risen above the set limit.	▪ The desiccant is saturated. ▪ The gaskets are defective. ▪ The instrument was open for a long period.
CURRENT 1 .. 8	Current output 1 .. 8 is disturbed.	▪ Terminals open. ▪ Interruption of the current loop of the measuring value output.
EXTERNAL ON (Name ext.in.)	An external event is signaled via a digital input.	▪ External malfunction.
WATCHDOG	The internal fault monitoring has been actuated. The program has been restarted.	▪ Program crash.
SERVICE	Shows when service work is due.	
SD CARD VERS.	The data on the microSD card does not match the current software.	
BATTERY EMPTY	Date was set back to 01.01.2008.	▪ Instrument too long without power supply ▪ Battery defective

Table 3: Possible warning messages

10.3 Fault messages and their effect on operation

FAULT	
If a fault occurs during operation, it has the following effects: ▪ A fault is a malfunction which prevents correct measurement value acquisition. ▪ The measuring values of the concerned photometer go to **0**. ▪ Assigned current outputs go to the programmed electrical current **If fault**. ▪ Assigned limits are deactivated. ▪ When the **Fault** message appears, the color of the status display changes to **red** and the text describes the fault in question. ▪ If an output for faults is programmed, it is activated.	 Example: **FAULT V ANALOG** If the cause of the fault has been remedied, it is automatically deleted.

The following fault messages can be displayed:

FAULT MESSAGE	DESCRIPTION	POSSIBLE CAUSES
SLAVE SW VERS	The software version of the photometer does not match that of the control unit.	▪ Different delivery data on photometer and control unit. Carry out a slave update. → Reference Manual
SERIAL 1	The control unit cannot establish a connection to the photometer.	▪ Interrupted connection to the photometer. ▪ Defect in the electronic system. → Service technician
V ANALOG	One of the internal analog voltages is outside the permitted range.	▪ Defect in the electronic system. → Service technician
MEASUR.FAULT	Measuring value acquisition is faulty.	▪ Bubbles in the water. ▪ External light in the vicinity of the measuring point (e.g. transparent hoses). ▪ Defect in the electronic system. → Service technician
LIGHTSOURCE 1	The detector for monitoring the light source receives no light from the corresponding light source.	▪ Defective light source. → Service technician
MASTER SW VERS	This fault message is displayed when the software version of the SICON is older than the version of the connected photometer.	▪ Software is not the most recent version. In this case the software of the control unit must be updated to the most recent version. → Reference Manual

FAULT MESSAGE	DESCRIPTION	POSSIBLE CAUSES
POWERBOX	Actuation of the power box has been disturbed.	▪ Connection to the power box has been interrupted.
IO PORT	The connection between the NG_Haupt and NG_Bedi print in the SICON has been disturbed.	▪ Cable disconnected. ▪ Plug connection defective.
HUMIDITY	The relative humidity in the instrument has risen above 50%.	▪ The desiccant is saturated. ▪ The gaskets on the electronic component are defective. ▪ The instrument was open too long.

Table 4: Possible fault messages

10.4 Prioritized fault messages and their effect on operation

When there is a prioritized fault, the cause of the malfunction is serious.

PRIO (PRIORITIZED FAULT)	
If a prioritized fault occurs during operation, it has the following effects: ▪ The measuring values go to 0. ▪ Prioritized faults can be cleared only by a service engineer. ▪ When the **Prio** message occurs, the color of the status display changes to **red** and the text describes the prioritized fault in question.	 Example: **PRIO DEFAULT VALUES**

The following prioritized fault messages can be displayed:

PRIO MESSAGE	DESCRIPTION	POSSIBLE CAUSES
DEFAULT VALUES	The default values were loaded.	▪ If no parameters were initialized or if all parameters were lost, the default values are loaded.
CRC EXPERTS	A fault was determined when the expert data was checked.	▪ Electromagnetic malfunctions. ▪ Defect in the electronic system.
CRC USER	A fault was determined when the user data was checked.	▪ Electromagnetic malfunctions. ▪ Defect in the electronic system.
CRC DISPLAY	A fault was determined when the display data was checked.	▪ Electromagnetic malfunctions. ▪ Defect in the electronic system.
EXT RAM	A fault was determined when the RAM in the graphic controller was checked.	▪ Defect in the electronic system.
SW VERS	Software which is unsuitable for this instrument type was loaded.	▪ Faulty software update. → Service technician

Table 5: Possible prioritized fault messages

11 Customer service information

Should you have any questions, please contact the responsible service center in your country or region. If this is not known, SIGRIST-PHOTOMETER AG customer service in Switzerland would be glad to provide you with a contact address.

A current list of all SIGRIST country representatives is available online at www.sigrist.com.

Please have the following information ready when you contact a SIGRIST service point or customer service:

- The serial number of the OilGuard PR 30.
- A description of instrument behavior and the work steps when the problem occurred.
- A description of what you did when trying to solve the problem yourself.
- The documentation of the third-party products you use in conjunction with the OilGuard PR 30.
- Description of operation conditions (place, power supply, measured medium, temperature etc.)
- Application and Instruction Manual.

12 Decommissioning/Storage

12.1 Decommissioning the photometer

The aim of decommissioning is to prepare the individual components of the system properly for storage.

	WORKSTEP	ADDITIONAL INFO / IMAGES
1.	Interrupt the service voltage and remove the connector from the OilGuard PR 30.	
2.	Remove the OilGuard PR 30 from the line according to Section 4.	
3.	Clean and dry the OilGuard PR 30.	
4.	Remove the electrical connections from the Conn-R junction box and the SICON (M) (if present).	Section 5
5.	Remove and pack all components.	

12.2 Storing the photometer

There are no special requirements for storing the instruments. However, please note the following information:

- The system contains electronic components. Storage for such components must fulfill the usual conditions. It is important to note that the storage temperature must be between -20 and +50 °C.
- All components that come into contact with the sample during operation have to be dry and clean for a long time before being put into storage.
- The measuring equipment with all of the accessory parts must be protected against weather factors, condensing humidity and aggressive gases during storage.

13 Packaging/Transport/Returning

DANGER!

Injuries to persons due to hazardous media residues in the returned instrument.

Instruments that have come into contact with hazardous media may not be sent without the appropriate information on the corresponding repairs or professional decontamination (see RMA form).

- Precise information on the medium must be received by SIGRIST-PHOTOMETER in advance of the instrument to be repaired so that the necessary precautions can be taken when unpacking it.

The original packaging materials should be used for packaging the OilGuard PR 30 if possible. If the original packaging is no longer available, note the following information:

- Before packaging, close the openings of the instrument with adhesive tape or plugs so that no packaging materials can enter the instrument.
- The instrument contains optical and electronic components. Make sure that the packaging protects the instrument from being damaged by impacts during transport.
- All peripheral devices and accessory parts must be packaged separately and marked with the serial number of the photometer (Section 2.2). This prevents confusion and mix-ups later while also making it easier to identify parts.
- A RMA form (14711E) must be filled in and enclosed for all returned instruments and spare parts. This can be downloaded at www.sigrist.com.

When packaged as described above, the instruments can be transported via all usual shipping methods.

14 Disposal

Disposal of the system and its peripheral devices is to be carried out in compliance with regional statutory regulations.

The system has no environmentally damaging sources of radiation. The materials listed below should be disposed of or recycled as described in the following table:

CATEGORY	MATERIALS	DISPOSAL POSSIBILITIES
Packaging	Cardboard, wood, paper	Reuse as packaging material, local disposal center, incineration plants
	Protective foils, polystyrene shells	Reuse as packaging material, recycling
Electronics	Circuit boards, electromechanical components, display, touchscreen, transformer and cables	To be disposed of as electronic waste
Parts which come into contact with water	PE, PPSU	Local disposal center
	Stainless steel	Waste metal disposal centers
Optics	Glass, aluminum	Recycling via centers for recycling glass and waste metal
Filter and lens holder	Aluminum	Waste metal disposal center
Battery	Lithium	Recycling via locally organized collection point
Photometer housing	Stainless steel	Local disposal center
Control unit housing	ABS	Local disposal center
Conn-R junction box housing	PC	Local disposal center
Desiccant	Cristagel	Normal waste disposal (chemically safe)

Table 6: Materials and their disposal

15 Spare parts

Spare parts are available online:
https://www.sigrist.com/en/Oil-in-Water-Analyzers/OilGuard-PR-30/Parts

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