Operating instructions

TARAeasy® sensors

CCF1

October 2025 (EN)
V3

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1 Information about these operating instructions

1.1 Symbols and displays

1.1.1 Safety and warning instructions

The hazard symbols and signal words listed below are used in these operating instructions. They help you use the product safely, protect the operating personnel against injuries and protect the operating company against damage to property and additional costs.

	Signal word	Meaning
	**DANGER!**	DANGER means a hazard with a high degree of risk which if not avoided will lead to death or serious injury.
	**WARNING!**	WARNING means a hazard with a medium degree of risk which if not avoided may lead to death or serious injury.
	**CAUTION!**	CAUTION means a hazard with a low degree of risk which if not avoided may lead to minor or moderate injury.
	NOTE	NOTE warns against damage to property.

Tab. 1: Signal words

1.1.2 Displays in the text

Symbol	**Meaning**
	This symbol is the general warning symbol and warns you about risks of injury. Take all the actions that are indicated by this warning symbol.
	This symbol indicates tips and helpful information for optimum and economic use of the product.
▶	This symbol indicates actions to be performed by the personnel.
⮡	This symbol indicates the result of an action.
•	This symbol indicates individual bullet points.
✓	This symbol indicates a precondition before performing an action.

Tab. 2: Symbols in the text

1.2 Associated documents

Data sheets on the individual types of sensors can be found at the following Internet address:
https://reiss-gmbh.com/data-sheets/?lang=en

2 Information on this product

2.1 Product description

The TARAeasy® product range are 3-electrode systems for measuring the concentration in water of the disinfectant chlorine[1]. The area of application of these sensors comprises swimming baths or water with qualities similar to those of drinking water.
Even prolonged absence of chlorine does not cause any problems for TARAeasy®.
A complete measuring and/or control system normally consists of the following components:

- Sensor
- Electrical leads and connectors
- Flow chambers and connections
- Measuring and control device
- Dosing equipment
- Analytical equipment

These operating instructions relate exclusively to the sensor.

▷ Comply with the operating instructions for the peripheral devices.

2.1.1 Chlorine CCF1

The sensor measures the concentration of free chlorine in the water being measured. Such chlorine arises from the application of inorganic chlorine products (such as chlorine gas, sodium hypochlorite solution, calcium hypochlorite solution).
The sensor can be used in the pH range from pH 6.0 to pH 9.0. It is essential to keep the pH value at a constant level.
The sensor shows different chlorine values different values depending on the pH value although no change in the chlorine concentration can be recognised in the DPD-1 measuring values.

[1] Free chlorine (dependent on the pH value)

When organic chlorine products or chlorine stabilisers are used, both based on (iso) cyanuric acid as a rule, there may be considerable differences between the DPD-1 measuring value and the signal of the chlorine sensor.

2.2 Scope of supply

- Keep the all the packaging for the sensor.
- In the event of warranty please return the sensor in the original packaging.
- Check that the delivery is complete and undamaged.

If it is damaged:

- Please contact your supplier.

Component	Quantity
Sensor	1
Operating instructions	1

Tab. 3: Scope of supply

2.3 Product overview

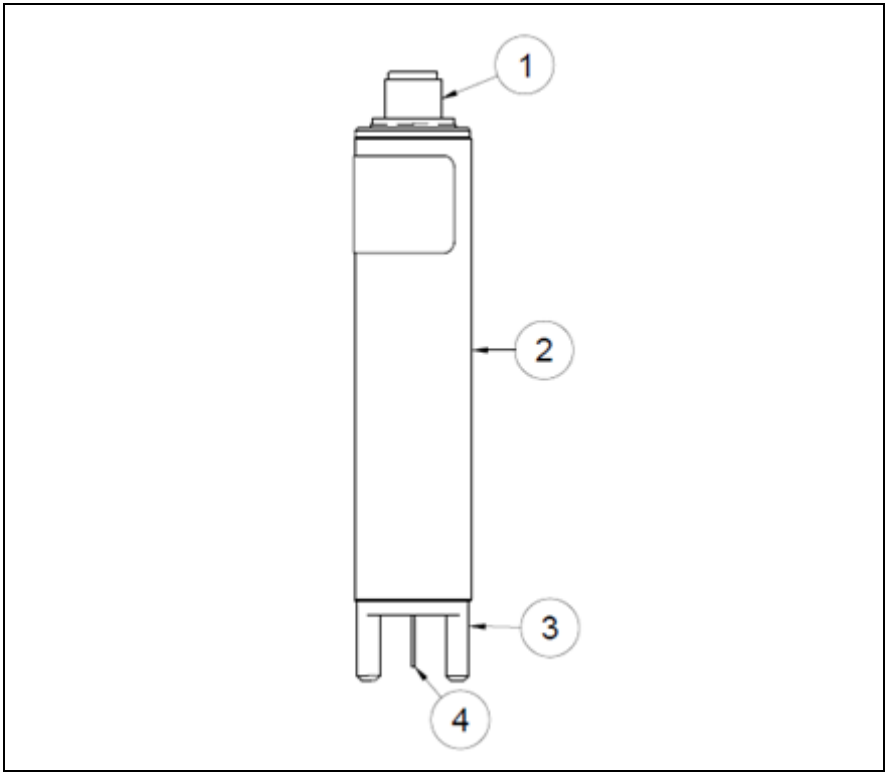

Fig. 1: Product overview

1 Electrical connection
2 Sensor body
3 Impact protection
4 Electrodes

2.4 Name plate

A name plate is glued to each sensor, this shows the following information:

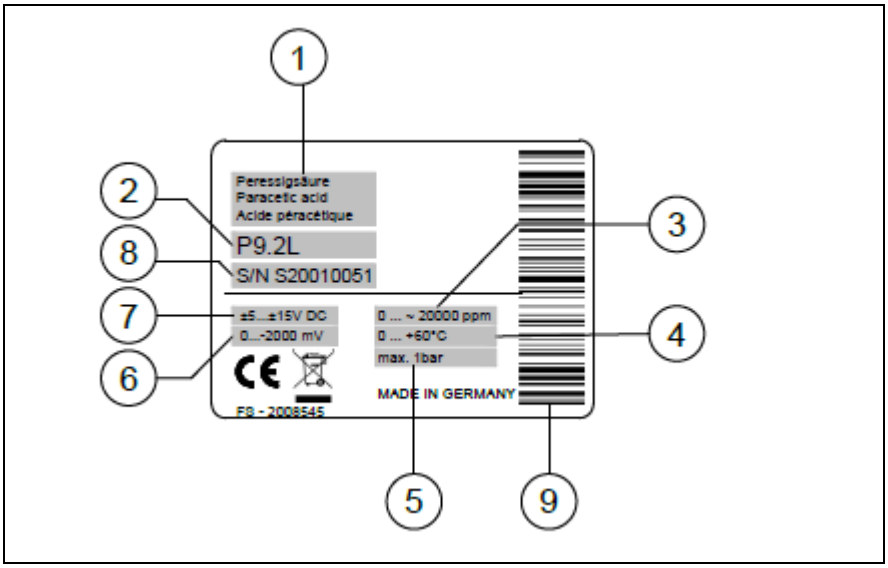

Fig. 2: Example of a name plate

1 Measured variables
2 Sensor designation, sensor name
3 Nominal measuring range of the sensor
4 Permissible temperature range of the measuring water
5 Maximum permissible pressure of the water being measured
6 Signal transmission
7 Power supply
8 Serial number
9 Serial number as barcode

3 Safety

The sensor is manufactured using the latest technology.
Nevertheless, improper use can give rise to the following risks:

- Effects on health
- Falsification of measuring values, which can lead to dangerous dosing of incorrect quantities of the disinfectant.

▶ Comply with the safety instructions in these operating instructions.

3.1 Use for the intended purpose

The sensor is intended to be used for measuring the concentration of a specific disinfectant in water.
The sensor may be used only under the following conditions:

- For the disinfectant specified in the respective data sheet
- Under the conditions of use specified on the respective data sheet
- Installation in a suitable flow chamber
- Restricted to the activities described in these operating instructions.
- Use only when in fault-free condition
- Use of original accessories and spare parts (see https://reiss-gmbh.com/data-sheets/?lang=en)

3.2 Use other than for the intended purpose

The sensor may not be used for measurements to demonstrate the absence of the disinfectant.

3.3 Personal qualifications

The user must hold the following personal qualifications:

- He must have read and understood the operating instructions.
- He must have received training in the handling of the sensor.

3.4 Rebuilding and modifications

Opening the sensor and making modifications to it which can affect the safety and functionality of the sensor may be performed only by the manufacturer.

3.5 Residual risks

3.5.1 Slippage of the sensor

If the sensor is inadequately secured, it may become loose due to the pressure of the water or due to vibration. This results in the following risks:

- Due to the pressure of the water the sensor may slip out of the flow chamber.
- Due to its own weight the sensor may slip down into the flow chamber.

▶ If recommended on the data sheet, use a variant with a retaining ring (see section 1.2, p. 5).

▶ Make sure that the fixation of the sensor in the flow chamber cannot be loosened during operation.

▶ Check the sensor regularly for secure attachment.

3.5.2 Water pressure that is high

If the water pressure exceeds the maximum permissible value, the sensor may be damaged.

▶ Observe the maximum permissible pressure according to the data sheet (see section 1.2, p. 5).

3.5.3 Fluctuating water pressure and/or measuring water flow

If the water pressure varies greatly, the sensor signal may vary.

▶ Keep pressure and flow constant.

3.5.4 Abrasive particles

Abrasive particles can damage the electrodes.

- Install a filter in the system.

3.5.5 Impacts, shocks and improper touching

Impacts or shaking of the sensor, such as by dropping it, can damage it.

- Avoid impacts and shocks.
- Do not allow the sensor to be dropped.

Touching the electrodes can damage them.

- Do not touch the electrodes.

3.5.6 Electrical interference

A lack of galvanic isolation can falsify the measuring value and even damage the sensor beyond repair.

- Ensure the electrical connection has galvanic isolation.

Electrical interference on the signal lead can damage the electronics.

- Ensure the connection is made correctly.

3.5.7 Loss of measuring values when the sensor is removed

After the sensor has been removed there is no longer a measuring value, which can lead to incorrect dosing of the disinfectant.

- Switch off the measurement and control system or switch it over to manual operation.

3.5.8 Oxidants, reducers and corrosion inhibitors

Oxidants, reducers and corrosion inhibitors in the water interfere with measurement and can lead to measuring errors.

- ▶ Make sure there are no oxidants, reducers or corrosion inhibitors in the water.
- ▶ Comply with the instructions on the data sheet (see section 1.2, p. 5).

3.5.9 pH value

If the pH value in the water changes or if the pH value lies outside the permissible range the measuring value can be falsified.

- ▶ Make sure that the pH value lies within the permissible range.
- ▶ Make sure that the pH value is kept constant.
- ▶ Comply with the instructions on the data sheet (see section 1.2, p. 5).

3.5.10 Temperature and fluctuations in temperature

If the ambient temperature or the temperature of the medium lies outside the permissible range, the sensor may be damaged.

- ▶ Make sure that in all the operating phases the temperatures comply with the permissible values specified on the data sheet (see section 1.2, p. 5).

The measuring value can be falsified if the temperature in the medium fluctuates abruptly.

- ▶ Make sure that the temperature in the water changes only slowly.

3.5.11 Incorrect chemical analytical methods

Incorrect determination of the concentration of the disinfectant will lead to incorrect calibration of the sensor.

- ▶ Employ the recommended analytical methods as specified on the data sheet (see section 1.2, p. 5).
- ▶ Perform analytical work in accordance with the specifications in the manufacturer’s operating instructions for the analytical equipment.

4 Commissioning

4.1 Installation requirements

The following installation requirements must be satisfied:

- Continuous power supply and presence of measuring water
- Minimum flow rate as specified on the data sheet
- Constant through flow rate
- There must be galvanic isolation at the electrical connections
- Make sure that the measuring water does not evolve gas at the measurement point.

4.2 Insertion into the flow chamber

✓ Remove the sensor from packaging.

▶ Insert the sensor into a flow chamber of the type TARAflow® FLC or any other suitable flow chamber.

In order to insert the sensor correctly into the flow chamber:

▶ Comply with the instructions in the operating instructions for the flow chamber that is used.

4.3 Electrical connection

The sensor is provided with a 5-pin M12 screwed plug protected against polarity reversal.

✓ The sensor must have been inserted into the flow chamber (see section 4.2, p. 14).

The following electrical connection types of the sensor are possible:

4.3.1 Connection with 0...-2000 mV signal output

The connection pins are assigned as follows:

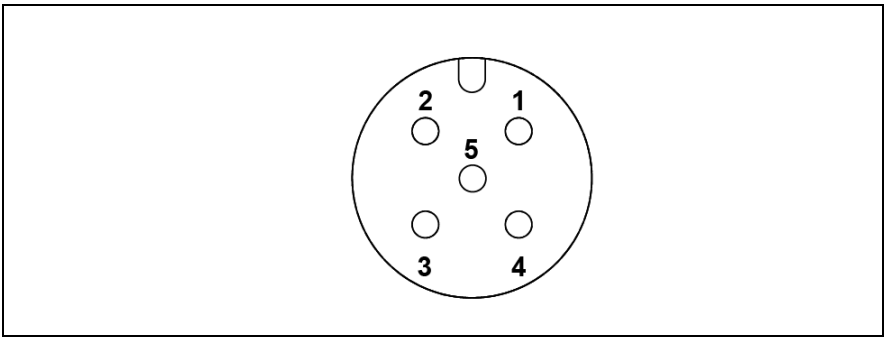

Fig. 3: Connection pin assignment (5-pin)

	Analog signal processing	**Digital signal processing**
	0…-2000 mV	0…+/-2000 mV
1	Measuring signal	Measuring signal
2	+U	+U
3	-U	Power GND
4	Signal GND	Signal GND
5	(not assigned)	(not assigned)

4.3.2 Connection with 4...20 mA signal output

The connection pins are assigned as follows:

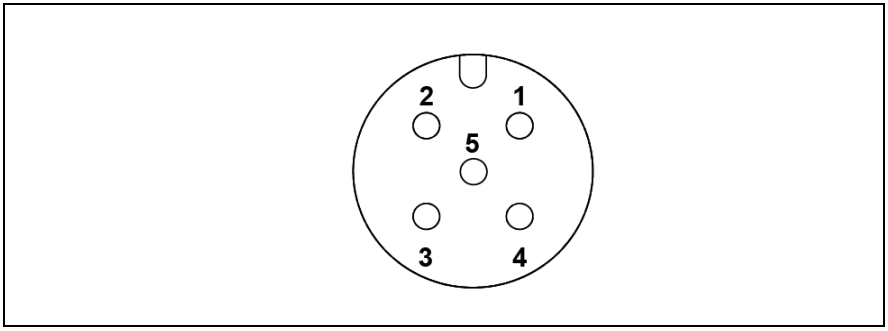

Fig. 4: Connection pin assignment (5-pin)

1 (not assigned)
2 +U
3 -U
4 (not assigned)
5 (not assigned)

4.3.3 Connection with Modbus signal transmission

The sensor is provided with a 5-pin M12 screwed plug protected against polarity reversal. There are no termination resistors within the sensor. The connection pins are assigned as follows:

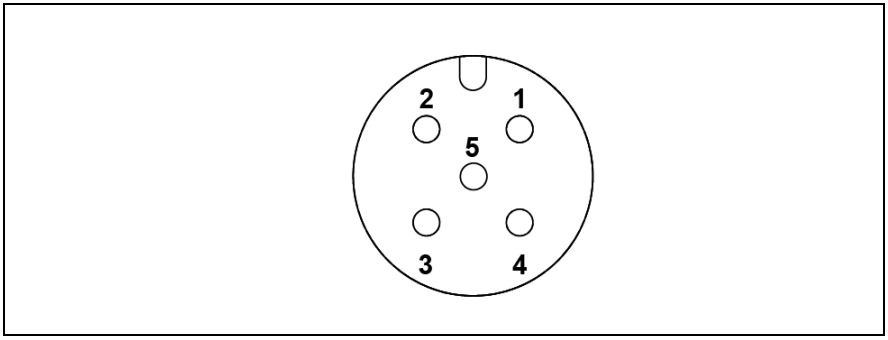

Fig. 5: Connection pin assignment (5-pin)

1 (reserved)
2 +9…+30 V
3 Power GND
4 RS485 B
5 RS485 A

4.4 Initial calibration

- ✓ The sensor must have been connected electrically (see section 4.3, p. 14).
- ✓ The running-in time must comply with the specification on the data sheet (see section 1.2, p. 5).
- ▶ Perform calibration (see section 5, p. 18).

5 Calibration

The sensor outputs a signal proportional to the concentration of the disinfectant in the measuring water. In order to assign the value of the sensor signal to the concentration of the disinfectant in the measuring water, the sensor must be calibrated.

- ✓ The flow rate must be constant.
- ✓ The temperature of the measuring water must be constant.
- ✓ Acclimatisation of the temperature of the sensor to that of the measuring water must be complete (this takes about 20 minutes after a change in temperature).
- ✓ The sensor must have completed running in.
- ✓ No other oxidant may be present in the measuring water.
- ✓ The pH value must be constant.
- ▶ Take the analytical sample of the measuring water from near to the sensor.
- ▶ Using appropriate methods, determine the concentration of the disinfectant in the measuring water (see the manufacturer's operating instructions for the analytical equipment).
- ▶ In the calibration menu of the measuring and control device, mark up the sensor signal against the value determined by the analytical procedure (see the operating instructions for the device).
- ▶ Repeat the calibration at regular intervals
- ▶ Comply with the applicable national regulations for calibration intervals.

Measured variables	Recommended analytical methods
Free chlorine	DPD-1

Tab. 4: Recommended analytical methods

6 Removal

Removal of the sensor can lead to an incorrect measuring value at the input to the measuring and control device, which can cause the control circuit to apply uncontrolled dosing.

- ▶ Switch off the measurement and control system or switch it over to manual operation.
- ▶ Close the inlet of the measuring water.
- ▶ Close the outlet of the measuring water.
- ▶ Remove the electrical connection.
- ▶ Undo the screw fastening and carefully pull the sensor out.

7 Troubleshooting

Various factors in the environment can affect the sensor. If irregularities occur, it may be useful to check these factors:

- Flow rate
- Measuring cable
- Measuring and control device
- Calibration
- Dosing equipment
- Concentration of the disinfectant in the dosing container
- Suitability of the sensor for measuring the disinfectant that is being dosed
- Concentration of the disinfectant in the measuring water (determined by analytical methods)
- pH value of the measuring water
- Temperature of the measuring water
- Pressure in the flow chamber
- Analytical methods

7.1 Fault overview

Fault	Cause	Corrective action
Sensor cannot be calibrated / deviation of the measuring value from DPD measurement	Run-in time too short.	▶ Wait for the run-in period (see section 4.4, p. 17). ▶ Repeat the calibration after a few hours.
	Disruptive substances in the water contents	▶ Check the water for disruptive substances and remedies (observe data sheet) ▶ Consult the supplier.
	Short circuit / defect in the measuring lead	▶ Locate and eliminate the short circuit / defect. ▶ Exchange the measuring lead.
	The DPD chemicals are past their effectiveness date.	▶ Use new DPD chemicals. ▶ Repeat the calibration (see section 5, p. 18).
	Deposits on the electrodes	▶ Install new sensor ▶ Consult the supplier if the service life is short.

Fault	Cause	Corrective action
	Gas bubbles on the outside of the electrodes	▶ Temporarily increase the flow rate. ▶ Check the installation and modify it.
	The concentration of disinfectant exceeds the upper limit of the measuring range.	▶ Check the system. ▶ Remedy the faults. ▶ Repeat the calibration (see section 5, p. 18).
	Lack of galvanic isolation	▶ Create galvanic isolation.
	The sensor is defective.	▶ Install new sensor ▶ Consult the supplier if the service life is short.
Unstable measuring value	Gas bubbles on the electrodes	▶ Temporarily increase the flow rate. ▶ Check the installation and modify it.
	Pressure fluctuations in the measuring water	▶ Check the type of installation and modify it.
	Lack of galvanic isolation	▶ Create galvanic isolation.

Fault	Cause	Corrective action
Overdriving[2]	Excessive concentration of disinfectant in the measuring water	▶ Check the system. ▶ Remedy the faults. ▶ Calibrate the sensor (see section 5, p. 18).
	Run-in time too short.	▶ Wait until the run-in time has elapsed (see section 4.4, p. 17).
	Flow rate too high	▶ Check the system. ▶ Reduce the flow rate.
	Lack of galvanic isolation	▶ Create galvanic isolation.
	The sensor is defective.	▶ Install new sensor ▶ Consult the supplier if the service life is short.
Underdriving[3]	Run-in time too short.	▶ Wait until the run-in time has elapsed (see section 4.4, p. 17).
	The electrode is contaminated.	▶ Install new sensor ▶ Consult the supplier if the service life is short.
	Lack of galvanic isolation	▶ Create galvanic isolation.

[2] The electronics receive too high a signal from the electrochemical cell at the input (see Tab. 6, p. 24).
[3] The electronics receive a signal with the wrong polarity from the electrochemical cell at the input (see Tab. 6, p.24).

Fault	Cause	Corrective action
	The sensor is defective.	▶ Install new sensor ▶ Consult the supplier if the service life is short.
Green LED failing to flash[4]	Defective Power supply	▶ Provide the correct power supply
	The sensor is defective.	▶ Install new sensor ▶ Consult the supplier if the service life is short.
No signal	The sensor is connected to the measuring/control device with the wrong polarity.[5]	▶ Connect the sensor correctly to the measuring/control device.
	The measuring lead is broken	▶ Exchange the measuring lead.
	The sensor is not receiving any power supply.	▶ Provide the correct power supply.
	The sensor is defective.	▶ Install new sensor ▶ Consult the supplier if the service life is short.

Tab. 5: Faults overview

[4] Only for sensors with digital electronics
[5] Only for sensors with 4...20 mA signal output

Electronics	Signal transmission	Underdriving	Overdriving
Analogue	4 … 20 mA	<4 mA	>20 mA
	0 … -2000 mV	>0 mV	<-2000 mV
Digital	Modbus RTU	<0 ppm/ % <0 nA	Measured value > Measurement range
	0 … +2000 mV	<0 mV	• >+2000 mV
	0 … -2000 mV	>0 mV	• <-2000 mV

Tab. 6: Output signal of the sensor when overdriven/underdriven

7.2 Special checks

7.2.1 Checking the zero point

✓ Sensor is prepared according to section 10, p. 26.
▶ Connect the sensor to the measuring and control device.
▶ Fill a glass beaker with mains water (without any disinfectant!).
▶ Stir the sensor round in the glass beaker for 30 seconds.
▶ Carefully put the sensor down obliquely in the glass beaker.
▶ Wait 30 minutes.
▶ Read the measuring value.

If the measuring value is close to the value 0, the zero point can provisionally be regarded as OK.
If the measuring value deviates significantly from zero:
▶ Install new sensor.
▶ Consult the supplier if the service life is short.

This completes the zero point checking

7.2.2 Signal

✓ The zero point checking must have been performed successfully.
▶ Add the relevant disinfectant to the mains water in the glass beaker (see section 7.2.1, p. 25).
▶ Stir the sensor steadily round in the glass beaker for five minutes.
▶ Monitor the measuring value throughout this time.

If the measuring value increases, the sensor can provisionally be regarded as OK.
If the measuring value does not change:
▶ I Install new sensor.
▶ Consult the supplier if the service life is short.

8 Technical data

Information on the technical data can be found at the following Internet address:
https://reiss-gmbh.com/data-sheets/?lang=en

9 Storage

- Allow the sensor to air dry.
- Store the sensor in a dry and dust-free place.

10 Recommissioning

- Commission the sensor according to section 4, p. 14.

11 Disposal

- Observe local disposal regulations.

12 Warranty

All sensors of the TARAeasy® type are wearing parts.
Their usability ("service life") depends on care and the conditions of use. Depending on the application, the time period for a necessary sensor change can be between a few weeks and several years.
between a few weeks and several years. For this reason, it is not possible to make a reliable promise of a specific minimum service life.

In the event of a complaint, please contact the supplier, stating the serial number. We also require information about the type of malfunction that has occurred.

13 Liability disclaimer

The sensor is manufactured with great care. Should any malfunctions occur in the sensor despite this, no liability claims may be lodged against the manufacturer for damages resulting from this malfunction.

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