OPERATING MANUAL

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SensoLyt® ORP 900-P

IDS ORP ELECTRODE

WTW

a xylem brand

1 General information

Automatic sensor recognition

The sensor electronics with the stored sensor data are in the connecting head of the electrode. The data include, among other things, the sensor type and series number. The data is recalled by the meter when the sensor is connected and is used for measurement and for measured value documentation.

The digital transmission technique guarantees the failure-free communication with the meter even with long connection cables. The sensor firmware can be updated via the meter.

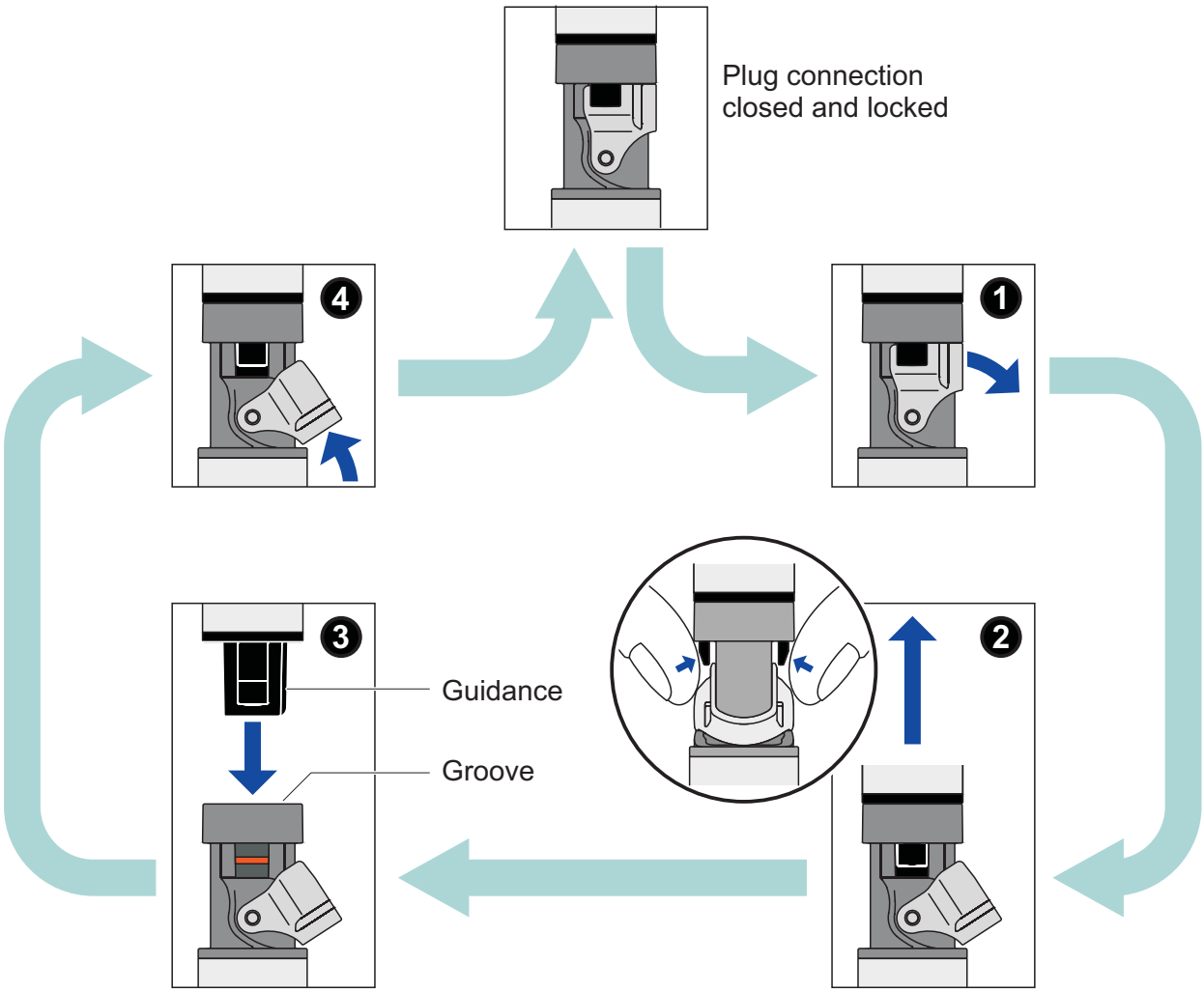
Armoring A 925-P/K and A 925-P/S (accessory)

To protect the electrode against mechanical impacts, the A 925-P/K armoring (with plastic protective hood) or A 925-P/S (with steel protective hood) can be installed and uninstalled as necessary. The steel model is simultaneously used as a sinker for depth measurements.

2 Commissioning, measuring, calibration

2.1 Opening and closing the IDS plug connection

This section only applies to variants with IDS plug (SenTix® ... -P).



Opening the plug connection

- If necessary, clean the plug connection.
- Open the locking device (step 1).
- Use your thumb and index finger to press the clips of the connector together, and pull the connector out of the plug (step 2).

Closing the plug connection

- Make sure that the plug connection is completely dry and clean.
- Align the guidance of the connector with the groove in the plug and insert the connector in the unlocked plug until it catches (step 3).
- Close the locking device (step 4).

2.2 Commissioning

Scope of delivery

- ORP electrodeSensoLyt® ORP 900-P
- Operating manual

Commissioning

Prepare the electrode for measuring as follows:

- Remove the watering cap from the electrode tip. Possible salt deposits in the area of the watering cap do not affect the measuring characteristics and can easily be removed with deionized water.

Please keep the watering cap. It is required for the electrode to be stored. Always keep the watering cap clean.

- Connect the sensor to the meter.
  The sensor is immediately ready to measure.

  Types of connection:

  – via a connecting cable (accessory) to a free IDS connector on the meter

  or

  – wireless via an IDS WLM-S adapter (accessory) to a WLM-capable meter

  or

  – via an IDS sensor slot of a multi parameter probe (connected to a meter)

  Accessories for the connection of the SensoLyt® ORP 900-P-P sensor to the meter are listed in chapter 7 WEAR PARTS AND ACCESSORIES.

  To open and close the IDS plug-in position please note the section 2.1 OPENING AND CLOSING THE PLUG CONNECTION.

2.3 Calibrating, measuring

Remove the watering cap for calibrating and measuring. More detailed information is given in the operating manual of the meter.

Conversion to standard hydrogen electrode

$U_H = U_{Meas} + U_{Ref}$

with: U_H = ORP, referring to the normal hydrogen electrode

U_{Meas} = Measured ORP

U_{Ref} = Voltage of the reference system compared to the normal hydrogen electrode

U_{Ref} depends on the reference system and temperature and can be taken from the following table (see also DIN 38404-6 for the system Ag/AgCl/ saturated KCl):

T (°C)	U_{Ref} [mV] SensoLyt® ORP 900-P	T (°C)	U_{Ref} [mV] SensoLyt® ORP 900-P
0	+221	35	+187
5	+216	40	+181
10	+212	45	+176
15	+207	50	+171
20	+202	55	+165
25	+197	60	+160
30	+192		

3 Aging

ORP electrodes are consumables. Every ORP electrode undergoes a natural aging process. Extreme operating conditions can considerably shorten the lifetime of the electrode. These are:

- Strong acids or lyes, hydrofluoric acid, organic solvents, oils, fats, bromides, sulfides, iodides, proteins
- High temperatures
- High changes in pH and temperature.

The warranty does not cover failure caused by measuring conditions and mechanical damage.

4 Storage

During short measuring breaks

Immerse the electrode in reference electrolyte (KCl 3 mol/L, Ag^+ free). Prior to the next measurement, shortly rinse the electrode with the test sample or deionized water.

Overnight or longer

Put the clean electrode in the watering cap that is filled with reference electrolyte (KCl
3 mol/L, Ag^+ free).

NOTE
Do not store the electrode dry or in deionized water.
The electrode could be permanently damaged by this.

During longer storing periods, salt sediments may develop on the watering cap. They do not affect the measuring characteristics and can easily be removed with deionized water when the electrode is put into operation again.

5 Cleaning

Cleaning procedures

Contamination	Cleaning
Gross contamination on the junction	Carefully brush off contamination under running water using a soft toothbrush
Fats, oils, protein-containing sediments and similar substances	Remove with household washing-up liquid

6 Technical data

Shaft dimensions, material

Shaft length	120 mm
Shaft diameter	12 mm
Shaft material	Glass
IDS plug	● Synthetic materials: Glass fiber reinforced Noryl, TPU, TPC-ET, POM, PVC, PEEK, PBT ● O-ring: FPM ● Contacts gold-plated

General data

ORP electrode	Platinum ring
Reference electrolyte	Polymer electrolyte
Junction	2-hole junction
Shunt conduction element	Ag/AgCl
Temperature sensor	Integrated NTC 30 (30 kΩ at 25 °C / 77 °F)

Measurement and application characteristics

ORP measuring range	-1250.0 ... +1250.0 mV
Minimum immersion depth	25 mm
Allowed temperature range	0 ... 60 °C (32 ... 140 °F)
Precision of the temperature sensor	± 0.2 K
Response time t_{99} of the temperature sensor	< 130 s
Allowed pH range of the measuring medium	4 ... 12
Typical application	Field

Accuracy of the IDS measuring technique

Measured parameter	Accuracy (± 1 digit)
U [mV]	± 0.2
T [°C]	± 0.1

Pressure range at temperature

Temperature	allowed overpressure
0 °C (32 °F)	1000 kPa (10 bar)
20 °C (68 °F)	1000 kPa (10 bar)
30 °C (86 °F)	500 kPa (5 bar)
40 °C (104 °F)	300 kPa (3 bar)
60 °C (140 °F)	100 kPa (1 bar)

The electrodes meet the requirements according to article 3(3) of the directive 97/23/EC ("pressure equipment directive").

Storage With watering cap; filled with KCl 3 mol/L, Ag^+ free

Disposal Residual waste

7 Wear parts and accessories

Maintenance equipment

Description	Model	Order no.
Reference electrolyte solution 250 ml to fill the watering cap (KCl 3 mol/l, Ag^+-free)	KCl-250	109 705
ORP buffer solution (250 ml)	RH 28	109 740

Connection cable SensoLyt® ORP 900-P - meter

Description	Model	Order no.
IDS connection cable, 1.5 m	AS/IDS-1.5	903 850
IDS connection cable, 3 m	AS/IDS-3	903 851
IDS connection cable, 6 m	AS/IDS-6	903 852
IDS connection cable, 10 m	AS/IDS-10	903 853
IDS connection cable, 15 m	AS/IDS-15	903 854
IDS connection cable, 20 m	AS/IDS-20	903 855
IDS connection cable, 25 m	AS/IDS-25	903 856
IDS connection cable, 40 m	AS/IDS-40	903 857
IDS connection cable, 60 m	AS/IDS-60	903 858
IDS connection cable, 100 m	AS/IDS-100	903 859

Radio connection SensoLyt® ORP 900-P - meter

Description	Model	Order no.
WLM capable IDS meter + radio module for IDS meter	see Internet	
Radio module for plug head sensor	IDS WLM-S	108 141

General purpose accessories

Description	Model	Order no.
Blind plug for IDS plug	BPO/IDS 900	908 371
Armoring without protective hood	A 925-P	903 838
Armoring with plastic protective hood	A 925-P/K	903 839
Armoring with steel protective hood	A 925-P/S	903 840

8 Disposal

At the end of its operational lifetime, the electrode must be returned to the disposal or return system statutory in your country (electronic waste). If you have any questions,
please contact your supplier.

What can Xylem do for you?

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

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