



a xylem brand



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Operating manual

SensoLyt[®] combination electrodes

pH combination electrodes	Order number
SensoLyt[®] SEA	109 115Y
SensoLyt[®] SEA-HP	109 118Y
SensoLyt[®] ECA	109 117Y
SensoLyt[®] DWA	109 119Y
ORP combination electrodes	Order number
SensoLyt[®] PtA	109 125Y

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Fields of application

Electrode	Application area
pH combination electrode SensoLyt® SEA	Measurements in moderately or heavily loaded waste water and in emulsions, suspensions and media that contain protein and sulfide.
pH combination electrode SensoLyt® SEA-HP	Measurements in moderately or heavily loaded waste water and in emulsions, suspensions and media that contain protein and sulfide. To be used under increased pressure and temperature conditions.
pH combination electrode SensoLyt® ECA	Measurements in municipal and normally charged waste water.
pH combination electrode SensoLyt® DWA	Measurements in drinking water.
ORP combination electrode SensoLyt® PtA	Measurements in waste water, emulsions, suspensions and media that contain protein and sulphide.

Assembly



Note

Prior to installing the electrode in an armature, lubricate the two O rings of the armature with the grease provided.

Calibrating, measuring



Note

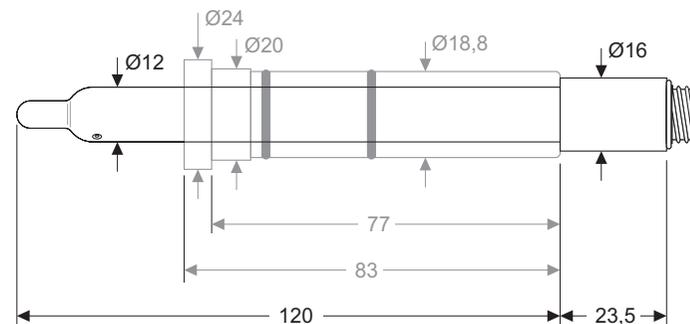
See operating manual of the meter.



Note

Take off the watering cap when you want to calibrate or measure.

Dimensions



Weight approx. 65 g

Materials	Shaft	Glass
Armoring	SensoLyt® SEA-HP: POM All other types: PVC-U	
Connection head	PPS-GF40	
O-rings	FPM (Viton)	
Watering cap	PE	

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

Disposal Residual waste

Technical data

pH measuring range	SensoLyt® SEA	pH 2 ... 12	
	SensoLyt® ECA		
	SensoLyt® SEA-HP	pH 4 ... 12	
	SensoLyt® DWA	pH 0 ... 14	
ORP measuring range	SensoLyt® PtA	-2000 ... 2000 mV (pH application range pH 4 ... 12)	
Pressure range at temperature (armored electrodes only)	Sensolyt® SEA Sensolyt® ECA Sensolyt® DWA Sensolyt® PtA	<u>Temperature</u>	<u>Allowed overpressure</u>
		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)
	Sensolyt® SEA-HP	0-60 °C (32-140 °F)	1000 kPa (10 bar)

All Sensolyt® combination electrodes meet the requirements of article 3 (3) of the directive 97/23/EC ("Pressure equipment directive").

Measuring electrode	Sensolyt® PtA	Platinum ring
	All except for Sensolyt® PtA	Glass
Reference electrolyte, junction	Sensolyt® SEA Sensolyt® SEA-HP Sensolyt® PtA	Gel polymer solid electrolyte; 2-hole junction
	Sensolyt® ECA	Gel electrolyte; 1-hole junction
	Sensolyt® DWA	Modified gel electrolyte; ceramic junction
Shunt conduction element	Ag/AgCl	
Connection	Plug-in system (S7)	
Minimum immersion depth	25 mm	

Cleaning

Contamination	Cleaning
Gross contamination at the junction	Carefully brush off contamination under running water using a soft toothbrush
Membrane contamination	Splash the electrode with water, then blot it dry using a moist paper towel (do not rub).
Fat, oil, protein-containing coatings and similar substances	Remove with household washing-up liquid

Conversion to standard hydrogen electrode (Sensolyt® PtA only)

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

- with: U_H = ORP, referring to the standard hydrogen electrode
 U_{Meas} = Measured ORP
 U_{Ref} = Voltage of the reference system compared to the standard hydrogen electrode

U_{Ref} depends on the reference system and temperature and is given in the following table (see also DIN 38404-6 for the system, Ag/AgCl/saturated KCl):

T (°C)	U_{Ref} [mV] Sensolyt® combination electrodes	T (°C)	U_{Ref} [mV] Sensolyt® combination electrodes
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		

Maintenance / regeneration (SensoLyt® PtA only)

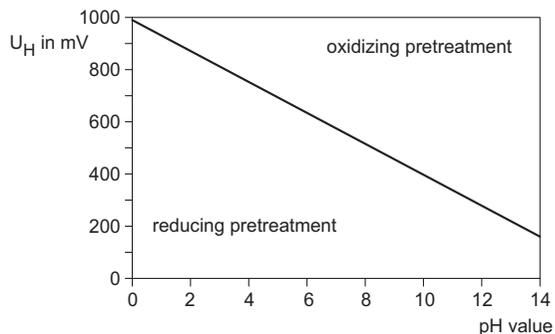
First-time activation during installation and as required

For first-time activation, use the activating powder provided with the SORT/RH reagent set. Use a paper towel to gather a small amount of activating powder. Using moderate pressure, press the activating powder against the moist (but not dripping) platinum electrode from two opposite sides and turn the electrode to and fro several times. Activation happens mainly due to abrasion. Then remove the adherent remains of activating powder under running water with a soft brush (e.g. toothbrush).

Activation during very long set-up times

When changing from oxidizing to reducing test solutions and vice versa this can result in set-up times that can take significantly more than an hour. In this case pretreatment (activation) of the platinum surface can shorten the set-up time. The type of pretreatment (reducing or oxidizing) is based on the pH value and the ORP voltage (U_H) of the test solution where the latter must be estimated for the first measurement.

The type of pretreatment can then be determined using the following diagram where U_H refers to the normal hydrogen electrode:



Oxidizing pretreatment

Immerse the platinum electrode for two to three days in a sulfuric Clorina solution. Clorina powder for producing the solution is included in the SORT/RH reagent set.

Note: The junction must not be immersed in the Clorina solution (see figure below)!

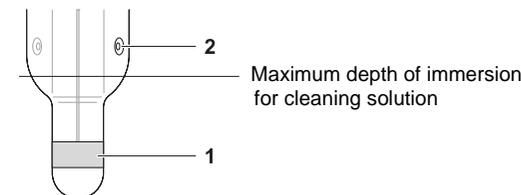
Reducing pretreatment

When the electrode is ready for the test immerse it in the Zobell ORP buffer solution and wait for a stable measured value.



Note

The platinum electrode (1) should be completely covered during the pretreatment but the electrode must not be immersed in the solution up to the reference system with the hole junction (2) (see following figure).



Note

Detailed information on activating platinum electrodes, such as how to produce the Clorina solution, is given in the WTW application report entitled REGENERATING ORP ELECTRODES. The application report is included in the SORT/RH reagent set.

Accessories

General accessories

Description	Model	Order no.
Reference electrolyte solution 250 ml to fill the watering cap (KCl 3 mol/L, Ag ⁺ free)	KCl-250	109 705Y

Buffer solutions for SensoLyt® pH electrodes

Description	Model	Order no.
pH 4 (box of 6 pints)	3821	003821
pH 7 (box of 6 pints)	3822	003822
pH 10 (box of 6 pints)	3823	003823
pH assorted (2 pints ea of 4, 7, and 10)	3824	603824

Accessories for SensoLyt® PtA

Description	Model	Order no.
Reagent set for regenerating ORP platinum electrodes, comprising 10 g activation powder and 30 g Clorina powder	SORT/RH	109 730Y
Zobell ORP buffer solution (125 ml)	3682	061320