OPERATING MANUAL

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SenTix® 20, 21, 21-3, 22
SenTix® 41, 41-3, 42, 43, 44, 46, 47
SenTix® Top 41, Top 46
SenTix® RJD
SenTix® Sp, Sp-T
SenTix® Sur

SenTix®

pH ELECTRODES WITH POLYMER AND GEL ELECTROLYTE

WTW
a xylem brand

Technical data

General data

Model	Reference electrolyte	Junction	NTC	Special features
SenTix® 20	Gel	Fiber	No	Plastic shaft
SenTix® 21	Gel	Fiber	No	Plastic shaft
SenTix® 21-3	Gel	Fiber	No	Plastic shaft
SenTix® 22	Gel	Fiber	No	Plastic shaft
SenTix® 41	Gel	Fiber	NTC 30 kOhm	Plastic shaft
SenTix® 41-3	Gel	Fiber	NTC 30 kOhm	Plastic shaft
SenTix® 42	Gel	Fiber	NTC 30 kOhm	Plastic shaft
SenTix® 43	Gel	Fiber	Pt 1000	Plastic shaft
SenTix® 44	Gel	Fiber	Pt 1000	Plastic shaft
SenTix® 46	Gel	Fiber	NTC 30 kOhm	Plastic shaft
SenTix® 47	Gel	Fiber	NTC 30 kOhm	Plastic shaft
SenTix® Top 41	Polymer	Hole	NTC 30 kOhm	Plastic shaft
SenTix® Top 46	Polymer	Hole	NTC 30 kOhm	Plastic shaft
SenTix® RJD	Polymer	Split ring	NTC 30 kOhm	Glass shaft
SenTix® Sp	Polymer	Hole	No	Electrode for cut-in measurements
SenTix® Sp-T	Polymer	Hole	NTC 30 kOhm	Electrode for cut-in measurements
SenTix® Sur	Polymer	Split ring	No	Electrode for surface measurements

Measurement and application characteristics

Model	pH measuring range	Allowed temperature range	Membrane resistance at 25 °C	Typical application
SenTix® 20	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 21-1	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 21-3	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 22	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 41	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 41-3	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 42	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 43	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 44	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 46	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® 47	0 ... 14	0 ... 80 °C	< 1 GOhm	Field
SenTix® Top 41	0 ... 14	-5 ... 100 °C	< 1 GOhm	Field/Process

SenTix® Top 46	0 ... 14	-5 ... 100 °C	< 1 GOhm	Field/Process
SenTix® RJD	2 ... 13	0 ... 80 °C	< 600 MOhm	Laboratory
SenTix® Sp	2 ... 13	0 ... 80 °C	< 400 MOhm	Laboratory / foods
SenTix® Sp-T	2 ... 13	0 ... 80 °C	< 400 MOhm	Laboratory / foods
SenTix® Sur	2 ... 13	0 ... 50 °C	< 1 GOhm	Laboratory

Shaft dimensions, shaft material, electrical connection

Model	**Shaft**			**Electrical connection**		
	Length [mm]	**Ø [mm]**	**Material**	**Electrode connection**	**Meter connection**	**Cable length**
SenTix® 20	120	12	PPE/PS	S7 plug-in connector	depending on S7 cable***	
SenTix® 21-1	120	12	PPE/PS	Fixed cable	DIN*	1 m
SenTix® 21-3	120	12	PPE/PS	Fixed cable	DIN*	3 m
SenTix® 22	120	12	PPE/PS	Fixed cable	BNC	1 m
SenTix® 41	120	12	PPE/PS	Fixed cable	DIN*+banana	1 m
SenTix® 41-3	120	12	PPE/PS	Fixed cable	DIN*+banana	3 m
SenTix® 42	120	12	PPE/PS	Fixed cable	BNC+banana	1 m
SenTix® 43	120	12	PPE/PS	Fixed cable	DIN*+banana	1 m
SenTix® 44	120	12	PPE/PS	Fixed cable	BNC+banana	1 m
SenTix® 46	120	12	PPE/PS	Fixed cable	BNC+Cinch	1 m
SenTix® 47	120	12	PPE/PS	Fixed cable	BNC+banana	1 m
SenTix® Top 41	120	12	PEEK	Fixed cable	DIN*+banana	1 m
SenTix® Top 46	120	12	PEEK	Fixed cable	BNC+Cinch	1 m
SenTix® RJD	120	12	Glas	Fixed cable	DIN*+banana	1 m
SenTix® Sp	65/25**	15/5**	PPE/PS	S7 plug-in connector	depending on S7 cable***	
SenTix® Sp-T	65/25**	15/5**	PPE/PS	Fixed cable	DIN*+banana	1 m
SenTix® Sur	120	12	Vidrio	S7 plug-in connector	depending on S7 cable***	

*Coaxial plug according to DIN 19262
**Stage geometry
***Connection cable not included in the scope of delivery of the combination electrode (see WEAR PARTS AND ACCESSORIES)

Commissioning, measuring, calibration

Commissioning

Prepare the electrode for measuring as follows:

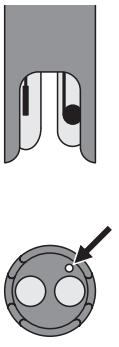
- Remove the watering cap from the electrode tip. Possible salt deposits in the area of the watering cap do not affect the measuring characteristics and can easily be removed with deionized water.

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

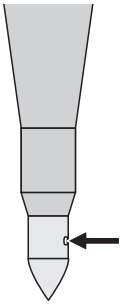
- SenTix® 2x, SenTix® 4x, SenTix® Top 4x and SenTix® Sp: Remove any gas bubbles behind the pH membrane by shaking. With all other electrodes, gas bubbles behind the pH membrane are not a problem.
- Connect the electrode to the meter.
- Calibrate the electrode according to the operating manual of the meter and observe the following rules while doing so:

Calibration and measurement: General rules

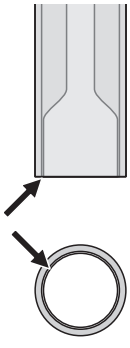
- Avoid the displacement of any solution (sample or buffer solution) from one measurement to the next by taking the following measures:
  - Shortly rinse the calibration and sample beakers with the solution the beakers are to be filled with next.
  - Between measurements, rinse the electrode with the solution that follows. Alternatively, you can also rinse the electrode with deionized water and then carefully dab it dry.
- To measure in aqueous solutions, it is recommended to immerse the electrode in a vertical or slightly tilted position.
- Observe the correct depth of immersion and make sure the contact between the junction and test sample is thorough. The junction is in the area of the bottom end of the shaft (see arrow).



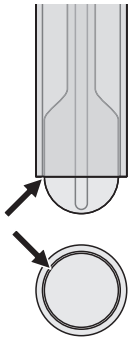
SenTix® 2x
SenTix® 4x
SenTix® Top



SenTix® Sp
SenTix® Sp-T



SenTix® Sur



SenTix® RJD

Caution:
Only the shaft part of the electrode may be immersed!

- For measurements in aqueous solutions, provide approximately the same stirring conditions for measuring as for calibrating.

Subsequent calibrations

The frequency of subsequent calibrations depends on the application. Many meters provide an option where you can enter a calibration interval. After the calibration interval has expired, the meter will automatically remind you of the due calibration.

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.

Prevent contact of the pH membrane to the beaker bottom to avoid scratches on the pH membrane.

Overnight or longer

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

NOTE

pH electrodes must not be stored dry or in deionized water. The electrode could be permanently damaged by this. If the liquid in the watering cap has dried up, condition the electrode in reference electrolyte (KCl 3 mol/L, Ag+ + free) for at least 24 hours.

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.

Aging

pH electrodes are consumables. Every pH electrode undergoes a natural aging process. With aging, the responding behavior becomes slower and the electrode slope and asymmetry change. Moreover, 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.

Maintenance and cleaning

Cleaning

Remove water-soluble contamination by rinsing with deionized water. Other types of contamination have to be removed as follows while the contact time with the detergents should be kept as short as possible:

Contamination	Cleaning procedure
Fat and oil	Rinse with water containing household washing-up liquid
Lime and hydroxide deposits	Rinse with citric acid (10 % by weight)

Hydrofluoric acid, hot phosphoric acid and strong alkaline solutions destroy the glass membrane.

After cleaning

Rinse the electrode with deionized water and condition it in reference electrolyte solution for at least 1 hour. Then recalibrate the electrode.

Wear parts and accessories

Description	Model	Order no.
Reference electrolyte solution 250 mL (KCl 3 mol/L, Ag^+ free)	KCl-250	109 705
Connection cable S7 plug-in connector/DIN, 1 m	AS/DIN	108 110
Connection cable S7 plug-in connector/DIN, 3 m	AS/DIN-3	108 112
Connection cable S7 plug-in connector/BNC, 1 m	AS/BNC	108 114
Plastic arming for SenTix® pH electrodes	A pHLab/K	903 841

Disposal

Handle and dispose of all waste in compliance with local laws and regulations.

EU only: Correct disposal of this product — WEEE Directive on waste electrical and electronic equipment

This marking on the product, accessories or literature indicates that the product should not be disposed of with other waste at the end of its working life.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Waste from electrical and electronic equipment can be returned to the producer or distributor.

Xylem |ˈzīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. 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 with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com.

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