

SenTix[®] 940

SenTix[®] 940-3



pH electrode with polymer electrolyte

Operating manual



Note

The latest version of the present operating manual can be found on the Internet under www.WTW.com.

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General information

Automatic sensor recognition

The sensor electronics with the stored sensor data is in the connecting head of the electrode. The data include, among other things, the sensor type and series number. With each calibration, the calibration data is written in the sensor and the calibration history is recorded. The data is recalled by the meter when the sensor is connected and is used for measurement and for measured value documentation. Storing the calibration data in the sensor ensures that the correct slope and asymmetry are automatically used if the sensor is operated with several meters.

The digital transmission technique guarantees the failure-free communication with the meter even with long connection cables. If the sensor firmware is enhanced by WTW, it can be updated via the meter.

Technical data

General data	Reference electrolyte	Gel	
	Junction	Fiber	
	NTC	Yes	
	Special feature	Plastic shaft	
Measurement and application characteristics	pH measuring range	0.000 ... 14.000	
	Allowed temperature range	0 ... 80 °C (32 ... 176 °F)	
	Membrane resistance at 25 °C	< 1 GOhm	
	Typical application	Field	
Shaft dimensions, material, electrical connection	Shaft length	120 mm	
	Shaft diameter	12 mm	
	Shaft material	PPE/PS	
	Combination electrode connection	Fixed cable	
	Meter connection	Digital plug	
Connection cable	Lengths	1.5 m (SenTix [®] 940) 3 m (SenTix [®] 940-3)	
	Diameter	4.3 mm	
	Smallest allowed bend radius	Fixed installation:	20 mm
		Flexible use:	60 mm
	Plug type	Socket, 4 pins	
Accuracy of the IDS measuring technique	Measured parameter	Accuracy (± 1 digit)	
	pH	± 0.004	
	U [mV]	± 0.2	
	T [°C]	± 0.1	

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.

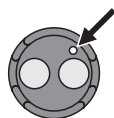


Note

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

- Remove any gas bubbles behind the pH membrane by shaking.
- 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:
 - Avoid the carryover 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).

Calibration and measurement: General rules



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Caution: Only the shaft part of the combination 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.

**Overnight or longer****Note**

Do not scratch the pH membrane.

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.

**Note**

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

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)



Note

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 to fill the watering cap (KCl 3 mol/l, Ag ⁺ -free)	KCl-250	109 705



Note

Detailed information on our wide range of buffer solutions and more accessories is given in the price list of the WTW catalog "Laboratory and field instrumentation".

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