

SenTix[®] 950

SenTix[®] 980



pH combination electrodes with refillable
liquid reference system

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

WTW model	Reference electrolyte	Junction	NTC	Special features
SenTix® 950	KCl 3 mol/L, Ag ⁺ free	Ceramic	Yes	Plastic shaft
SenTix® 980	KCl 3 mol/L, Ag ⁺ free	Platinum	Yes	

Measurement and application characteristics

WTW model	pH measuring range	Allowed temperature range
SenTix® 950	0.000 ... 14.000	0 ... 80 °C (32 ... 176 °F)
SenTix® 980	0.000 ... 14.000	0 ... 100 °C (32 ... 212 °F)

WTW model	Membrane resistance at 25 °C	Typical application
SenTix® 950	< 1 GOhm	Field
SenTix® 980	< 600 MOhm	Laboratory

Shaft dimensions, shaft material, electrical connection

WTW model	Shaft			Electrical connection		
	Length [mm]	Ø [mm]	Material	Electrode connection	Meter connection	Cable length
SenTix® 950	120	12	Polyamide	Fixed cable	Digital plug	1.5 m
SenTix® 980	120	12	Glass	Fixed cable	Digital plug	1.5 m

Connection cable

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

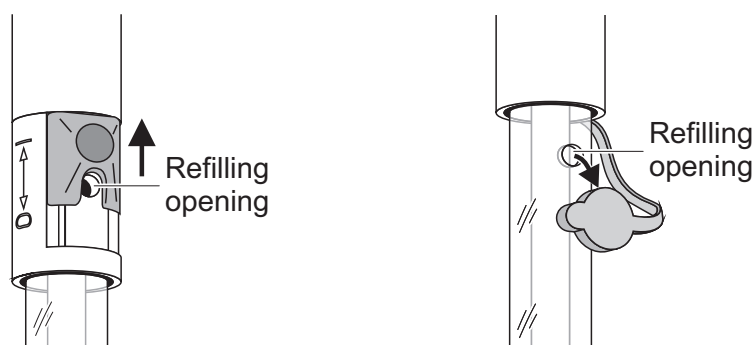
Commissioning, measuring, calibration

Commissioning

The electrode is filled with reference electrolyte solution in the factory. Prepare the electrode for measuring as follows:

- Open the refilling opening for the reference electrolyte solution. Depending on the model, the stopper of the refilling opening is an elastomer stopper or a slider.

The refilling opening must always be open during calibration and measurement!



- 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

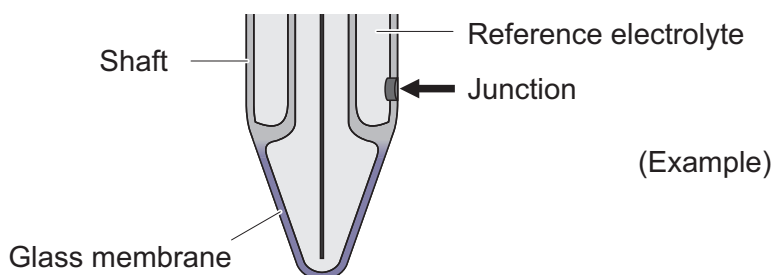
Please keep the watering cap. It is required for the electrode to be stored. Always keep the watering cap clean.

- SenTix[®] 950: 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:

Calibration and measurement: General rules

- Make sure the refilling opening for the reference electrolyte solution is open.
- 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.
- Immerse the electrode in the solution in a vertical or slightly tilted position. Make sure the immersion depth is correct. The junction must be completely submerged in the solution. The junction is in the area of the bottom end of the shaft (see figure). At the same time, the level of the reference elec-

trolyte in the electrode must be at least 2 cm above the level of the solution.



- Provide approximately the same stirring conditions for measuring as for calibrating.



Subsequent calibrations

Note

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

The frequency of subsequent calibrations depends on the application. The 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

With the refilling opening open, 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

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

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



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.

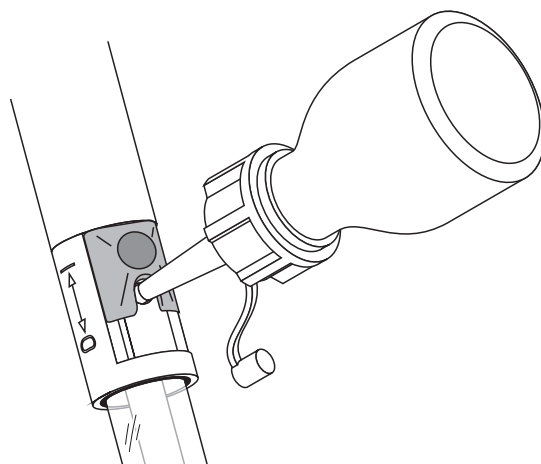
The warranty does not cover failure caused by measuring conditions and mechanical damage.

Maintenance and cleaning

Refilling the reference electrolyte

During operation, a small amount of reference electrolyte leaks through the junction from the electrode into the test sample. If the level of reference electrolyte becomes too low with time, refill it through the refilling opening. Refilling is very easy with the enclosed dropping bottle. Proceed as follows:

- Cut off the tip of the dropping bottle at a right angle until the opening in the tip can be seen
- Open the refilling opening of the electrode
- Press the tip of the dropping bottle into the refilling opening while turning it slightly
- Pump the reference electrolyte in the shaft using the dropping bottle
- Pull the dropping bottle out of the refilling opening while turning it slightly as necessary.



Cleaning

Remove water-soluble contamination by rinsing with deionized water. Remove other contamination as follows:

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)
Proteins	Immerse in pepsin cleaning solution PEP/pH for approx. 1 hour. <u>Note:</u> Make sure the level of the reference electrolyte is above that of the cleaning solution.



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 (KCl 3 mol/L, Ag ⁺ free)	KCl-250	109 705
Pepsin cleaning solution 3 x 250 ml	PEP/pH	109 648



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".

Disposal

When the electrode is at the end of its operational lifetime, please dispose of it as electronic waste and not with unsorted municipal waste. It is illegal to dispose of it with the household refuse.

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