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ДАТЧИКИ рН и ОВП OPTISENS ORP 8500



1.1 ORP sensor for water applications

The OPTISENS ORP 8500 sensor is characterised by standardised design, easy handling and a long life cycle. In combination with the MAC 100 signal converter it is possible to create an extremely reliable and low-cost measurement system, which is suitable for a wide range of water analysis measurement tasks.

Designed as combined electrode with built-in reference electrode the OPTISENS ORP 8500 is equipped with a ceramic diaphragm. The sensor can be used in various applications and it is extremely service friendly as well as durable.



- ① Process connection PG 13.5
- ② Glass shaft with built-in reference electrode and KCl gel filling
- ③ Ceramic diaphragm
- ④ Platinum ring electrode

Highlights

- Pure platinum electrode and small ceramic diaphragm for long time and reliable ORP measurement.
- Special reference system for extended lifetime and a wide application range.
- Various mounting assemblies for easy installation and reliable handling.
- Suitable for connection to the MAC 100 signal converter.

Industries

- Water industry

Applications

- Drinking Water / Beverages
- Process Water

1.2 Design and options

MAC 100 Multiparameter signal converter for liquid analytical measurements



A complete measuring system consists of:

- MAC 100 Multiparameter signal converter
- 1 or 2 sensors
- Mounting assemblies

Up to two sensors (for identical or different parameters) can be connected to the signal converter.

The signal converter MAC 100 can be adapted perfectly for your requirements: you specify the number and type of signal inputs and outputs, you define the complexity of the measuring point and the number of parameters. The standardised user interface also speeds up commissioning of the device and opens access to a wide range of diagnostic functions for devices and processes.



The OPTISENS ORP 8500 sensor is manufactured using a very pure and large platinum electrode which can be used in almost all standard water applications due to its robust sensor design.

This sensor type is equipped with ceramic diaphragm.

Made to Fit

Mounting assemblies SENSOFIT series

As a complete provider for water analysis, we naturally offer a complete range of assemblies. In addition to retractable and immersion assemblies, there is also a range of flow-through and insertion assemblies available, in a wide range of materials. Special versions for special operating conditions are available on request.

For the OPTISENS ORP 8500 sensor type the following individual assemblies are available:

- SENSOFIT FLOW 1000 series - Flow-through assemblies
- SENSOFIT IMM 1000 series - Immersion assemblies
- SENSOFIT INS 1000 / 7000 series - Insertion assemblies
- SENSOFIT RET / RAM 5000 series - Manual and pneumatic retractable assemblies

For further information please consider the technical datasheets.

1.3 Measuring principle

1.3.1 ORP measurement

The oxidation reduction potential, ORP in short, is the measurement for the concentration of oxidising and reducing agents in water. Its value is influenced both by pH and temperature. ORP is a sum parameter that gives no information on the concentration of a single substance in a mixture.

ORP measurements are used to monitor chemical reactions involving electron transfer. In drinking water treatment it can be found in ozone treatment and the removal of iron, manganese and nitrate as well as in disinfection steps. In swimming pools the German DIN 19643 requires ORP measurements as a hygiene parameter and decrees maximum and minimum values for fresh water, pool water, and salt water. In wastewater treatment ORP is measured in the denitrification process and in detoxication of industrial wastewater.

The ORP sensor consists of a measuring electrode of platinum or gold and a reference of e.g. Ag/AgCl. The potential of the measuring electrode changes with the concentration of reducing and oxidising agents and is measured against the reference. The measured values can be recalculated to fit literature values based on NHE (normal hydrogen electrode) as reference.

2.1 Technical data

- *The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.*
- *Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website (Downloadcenter).*

Measuring system

Measuring principle	Potentiometric
Measuring range	-1500...+1500 mV

Design

Construction	Glass sensor
Shaft diameter	12 mm / 0.47"
Length	120 mm / 4.72"
Process connection	PG 13.5
Sensor cap	S8
Type of diaphragm	Ceramic

Measuring accuracy

Reference conditions	Medium: water
	Temperature: 20°C / 68°F
	Pressure: max. 1 bar / 14.5 psi (absolute)
Measuring error	0.3% full scale
Repeatability	<0.2% full scale
Resolution	0.1 (or 0.01 in extended mode)

Operating conditions

Temperature range	-5...+70°C / +23...+158°F
Max. operating pressure	<2 bar / 29 psi
Minimum conductivity	>150 µS/cm

Installation conditions

Process connection	PG 13.5
Immersion assemblies	SENSOFIT IMM 1000
Flow-through assemblies	SENSOFIT FLOW 1000
Insertion assemblies	SENSOFIT INS 1000 series

Materials

Sensor shaft	Glass
Measuring electrode	Platinum
Reference	Ag/AgCl/Tepox gel
Diaphragm	Ceramic
Gasket	EPDM

Electrical connection

Connector	S8
Cable	Cable pH/ORP-W-Coax
Cable length	5 m / 16.4 ft; 10 m / 33 ft; 15 m / 49 ft

2.2 Dimensions

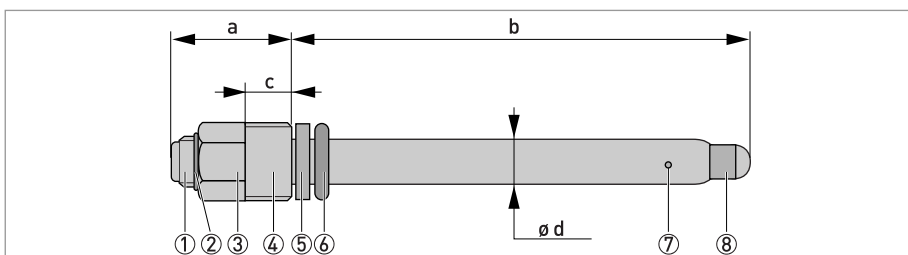


Figure 2-1: Dimensions of OPTISENS ORP 8500

- ① Thread for sensor cable connector
- ② O-ring
- ③ Hexagonal nut
- ④ Thread
- ⑤ Washer
- ⑥ O-ring
- ⑦ Diaphragm
- ⑧ Pt-Ring

	Dimensions [mm]	Dimensions [inch]
a	31	1.2
b	120	4.7
c	12	0.5
d	Ø12	Ø0.5
e	6	0.2
f	Ø8	Ø0.3

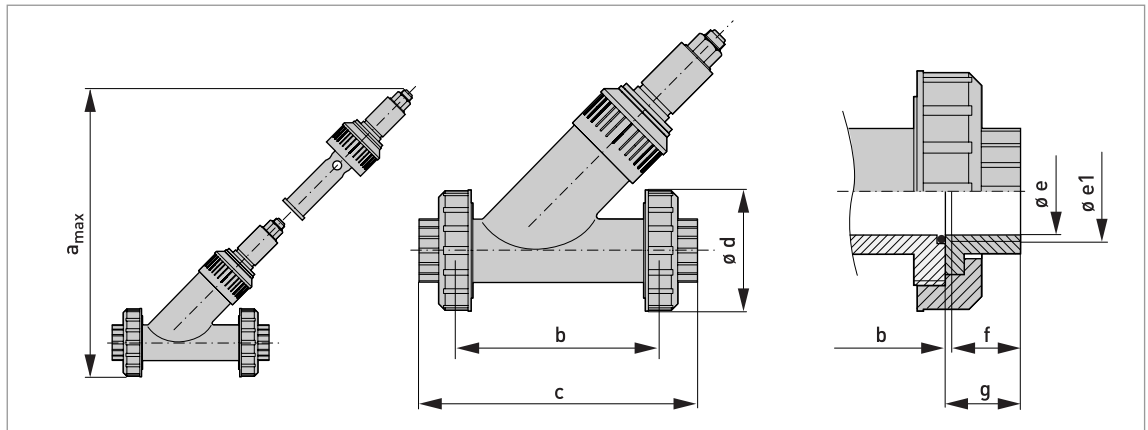


Figure 2-2: Dimensions SENSOFIT FLOW 1000

	Dimensions [mm]	Dimensions [inch]
a_{\max}	165	6.5
b	142.5	5.61
c	178.5	7.03
d	Ø 75	Ø 2.95
e	Ø 21	Ø 1.26
e1	G1	G1
f	19.1	0.75
g	22	0.87

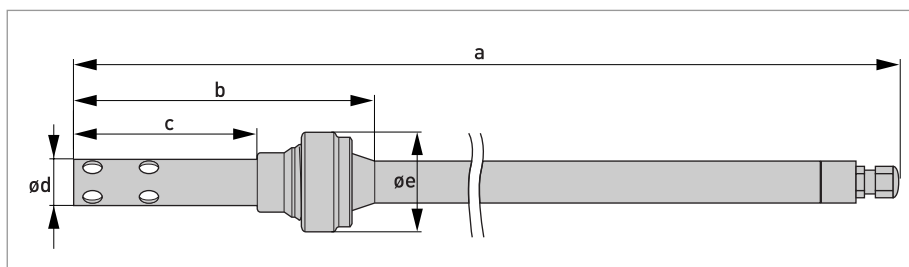


Figure 2-3: Dimensions SENSOFIT IMM 1000

	Dimensions [mm]	Dimensions [inch]
a	1030 (may be shortened)	40.55 (may be shortened)
b	160	6.3
c	100	3.94
d	Ø 25	Ø 0.98
e	Ø 59	Ø 2.32

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