

## SensoLyt® pH/ORP Sensor Systems

- Sensor check function for glass breakage detection
- Robust mechanical design
- Simple change of pH electrode
- Pre-calibration of sensor possible (SensoLyt® 700 IQ)

### SensoLyt® System Design

For continuous pH/ORP measurement, especially under the difficult conditions very often found in sewage treatment facilities, very high demands are made concerning the reliability and operating safety of the systems employed.

Designed specifically for these harsh applications, the SensoLyt® sensors are precision engineered assemblies, which consist of a submersible housing with a built-in preamplifier and the appropriate combination pH or ORP electrode. In combination with our high-performance monitors, the sensors constitute an integrated, extremely reliable pH/ORP measuring system which represents the highest standard, state-of-the-art technology with regard to accuracy, EMC noise immunity and economy.

The digital technology of the IQ sensors, which can store calibration values directly in the sensor, offer particular advantages. This feature allows the user to calibrate the sensor in the laboratory and then return it to its location of use. This provides a certain independency, especially in winter or with bad weather conditions. Its sensor's quick coupler permits direct reintegration into the system.



SensoLyt® 700

SensoLyt® 700 IQ

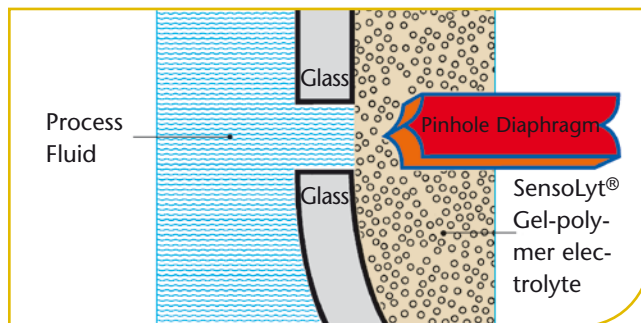


*IQ Sensor connection*

Parameter section
Dissolved Oxygen
<b>pH/ORP</b>
Conductivity
Turbidity/Suspended Solids
Nitrogen
Phosphate
Carbon: COD/TOC/DOC/BOD/SAC

## SensoLyt® Combination Electrodes

- Reliable
- Stable against interference
- Easy to maintain



The reliability of pH and ORP measurements are determined to a large extent by the quality of the pH/ORP electrode which commonly is exposed to extreme conditions; particularly in many industrial applications.

The design of the applied reference system used is crucial to the overall performance of an electrode. In SensoLyt® combination electrodes the reference is a conventional Ag/AgCl/Cl electrode system, completely embedded in a pressure resistant solid gel-polymer electrolyte. As concentration changes in gel-type electrolyte occur very slowly, i.e. the electrochemical characteristic of the cell is unchanged, a stable and constant reference potential will be achieved.

With this electrode design, the polymer matrix/process fluid interphase consists of a pinhole diaphragm; i.e. an electrical flux is established through two fine holes in the cell of the reference system. Such a diaphragm especially reduces the risk of failures.

In addition, SensoLyt® combination electrodes require very little maintenance as there is no electrolyte replacement.



Sensolyt® SEA-HP

### Sensolyt® SEA / SE\*

This pressure and temperature resistant combination pH electrode incorporates a double pin-hole diaphragm and a gel polymer solid electrolyte, which is AgCl free and therefore resistant to sulfides.

Measuring range: pH 2 ... 12

- Highly contaminated sewage
- Emulsions and suspensions
- Media containing proteins and sulfides

### Sensolyt® SEA-HP

Analog Sensolyt® SEA version, with optimized armoring for use under high pressure / temperature conditions.

Measuring range: pH 4 ... 12

- Inline measurement in pipes

### Sensolyt® DWA / DW\*

Especially its long service life and precise measurement make it stand out from the crowd, in particular for measurements of drinking water with low conductivity.

Measuring range: pH 0 ... 14

- Drinking water

### Sensolyt® ECA / EC\*

This combination pH electrode has a single pin-hole diaphragm and a gel electrolyte. With its long-term stability it provides an economical solution, particularly in most wastewater facilities.

Measuring range: pH 2 ... 12

- Normally polluted wastewater

### Sensolyt® PtA / Pt\*

This ORP electrode is also fitted with a pin-hole diaphragm, and is primarily recommended for applications in heavily contaminated wastewater.

Measuring range:  $\pm 2000$  mV

- Municipal and industrial sewage
- Emulsions and suspensions
- Media containing proteins and sulfides

\* electrode without armor for direct use in flow-thru vessels

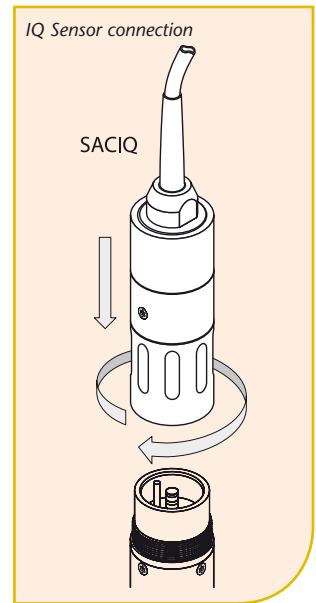
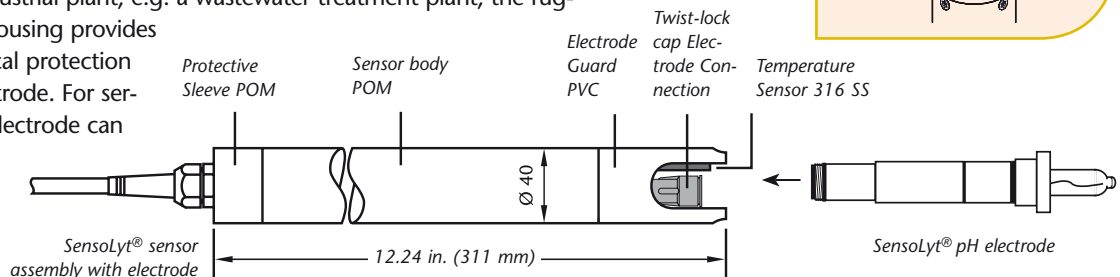
## SensoLyt® Sensor Assemblies

SensoLyt® sensor assemblies perform multiple functions:

- **preamplification** of the electrode signal
- holder for an integrated NTC sensor for **temperature measurement**
- reliable **protection** of the installed pH-electrodes against mechanical damage
- Digital signal processing with calibration value storage (IQ sensors)

The very low voltage signal delivered by the pH/ORP electrode is very susceptible to noise and ground-loop interferences. For this reason WTW has integrated a preamplifier in the sensor assemblies. Its amplification and impedance conversion assure low-impedance and thus reliable signal transmission over long distances; e.g. required for operation with remotely installed monitors.

SensoLyt® sensor assemblies feature a built-in NTC thermistor for temperature measurement and automatic temperature compensation. This enables both pH or ORP and temperature to be measured simultaneously with a single probe. Under the rigorous operating conditions of an industrial plant, e.g. a wastewater treatment plant, the rugged design of the housing provides important mechanical protection of the glass pH electrode. For service purposes, the electrode can be replaced in the field without tools.



### Analog

#### SensoLyt® 700

The SensoLyt® 700 standard assembly incorporates an integrated preamplifier and a built-in stainless steel NTC temperature sensor. When using a WTW monitor, a special circuitry allows the pH electrode to be monitored for glass breakage. In addition, the SensoLyt® 700 offers as a standard feature an efficient lightning protection system. The SensoLyt® 700 sensor assembly can be fitted with any combination electrode of the SensoLyt® series. It is compatible with all WTW monitors of the EcoLine and QuadroLine® Series.

#### SensoLyt® 690

Same as SensoLyt® 700, but without the SensCheck function.

#### SensoLyt® 650

The SensoLyt® 650 unit is a passive assembly without preamplifier; i.e., it is designed for "high-impedance operation" with the electrode connected directly to the monitor input. The assembly is directly compatible with the high-impedance input of following WTW monitors: pH 170 and pH 296 or Stratos 2211 X pH models.

### Digital

#### SensoLyt® 700 IQ

Digital pH/ORP armature with integrated preamplifier and lightning protection as well as digital signal processing and integrated temperature probe for connection to an IQ SENSOR NET. A special circuiting permits glass breakage detection monitoring. Due to the integrated calibration value memory, a "pre-calibrated pH measurement", the value of which is stored in the sensor, can be set in the laboratory. The sensor's quick release coupling allows the user to remove it from the location of use and return it after successful calibration in the laboratory. With an IQ connection in the laboratory, inconvenient field calibration under adverse conditions can be completely eliminated.

Parameter section

Dissolved Oxygen

pH/ORP

Conductivity

Turbidity/Suspended Solids

Nitrogen

Phosphate

Carbon: COD/TOC/DOC/BOD/SAC

## Technical Data SensoLyt® Sensor Assemblies

Type	Analog			Digital
	SensoLyt® 700 (SW*)	SensoLyt® 690	SensoLyt® 650	SensoLyt® 700 IQ (SW*)
Integrated Preamplifier	Yes	Yes	No	Yes
Signal output	Low impedance, analog	Low impedance, analog	High impedance	Digital
Sensor check funktion	Yes	No	No	Yes
Sensor memory for calibration values	—			Yes
Power consumption	—			0.2 Watt
Temperature measurement	Integrated NTC, 32 ... 140 °F (0 ... +60 °C)			Integrated NTC, 23 ... 140 °F (-5 ... +60 °C)
Ambient conditions	Operating temperature: 32 ... 140 °F (0 ... +60 °C)			Operating temperature: 32 ... 140 °F (0 ... +60 °C)
Electrical connections	integrated PU connecting cable with fitted 7-pole screw connector (IP 65)		Integral PU connection cable with bare cable ends	2-wire shielded cable with quick fastener to sensor
Transient voltage protection	Yes			Yes
EMI/RFI Conformance	EN 61326 class B, FCC Class A			EN 61326 class B, FCC Class A Intended for indispensable operation
Certifications	CUL, UL			CE, cETLus
Mechanical	Sensor body: POM  Protective cap: PVC  Protection rating: IP 68			Sensor body: 316 Ti stainless steel Protection cap: PVC Sensor holder: POM Protection rating: IP 68
Dimensions (L x D)	12.24 x 1.57 in. (311 x 40 mm); SW: 15.52 x 2.34 in. (318 x 59.5 mm)			20 x 1.57 in. (508 x 40 mm); SW: 20.78 x 2.34 in. (515 x 59.5 mm)
Weight (without cable)	Approx. 0.71 lb (320 g); SW: approx. 1.94 lb (880 g)			2.14 lb (970 g) SW: approx. 3.97 lb (1.800 g)
Guaranty	2 years for defects of quality			2 years for defects of quality

## Technical Data SensoLyt® Combination Electrodes

Type	SEA/SE**	SEA-HP	DWA/DW**	ECA/EC**	PtA/Pt**
Electrode type	Gel-polymer solid electrolyte double pinhole diaphragm		Modified gel electrolyte single pinhole diaphragm	Gel electrolyte single pinhole diaphragm	Gel-polymer solid electrolyte double pinhole diaphragm
Operation conditions (Overpressure/temperature)	10 bar/68 °F (20 °C) 1 bar/140 °F (60°C)	10 bar/140 °F (60°C)	6 bar / 68 °F (20 °C) 1 bar / 140 °F (60°C)	6 bar / 68 °F (20 °C) 1 bar / 140 °F (60°C)	10 bar / 68 °F (20 °C) 1 bar / 140 °F (60°C)
Measuring range	32...140 °F (0...60 °C)	32...140 °F (0...60 °C)	32 ... 140 °F (0 ... 60 °C)	32 ... 140 °F (0 ... 60 °C)	32 ... 140 °F (0 ... 60 °C)
Mechanical	2 ... 12 pH				
Dimensions	Cylindrical glass membrane, armored version with PVC armouring (SEA-HP: POM), 2 Viton O-ring seals for mounting into SensoLyt® sensor assemblies				
Electrical connections	Length 4.72 in./120 mm (without plug head)				
Guaranty	watertight plug head connector				
	6 months for defects of quality				

## Ordering Information pH/ORP Sensors

SensoLyt® Sensors	Order No.	
SensoLyt® 700-7	pH/ORP sensor with integrated preamplifier; cable length 23 ft. (7.0 m)	109 191
SensoLyt® 690-7	Same as model 700-7, but without SensCheck funktion	109 180
SensoLyt® 650-7	pH/ORP sensor for high impedance operation; cable length 23 ft. (7.0 m) (for SensoLyt® SEA, DWA, ECA, PtA)	109 195
SensoLyt® 700 IQ	pH/ORP sensor for combination electrodes SensoLyt® SEA, DWA, ECA, PtA	109 170
SACIQ-7,0	Sensor connection cable for all IQ sensors, cable length 23 ft. (7.0 m)	480 042
SensoLyt® Combined electrodes	Order No.	
SensoLyt® SEA	pH combination electrode, measuring range 2 ... 12 pH, for mounting into SensoLyt® sensor assemblies	109 115
SensoLyt® SEA-HP	pH combination electrode, measuring range 4 ... 12 pH, for mounting into SensoLyt® sensor assemblies	109 118
SensoLyt® DWA	pH combination electrode, measuring range 0 ... 14 pH, for mounting into SensoLyt® sensor assemblies	109 119
SensoLyt® ECA	pH combination electrode, measuring range 2 ... 12 pH, for mounting into SensoLyt® sensor assemblies	109 117
SensoLyt® PtA	ORP combination electrode, measuring range ± 1000 mV, for mounting into SensoLyt® sensor assemblies	109 125
SensoLyt® SE	Same as model SEA, but without armor; e.g. for direct use in flow-thru vessels	109 100
SensoLyt® DW	Same as model DWA, but without armor; e.g. for direct use in flow-thru vessels	109 103
SensoLyt® EC	Same as model ECA, but without armor; e.g. for direct use in flow-thru vessels	109 102
SensoLyt® Pt	Same as model PtA, but without armor; e.g. for direct use in flow-thru vessels	105 412

Further cable lengths, special design (e.g. for seawater) and buffer solutions see brochure "Product Details"

\* SW: Sensor in sea water design (with plastic armouring (POM))  
\*\* Electrode without armor, e.g. for direct use in flow-thru vessels  
\*\*\* Depending on monitor



\*on armature