ORP

ORP (Oxidation Reduction Potential) is a common measurement in biochemistry, environmental chemistry and water quality. In the biochemical perspective, an oxidizing chemical pulls electrons away from the cell membrane which means it can be destabilized and leaky. The rapid death of a cell is the consequence of a destroyed membrane. The ORPs of natural systems like aerated surface water, rivers, lakes, rainwater and acid mine water usually have oxidizing conditions leading to positive potentials. Submerged soils, swamps and marine sediments, where air supply has its limitations, reducing conditions are the norm leading to negative potentials. For water system monitoring, the ORP value provides the operator with a rapid and single-value assessment of the disinfection potential of water in the postharvest system. This enables the operator to assess the activity of the applied disinfectant rather than the applied dose.

ORPs in aqueous solutions are determined by measuring the potential difference between an inert sensing electrode in contact with the solution and a stable reference electrode. The reference electrode is connected to the solution by a salt bridge. It has a known potential and is made of silver chloride or saturate calomel. Platinum is frequently used for the sensing electrode.

The Oxygen-Reduction Potential, also known as Redox Potential describes the tendency of a chemical species or a solution to acquire electrons and therefore to be reduced. Each species has its own reduction potential. It is measured in Volts (V) or mV.

Polilyte Plus ORP

The maintenance free Polilyte Plus ORP sensors are designed to withstand demanding applications in chemical and petrochemical industries. Monitoring the ORP value is becoming increasingly important in many applications, especially harsh chemical environments or high alkaline wastewater. Because of its Single Pore diaphragms you will never have liquid junction problems and total breakdowns. The Polilyte Plus ORP sensors demonstrate reliable reproducible measurement accuracy in highly alkaline solutions as well as in samples with low conductivity. Additionally, the Everef-L reference cartridge ensures a long lifetime.

Benefits

- 2 Single Pores prevent clogging and ensure reliable measurements
- Minimal diffusion potenital
- Highly reproducible measurements and very stable over a long period of time
- Resistant against solvents, strong acids and bases

Typical applications

- Sugar industry
- Dye industry
- Industrial wastewater
- Paper industry

Specifications

Measuring range	± 2000 mV (Arc: ± 1500 mV)
Process temperature	0 to 130 °C (Arc: analog 0 to 110 °C, digital 0 to 130 °C)
Pressure range (relative to ambient)	0 to 3 bar (140 °C) 0 to 10 bar (130 °C) 0 to 16 bar (100 °C)
Hygienic aspects	Autoclavable, CIP, SIP
ORP element	Pt wire
Electrolyte	Polisolve Plus
Reference system	Everef-L
Diaphragm	Single Pore
O-ring	FKM

For more specifications see www.hamiltoncompany.com

Ordering Information

	a-length	S8	Arc	VP 6
Polilyte Plus ORP	120	243185	243060	243648
	225	243186	243061	–
	325	10078139	243062	–
	425	10078140	243063	–

Accessories

ORP buffers see page 107
Cables see page 112
Arc Accessories see page 116
Housings see page 127

EasyFerm Plus ORP

Specifications	
Measuring range	± 2000 mV (Arc: ± 1500 mV)
Process temperature	0 to 140 °C (Arc: analog 0 to 110 °C, digital 0 to 140 °C)
Pressure range (relative to ambient)	0 to 6 bar
Hygienic aspects	Autoclavable, CIP, SIP
ORP element	Pt ring
Electrolyte	Phermlyte
Reference system	Everef-F
Diaphragm	HP Coatramic
O-ring	EPDM

For more specifications see www.hamiltoncompany.com

The EasyFerm Plus ORP sensors are designed to withstand demanding applications in pharmaceutical and chemical industries. It is supplied with a pre-pressurized electrolyte which prevents the diffusion of sample into the sensors. The Everef-F reference cartridge ensures that the Phermlyte reference electrolyte remains free of silver and precipitation.

Measuring the ORP value is getting more and more important in the branches mentioned above.

Benefits

- Pre-pressurized reference electrolyte ensures a clog-free diaphragm
- Almost drift-free measurement
- Stable measurement signals after steam sterilization, autoclavation and CIP cleanings
- Large platinum ring

Typical applications

- Bioreactors
- Industrial processes
- Downstream processes

Ordering Information

	a-length	S8	Arc
EasyFerm Plus ORP	120	243187	243050
	225	243188	243051
	325	–	243052
	425	–	243053

Accessories

ORP buffers see page 107
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ChemoTrode ORP

The ChemoTrode ORP is the most robust sensor to measure the oxidation-reduction potential in demanding applications in pharmaceutical and chemical industries. The ChemoTrode ORP has a refill hole which allows refilling the electrolyte and pressurization of the reference electrolyte. Its Everef-F reference cartridge ensures that the reference electrolyte remains free of silver and precipitation of proteins.

Specifications

Measuring range	± 2000 mV
Process temperature	0 to 130 °C
Pressure range (relative to ambient)	0 to 6 bar
ORP element	Pt ring
Electrolyte	Viscous 3 M KCl-LR
Reference system	Everef-F
Diaphragm	HP Ceramic

For more specifications see www.hamiltoncompany.com

Benefits

- Liquid electrolyte ensures fast response time and high precision
- Longer lifetime thanks to refillable electrolyte
- Everef-F reference cartridge extends electrode life in aggressive media

Typical applications

- Industrial processes
- Mining Industry
- Pulp and Paper industry
- Fermentations

Ordering Information

	a-length	S7
ChemoTrode ORP	120	238740
	150	238742

Accessories

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Housings see page 127

OxyTrode Pt

The maintenance free OxyTrode Pt is an ORP sensor designed for processes in the chemical industry and for applications in wastewater treatment. Three high-performance ceramic diaphragms reduce the effect of flow potential in pipe mounting.

Specifications

Measuring range	± 2000 mV
Process temperature	0 to 130 °C
Pressure range (relative to ambient)	0 to 16 bar (25 °C) 0 to 6 bar (130 °C)
ORP element	Pt wire
Electrolyte	Viscous 3 M KCl-Pharma, blue
Reference system	Everef
Diaphragm	HP ceramic
O-ring	EPDM

For more specifications see www.hamiltoncompany.com

“Did you know… that the OxyTrode Pt is the ORP version of the MecoTrode?”

Benefits

- 3 high performance ceramic diaphragms for reduced flow potentials when mounted in pipes
- Platinum wire coil welded onto the glass

Typical applications

- Water and Wastewater
- Industrial processes

Ordering Information

	a-length	S8
OxyTrode	120	238810

Accessories

ORP buffers see page 107
Cables see page 112
Housings see page 127

Polilyte RX
Polyplast Pro RX

The maintenance free Polilyte RX and Polyplast Pro RX sensors are designed for ORP measurement in water applications and low conductivity samples, e.g. wastewater, fish farming, ground water, etc.

The Single Pore liquid junction guarantees best measurement results because of direct contact between the sample and the Polisolve electrolyte – clogging is nearly impossible. The Polyplast Pro sensor comes with a robust plastic shaft and glass bulb protection, making it one of our most economical and longest lasting sensors.

Benefits

- Single Pore for direct sample contact with Polisolve electrolyte
- No clogging
- Fast response even in low conductivity media
- Easy maintenance due to non refillable electrolyte

Typical applications

- Wastewater applications
- Fish farming
- Ground water

Specifications

Measuring range	± 2000 mV
Process temperature	Polilyte Pro: -10 to 60 °C Polyplast Pro: -10 to 40 °C
Pressure range (relative to ambient)	0 to 6 bar
ORP element	Pt-wire
Electrolyte	Polisolve
Reference system	Polilyte Pro: Everef-B Polyplast Pro: Ag/AgCl
Diaphragm	Single Pore
O-ring	Polilyte RX: EPDM Polyplast Pro RX: EPDM

For more specifications see www.hamiltoncompany.com

Ordering Information

	a-length	S8
Polilyte RX	120	238433
Polyplast Pro RX	120	238409

Accessories

ORP buffers see page 107
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Housings see page 127

EasyControl ORP

The maintenance free EasyControl ORP is an entry level ORP sensor for chemical or wastewater applications and low process temperatures.

It is also often used in swimming pools to control the disinfection with chlorine. They show also good behavior in samples containing few ions, with respectively low conductivity.

Specifications

Measuring range	± 2000 mV
Process temperature	0 to 60 °C
Pressure range (relative to ambient)	0 to 2 bar
ORP element	Pt-wire
Electrolyte	Gel electrolyte
Reference system	Ag/AgCl
Diaphragm	Ceramic
O-ring	EPDM

For more specifications see www.hamiltoncompany.com

Benefits

- Suitable for low conductivity media
- Easy maintenance due to non refillable electrolyte

Typical applications

- Wastewater applications
- Fish farming
- Ground water
- Swimming Pools

Ordering Information

	a-length	S8
EasyControl ORP	120	238523

Accessories

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