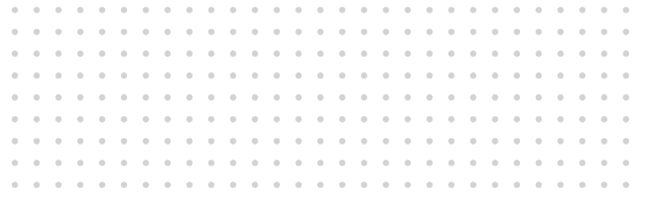




Sensor Technology for Industry & Technical Application



- Oxygen measurements in a range from 1 ppb to 100% O₂
- Contactless measurements of O₂
- OEM components for optical measurements
- Proven sensor technology, applied in industries for decades

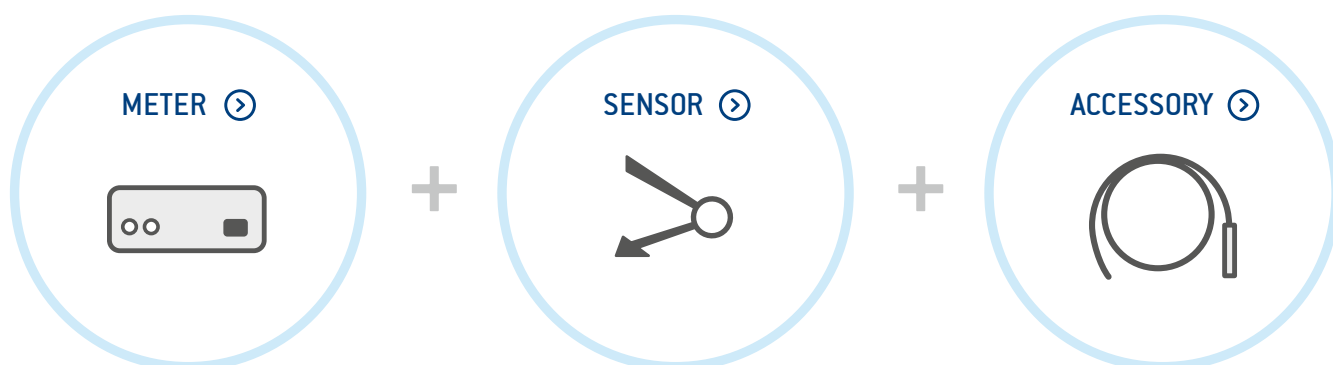


Contact us and we find your customized solution!

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Functional Principle



We bring to light what's inside...



Products Made in Germany

PreSens offers a broad range of sensor systems for end users in Bioprocess Control, Biological & Environmental Research, the Food & Beverage industry as well as other industrial applications.

We offer systems for

- Oxygen measurement in gases and liquids
- Non-invasive online pH, CO₂ and oxygen measurement
- Oxygen and pH sensors for single-use bioreactors
- Microsensors pH, oxygen and CO₂
- Process control in shake flasks incl. biomass monitoring
- Low-maintenance DO measurement for fermentation and bioreactor systems
- Online oxygen and pH measurement in disposables like multiwell plates and plastic bags
- Imaging solutions for 2D-mapping of oxygen-, pH-, and CO₂-distribution

Our product range is constantly expanding.

Company Profile

Based on research activities started in the 1980's PreSens Precision Sensing GmbH was founded in 1997 as a spin-off from the University of Regensburg, Germany.

The company combines long-time experiences of different researchers in the fields of electronic engineering and sensor development. Right from the beginning, microsensor systems were sold to customers in life sciences. Already in its first decade of operation PreSens became one of the leading companies in the field of chemical optical sensor technology. Together with its partners it offers full service in Europe, America and Asia.

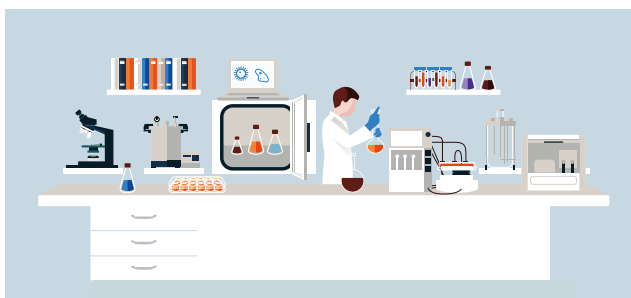
Service

Furthermore, we are developers and manufacturers of optoelectronic OEM sensor components for companies in the field of medical equipment and process control.



Quality Management
ISO 9001
ISO 13485
Voluntary participation in regular monitoring

...and work for the following industries.



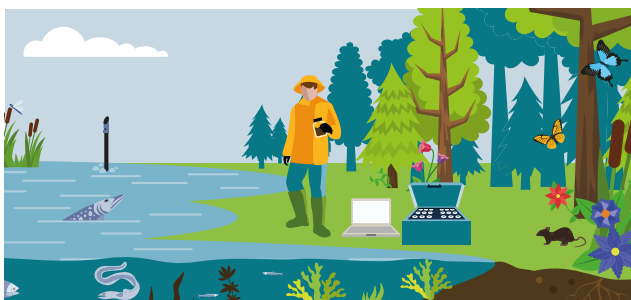
Biotech & Pharma

Our Biotech & Pharma business field helps pharmaceutical companies such as Roche and DSM to improve their bioprocess development with PreSens sensors. With two decades of customer feedback our product development provides efficient solutions for your needs.



Food & Beverage

A cooperation with the market leader for beverage filling systems, Kronen AG, Neutraubling, triggered our Food & Beverage business field in the late 1990's. PreSens supplies sensors for checking the oxygen-tightness of packaging and special systems for determining the penetrability of oxygen in PET bottles at companies such as Nestlé, Heineken or Danisco.



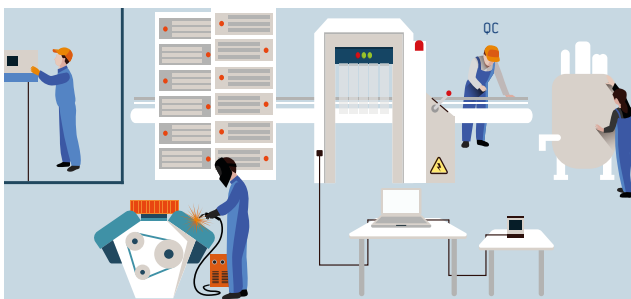
Biology & Environmental

Our worldwide customer base in biological & environmental research has now grown to hundreds of users coming from the University of Alaska in Anchorage to the University of Wellington in New Zealand. For more than two decades we have delivered special sensor systems for various applications such as respirometry, or environmental monitoring.



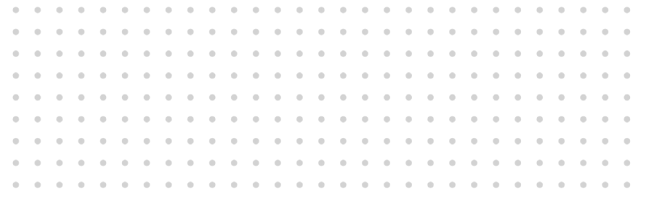
Medical Research & Life Sciences

Our most recent business field arose from a cooperation with renowned medical technology manufacturers from the medical devices sector. PreSens supplies OEM parts, which are integrated into more complex medical systems. Microsensors, sensor spots, and imaging systems are applied in tissue engineering, microfluidics, and many other medical research fields.



Industry & Technical Applications

Robust probes with excellent long-term stability or sensors for contactless measurement find use in technical or industrial applications. Specially designed flow-through connectors for integration in pipes are already applied to monitor the oxygen content in liquids or gases. OEM sensor components can be designed to be integrated in customer systems.



SENSORS

Sensor Solutions

Optical Measurement in Industrial Environments & Technical Applications

Robust probes with excellent long-term stability and sensors for non-invasive measurement find use in technical or industrial applications. The low cross-sensitivity to critical solvents together with the ultra-low oxygen detection limit makes them ideal tools for demanding applications in harsh environments. Specially designed flow-through connectors for integration in pipes are already applied to monitor the oxygen content in liquids or gases. Sensors for ultra-low oxygen concentrations help in the development of oxygen-sensitive products, or process control. PreSens also offers OEM components for integration in the customer's system and full engineering services for the development of customized optical sensor systems.

- Minimally invasive or even contactless measurement
- OEM components for optical measurement
- Customized optical sensor systems
- Ultra-low oxygen sensors for oxygen-sensitive applications
- Proven sensor technology, applied in different industries for decades

Contact us and we find your customized solution!

Applications



Monitoring in Oxygen Sensitive Processes

The trace oxygen sensor type PSt6 with a measurement range of 0 – 5 % oxygen and a detection limit of 1 ppb is ideally suited for monitoring or quality checks in oxygen sensitive processes. Detecting smallest oxygen traces can make the difference in many applications and PreSens optical sensors offer an easy measurement tool allowing even non-invasive measurements.



Oxygen Measurements in Tanks & Pipelines

PreSens offers a variety of metal flow-through connectors and sight glasses with integrated oxygen sensors. Different oxygen sensor types cover the whole range from 1 ppb to 100 % oxygen.



Oxygen-free Orbital Metal Welding

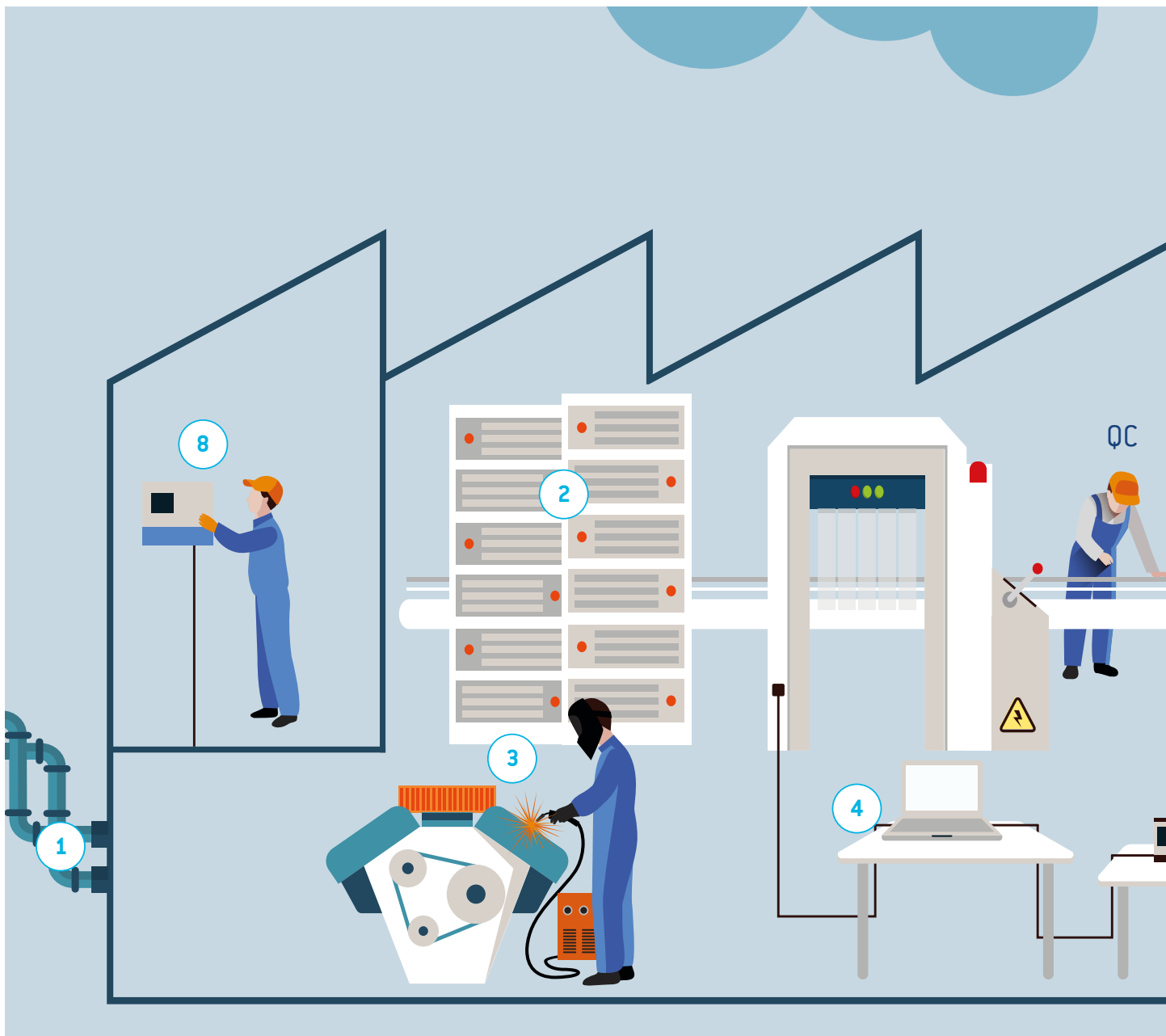
Oxygen integrated during the welding process might cause corrosion. Therefore, the welding joint is flushed with argon to displace all oxygen. An oxygen measurement unit by PreSens is installed in a bypass to detect even smallest oxygen traces below 200 ppm and to guarantee best welding results.



Customized Optical Sensor Systems

Right from the start in 1997, PreSens customized its sensor designs according to users' needs. Since 2001, PreSens offers dedicated OEM solutions for different industries like packaging suppliers, pharmaceutical production and medical device manufacturers. The multitude of the different sensing chemistries makes it so versatile.

Sensor Solutions for Industry & Technical Application



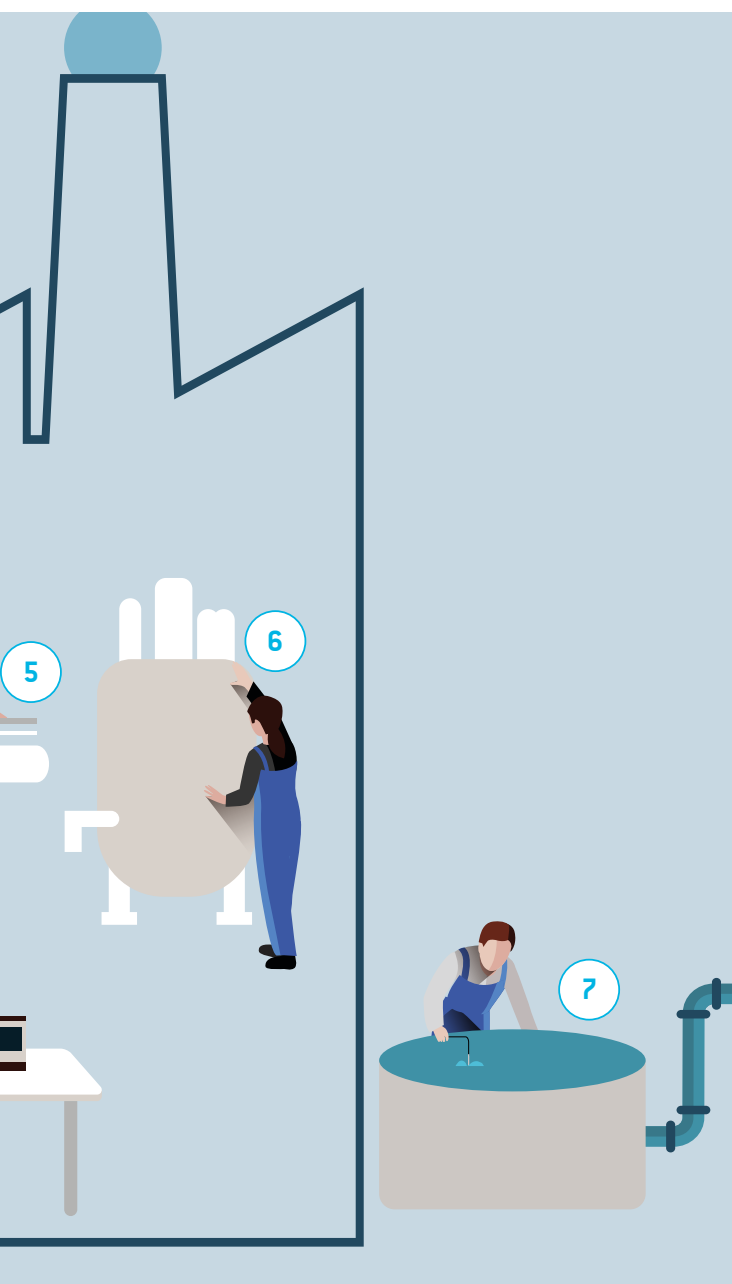
Contact us and we find your customized solution!

OEM Solutions for you



PreSens offers customized sensor technology solutions. Right from the beginning PreSens can be your partner while finding new approaches: from specifications to implementation up to production of your tool.

Don't hesitate to ask for your individual solution:
engineering@presens.de



- 1 Oxygen Sensor integrated in Metal Flow-through Cell + Fibox 4**
 for in-line measurement in pipes
- 2 OEM components + Customized Sensor Solutions**
 for integration in the customer's systems
- 3 Oxygen Sensor Spots + EOM-tO₂-mini**
 for monitoring oxygen sensitive processes, like e. g. welding
- 4 Software, Hardware & Sensor Development**
 PreSens full engineering services include software, hardware & sensor development for customized optical measurement solutions. Different sensor and hardware designs and many interfaces / protocols like Modbus RTU, analogue outputs or RS232/485 are offered
- 5 Sensor Spots, Dipping Probes, Microsensors + Meters**
 different solutions for O₂ measurement in product analysis and quality control
- 6 OXYPro® Series**
 designed for harsh conditions like high pressure, or oil/water mixtures, these probes allow gaseous and dissolved oxygen monitoring in most different environments
- 7 OXYBase® Series**
 these probes are waterproof and can be submerged completely, which makes them ideally suited for measurements in sewage and wastewater analysis
- 8 OXY1-WM**
 due to the optical measurement principle, this wall mount oxygen meter can be applied to monitor oxygen in hazardous environments

FEATURED SYSTEMS



Fibox 4 trace + Oxygen Probe FTM-PSt6

The Oxygen Probe Integrated in Metal Flow-through Cell FTM can easily be integrated in steel pipes with an outer diameter of 6 mm (or other diameter, when using the respective adapter). Connected to the oxygen meter Fibox 4, it measures trace oxygen in a range of 0 – 5 % O₂, 0 – 2 mg/L.



Fibox 3 LCD trace + POF + OEW-PSt3

An Oxygen Exchange Window OEW can be integrated in the customer's system and is read out via Polymer Optical Fiber POF with the Fibox 3 LCD trace. The oxygen meter has an integrated display. It is possible to easily exchange a used sensor coating by just exchanging the OEW.



EOM-tO₂-mini + Dipping Probe DP-PSt9

The Dipping Probe DP-PSt9 is used for measurements in the gas phase and has a measurement range of 0 – 200 ppmv and a detection limit of 0.5 ppmv. Ultra-low oxygen traces can be determined. Combined with the EOM-tO₂-mini it can be integrated in the customer's system.



Customized Optical Windows

Optical sensors are very versatile and small. For integration in the customer's system customized optical windows can be manufactured which are equipped with the respective sensor material. After integration the sensor can be read out through the window via polymer optical fiber either with one of our meters or our OEM components.

Featured Applications



Monitoring O₂ in Natural Gas Pipelines

PreSens sensors are already applied to monitor oxygen content in natural gas. Therefore, the sensor is integrated in a metal flow-through connector. The connector is designed for enhanced leak tightness. The integrated sensor type PSt9 allows to detect even lowest oxygen traces in a range of 0.5 to 200 ppmv.



Oxygen Monitoring in Fuel Cell Production

PreSens sensor spots and microsensors are applied for conducting battery tests and monitor diffusion processes in fuel cell development.



Measurements in Transformer Oil

Oxygen can even be measured in unpolar liquids like transformer oils. Also, systems with excellent long-term stability, equipped with an oil-tight fitting and tolerant to temperatures from $-40\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$ are supplied.



Semiconductor Development

We offer flow-through cells made of Teflon[®] with integrated oxygen sensors that can stand oxidation, aggressive chemicals [e. g. tetramethylammonium hydroxide TMAH up to 25 %] and abrasion of material while enabling oxygen monitoring in industrial environment.

Examples for Meters, Sensors & Accessories

Meters



Microx 4

Portable fiber optic oxygen meter for measurement in normal oxygen range with sensor spots, dipping probes or microsensors



Microx 4 trace

Oxygen meter for measurement with sensor spots, dipping probes or microsensors in normal and trace oxygen range



Fibox 4

Portable fiber optic oxygen meter for measurement in normal oxygen range



Fibox 4 trace

Fiber optic oxygen meter for measurement in normal, trace, and ultra-low oxygen range



OXY-1 SMA

Small, PC-controlled and USB-powered oxygen meter for measurements in normal oxygen range



OXY-1 SMA trace

USB-powered, benchtop oxygen meter for trace oxygen measurements



OXY-1 ST

Small, PC-controlled oxygen meter for use with microsensors, spots, dipping probes and flow-through cells



OXY-1 ST trace

Small trace oxygen meter for use with microsensors, spots, dipping probes and flow-through cells



OXY-4 SMA

Small, 4-channel oxygen meter with temperature compensation for each individual channel



OXY-4 SMA trace

Small, PC-controlled trace oxygen meter for measurements with up to 4 sensors



OXY-4 ST

USB-powered and PC-controlled 4-channel oxygen meter for use with microsensors, spots, dipping probes and flow-through cells



OXY-4 ST trace

Small, 4-channel trace oxygen meter for use with microsensors, spots, dipping probes and flow-through cells



OXY-1 WM

Wall mount oxygen meter for measurements in normal oxygen range



OXY-1 WM trace

Wall mount oxygen meter for measurements in normal, trace and ultra-low oxygen ranges



Fibox 3 LCD trace

Fiber optic oxygen meter with LCD display for measurement in normal, trace, and ultra-low oxygen range



EOM-O₂-mini

Precise OEM solution for oxygen measurements with sensor spots, FTCs and probes



EOM-tO₂-mini

OEM solution for measurement in normal and trace oxygen range



EOM-O₂-micro

OEM solution for high resolution oxygen measurement with microsensors

Sensors



O₂ Sensor Spots

Versatile, small oxygen sensors for measurement in different oxygen ranges



Self-adhesive O₂ Sensors

Easy integration into transparent vessels; for contactless measurement in normal oxygen range (0 – 100 % O₂, 0 – 45 mg/L)



Oxygen Probe Integrated in Metal Flow-through Connectors FTM-PSt3/PSt6/PSt9

Robust probe for oxygen monitoring in the process chain (0 – 100 % O₂ / 0 – 45 mg/L, or 0 – 5 % O₂ / 0 – 2 mg/L, or 0 – 200 ppm); stands CIP & pressure up to 15 bar



Oxygen Exchange Windows OEW-PSt3/PSt6/PSt9

Easy replacement of a used normal range, trace or ultra-low oxygen sensor (0 – 100 % O₂ / 0 – 45 mg/L, or 0 – 5 % O₂ / 0 – 2 mg/L, or 0 – 200 ppm) by just exchanging the OEW



**Teflon® Flow-Through Cell
FTCT-PSt3**

Flow-through cell made of PFA, PTFE (solvent-resistant and compatible with TMAH) with integrated oxygen sensor (0 – 100 % O₂ / 0 – 45 mg/L)



**O₂ Dipping Probes
DP-PSt3/PSt6/PSt9**

Oxygen probe with steel fitting for normal range, trace, or ultra-low oxygen measurements (0 – 100 % O₂ / 0 – 45 mg/L, or 0 – 5 % O₂ / 0 – 2 mg/L, or 0 – 200 ppm)



**Needle-type Oxygen Microsensor
NTH-PSt1**

High resolution measurement in normal oxygen range with Microx TX3 (0 – 100 % O₂ / 0 – 45 mg/L)



**Needle-type Oxygen Microsensors
NTH-PSt7/PSt8**

On-the-spot measurement of oxygen (0 – 100 % O₂ / 0 – 45 mg/L, or 0 – 10 % O₂ / 0 – 4.5 mg/L); compatible with Microx 4 or Microx 4 trace



**Needle-type Oxygen Microsensor
with Fixed Sensor Tip NFSG-PSt1**

Ideal sensor for measuring oxygen inside packaging with Microx TX3 (0 – 100 % O₂ / 0 – 45 mg/L)



**Needle-type Oxygen Microsensors
with Fixed Sensor Tip
NFSG-PSt7/PSt8**

Measures inside packaging (0 – 100 % O₂ / 0 – 45 mg/L, or 0 – 10 % O₂ / 0 – 4.5 mg/L) with Microx 4 or Microx 4 trace oxygen meters



OXYPro® MR(M)

Mid-range oxygen probe for direct connection to a control unit, measurement range 0 - 20.9 % O₂ / 0 - 9 mg/L



OXYPro® WR(M)

Wide range oxygen probe for direct connection to a control unit, measurement range 0 - 100 % O₂ / 0 - 45 mg/L



OXYPro® TR(M)

Trace range oxygen probe for direct connection to a control unit, measurement range 0 - 10 % O₂ / 0 - 4.5 mg/L



OXYPro® UTR(M)

Ultra-trace oxygen probe for direct connection to a control unit, measurement range 0 - 200 ppmv gaseous oxygen



OXYBase® Series

Robust electro-optical module combined with a sensor in a stainless steel housing



Oxygen Exchange Cap OEC-PSt3/PSt6/PSt7/PSt8/PSt9

Replacement cap for OIM or OXYPro®, available with different coatings, e. g. safe for food applications



Oxygen Exchange Cap OEC30- PSt3/PSt6/PSt7/PSt8/PSt9

Replacement cap for OIM or OXYPro®, reducing air bubble formation, available with different coatings, e. g. hydrophobic Teflon coating

Accessories



Polymer Optical Fiber POF

They serve as a versatile connection from meter to sensor.



Adapter for Round Containers ARC

The ARC is used for round containers with a diameter of 2.5 to 20 cm (1 – 8 inches).



Stick-on Adapter SOA

The Stick-on Adapter (SOA) is used for planar containers.



Integration Set Sensor Spots IS-SP

Vacuum tweezers for easy integration of self-adhesive sensor spots

Discover the complete PreSens portfolio



Products

Optical Oxygen
Sensors & Meters

Optical pH
Sensors & Meters

Optical CO₂
Sensors & Meters

Optical Sensor
Systems

VisiSens™
Imaging Systems

OEM Solutions &
Engineering



Industries

Biology &
Environmental

Industry &
Technical

Biotech &
Pharma

Medical &
Life Sciences

Food &
Beverage

Bring to light
what's inside.

PreSens comes from
PRECISION SENSING
and offers:

- precise and simple measurement of O₂, pH, CO₂ and biomass
- systems for Pharma, Biotech, Food & Beverage, Biological & Environmental Research, Technical or Industrial Applications and Medical Devices
- sensors thinner than a hair, non-invasive and online
- optimum advice and support
- more than 1,000 items in stock
- prompt delivery worldwide

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