

**InPro 6000 Sensor Series**

- Improved product quality
- Enhanced process safety
- Ease of operation
- Full regulatory compliance



## In-line Oxygen Measurements

Leading in Performance and Reliability

## Reliable Oxygen Measurement for Liquid and Gas Phase Applications

**Industrial oxygen measurement systems for process control and monitoring are critical for yield and safety. Mettler-Toledo Ingold offers a full line of amperometric and optical oxygen sensors to fulfill the toughest application requirements. The result: superior process performance combined with low maintenance costs.**

### Easy maintenance through ISM®

The Intelligent Sensor Management (ISM) technology simplifies all maintenance operations of the sensor. Process interruptions are shorter, leading to enhanced productivity.



### Improved product quality

Highest measurement accuracy at all measurement ranges is guaranteed through tailored, application-specific sensor solutions. Lowest detection limit for trace oxygen measurement significantly improves product quality in the brewing and beverage industry.

### Maximum process reliability

Reliable sensor operation, combined with the unique ISM technology improve batch-to-batch consistency and boost product quality. The sensors are compliant with the highest quality and safety standards, for instance in hazardous areas.

### Attractive solution for gaseous oxygen applications

The robust gaseous oxygen sensors accurately operate in a wide range of applications without gas pre-conditioning. Fast and simple maintenance during operation minimizes cost of operation.

### Improved process control in biotech applications

The unique optical oxygen measurement solution provides a significant improvement in accuracy and process control, resulting in optimum cell growth.



Brewery: beer quality.



Pharmaceutical industry: fermentation control.



Chemical industry: inertization control.



Wastewater process: biological water treatment.

# Complete Portfolio

## for Demanding Measurement Tasks

**Ingold's high performance in-line oxygen sensors portfolio is the answer to the highest requirements for measuring dissolved or gaseous oxygen. Latest innovative measurement technology combined with Ingold's established ISM concept result in measurement systems tailored to your application.**

### From traces to air saturation

Extensive range of dissolved and gaseous oxygen sensors available:

- Highest measurement consistency with optical oxygen technology
- Approved quality with certified traceability
- Fast response in determination of oxygen traces
- Enhanced process safety under harsh conditions in gas applications

### Latest Optical Technology

The InPro 6880i sensors set a new standard in bioprocess control.

- Outstanding accuracy and high signal stability
- Extremely easy and fast maintenance
- Rugged, industrial design

### Digital sensors for enhanced process control

The InPro 6850i and InPro 6950i sensors fully support the ISM technology for better maintenance:

- Signal conditioning directly in the connector for better signal transmission
- Separated anode and reference electrodes for enhanced signal stability
- Fully autoclavable and sterilizable to avoid cross contamination

### ISM sensors for easy maintenance and less process downtimes

- Plug and measure: Fast and trouble-free sensor start-up
- ISM sensors carry their own history for easy documentation
- Sensor wear monitoring for predictive maintenance



**Amperometric oxygen sensors**

Low oxygen concentration  
InPro 6950

High oxygen concentration  
InPro 6800  
InPro 6850i



**Optical oxygen sensors**

High oxygen concentration  
InPro 6880i



The InPro 6000 series is completed with an extensive range of housings and transmitters, i.g. retractable housing InTrac 777, transmitter M 700.



## InPro 6800 Series

### the Benchmark in Quality and Versatility

**The InPro 6800 and InPro 6850 i sensors are the answer for accurate and reliable measurement at higher oxygen concentration and are ideal for pharmaceutical and chemical processes. The modular design of the in-line dissolved oxygen sensors protects your investment and leads to low maintenance.**

Amperometric sensors satisfy all requirements for reliable measurement under demanding process conditions. With its unique 3-electrode technology with dedicated anode and reference electrodes, combined with the ISM technology for better sensor management, the digital InPro 6850 i sensor sets a new milestone in performance and reliability.

The InPro 6800 and InPro 6850 i sensors are typically used in applications such as:

- Fermentation processes
- Cell growth monitoring
- Inertization and blanketing in gas phase

The sensors are available in 12 mm or 25 mm diameter to allow for fast and convenient installation.

#### Your benefits

##### Proven performance

InPro 6800 and 6850 i oxygen sensors stand for accurate oxygen control even under harshest conditions.

##### Time-saving maintenance

The modular sensor design enables fast and easy part exchange for maximum availability.

##### Enhanced process compatibility with MaxCert™

InPro 6800 and 6850 i sensors offer a certified, hygienic design and are fully sterilizable and autoclavable. Sensor materials are fully traceable and comply with international standards like FDA or USP.



InPro 6850 i

**ISM**



Fast interior body exchange



InPro 6800



InPro 6800 25 mm

#### Selected features of InPro 6800 Series sensors

|                             | InPro 6850 i                                                                                          | InPro 6800                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------|
| Steam-sterilizable          | •                                                                                                     | •                                |
| Autoclavable                | •                                                                                                     | •                                |
| Accuracy (in aqueous media) | $\leq \pm [1\% + 6 \text{ ppb}]$                                                                      | $\leq \pm [1\% + 6 \text{ ppb}]$ |
| Process temperature         | 0...80 °C<br>32...176 °F                                                                              | 0...80 °C<br>32...176 °F         |
| Process pressure (absolute) | 0.2...6 bar<br>2.9...87 psi                                                                           | 0.2...6 bar<br>2.9...87 psi      |
| Connector                   | K8S                                                                                                   | VP                               |
| MaxCert™                    | Quality certificate, EHEDG, material certificate 3.1, FDA + USP class VI, surface finish 2.1, ATEX/FM |                                  |

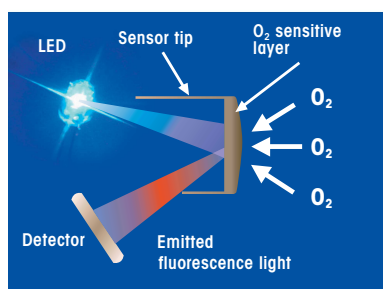


## Optical Technology for Top Measurement Performance

The InPro 6880 i series sets a new standard for operational availability and measurement quality of your oxygen loop. The optical oxygen sensors are easy and fast to maintain, leading to enhanced process safety and low cost of ownership.

### The InPro 6880 i optical sensors for high-level oxygen control

Using state-of-the-art measurement technology, the InPro 6880 i sensors with integrated electronics combine industrial design with regulatory compliance, making this sensor ideal for use in biopharmaceutical applications.



An oxygen-sensitive layer containing immobilized marker molecules is the "heart" of the optical sensor.

### Your benefits

#### Better measurements

Reduced signal drift and faster response time compared to amperometric sensors guarantees maximum accuracy of the oxygen measurement. Digital communication ensures interference-free signal transmission.

#### Maintenance redefined with ISM

Simplified electrolyte-free sensor handling guarantees maximum availability of the sensor. The built-in ISM (Intelligent Sensor Management) provides the user important information about the sensor wear and enables predictive maintenance.

#### Easy operation

The InPro 6880 i with its plug and measure functionality combined with fastest opto-cap replacement sets a new standard in ease of use. Requires no electrolyte and no polarization.



Complete oxygen measurement system



Replaceable sensing element



Fast and convenient opto-cap replacement

### Selected features of optical oxygen measurement systems

|                             | InPro 6880 i                                                                          |
|-----------------------------|---------------------------------------------------------------------------------------|
| Steam-sterilizable          | 130 °C/266 °F                                                                         |
| Autoclavable                | Yes                                                                                   |
| Accuracy                    | $\leq \pm [1 \% + 8 \text{ ppb}]$                                                     |
| Process temperature         | 0 ... 60 °C (32 ... 158 °F)                                                           |
| Process pressure (absolute) | 0.2 ... 6 bar (2.9 ... 87 psi)                                                        |
| MaxCert™                    | Quality certificate, material certificate 3.1, FDA + USP class VI, surface finish 2.1 |

## Trace Oxygen Sensors for Enhanced Product Quality

**The innovative 4-electrode measurement technology ensures accurate trace oxygen determination with high signal stability and reduced maintenance efforts. This establishes InPro 6950 and InPro 6950i sensors as ideal measurement solutions in liquid and gas phase applications.**

For detection of oxygen at the level of 0.1 ppb (parts per billion), there is no alternative to the revolutionary InPro 6950. Dedicated anode and reference electrodes and a guard ring around the cathode fully eliminate unwanted side effects and boost accuracy. Leading-edge membrane technology add up to the outstanding performance of the InPro 6950 and 6950i.

Typical applications in the liquid phase are:

- Filtration and filler lines in breweries
- CO<sub>2</sub> gas recovery in the beverage industry

### Your benefits

#### Outstanding measurement performance

InPro 6950 sensors offer fast and accurate determination of oxygen traces down to 0.1 ppb.

#### Reduced maintenance

The innovative 4-electrode technology reduces maintenance effort by minimizing electrolyte replacement.

#### Highest process safety through ISM

The separation of anode and reference electrode guarantees maximum signal stability. The built-in ISM (Intelligent Sensor Management) enables sensor wear monitoring.



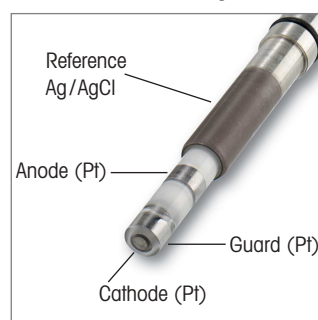
InPro 6950i digital sensor



Modular sensor design allows component replacement in minutes and ensures fail-safe handling.

### Selected features of the InPro 6950 sensor family

|                                                        | InPro 6950/6950i                   | InPro 6950/6950i<br>with gas option |
|--------------------------------------------------------|------------------------------------|-------------------------------------|
| CIP resistant                                          | •                                  | •                                   |
| Hygienic design                                        | •                                  | •                                   |
| Detection limit                                        | 0.1 ppb                            | 5 ppm (0.0005 Vol-%)                |
| Process temperature (measurement)                      | 0 ... 80 °C<br>32 ... 176 °F       | 0 ... 70 °C<br>32 ... 158 °F        |
| Process pressure (absolute)                            | 0.2 ... 9 bar<br>2.9 ... 130.5 psi | 0.2 ... 9 bar<br>2.9 ... 130.5 psi  |
| Response time (air → N <sub>2</sub> ) t <sub>98%</sub> | < 90 s                             | < 60 s                              |



4-electrode technology with additional guard and reference electrode.

## The Portable Analyzer for the Control of Your Process Quality

**In the beverages industry, dissolved oxygen concentration is one of the most important process parameters influencing shelf-life and taste stability of the final products. The InTap 4000e/4004e allow users to perform quick spot measurements wherever and whenever required.**

### **Time saving, easy handling and user-friendly**

INGOLD InTap 4000e or InTap 4004e dissolved oxygen (DO) analyzers can easily be connected to your process. Both analyzers have an intuitive control menu, resulting in maximum convenience for users.

### **Cost-saving**

InTap 4000e and InTap 4004e offer the best price/performance ratio yet available. The sensor maintenance cycle takes just two minutes, thereby maximizing availability. The analyzers are powered by three standard, user-replaceable, batteries.

### **Precise and fast measurements**

The flow-optimized measuring chamber and advanced sensor design guarantee fast, stable and repeatable results, unaffected by flow rate and effective at very low DO concentrations.

The InTap 4000e can store up to 200 measurement values. The accompanying Paraly® software allows data transfer to a PC and further processing in spread sheet programs to visualize your process.

### **Wastewater and water applications with InPro 6050**

In the field of biological wastewater treatment and for the monitoring of water generally, we recommend the use of our special robust and easy-to-use measuring system.

The durable oxygen sensor InPro 6050 is ideal for such demanding applications.



O<sub>2</sub> sensor  
InPro 6050



Immersion  
housing  
InDip 550



Transmitter  
M300



InTap 4000e



InTap 4004e

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