

Technical Datasheet

DISSOLVED OXYGEN MEASUREMENTS | DATA SHEETS | DS-WXDO7001 / DO-EN- REV.A-23

DISSOLVED OXYGEN SENSOR MODEL WXDO7001



FLOW | LEVEL | PRESSURE | TEMPERATURE | pH | ORP | TDS | CONDUCTIVITY | DO | TURBIDITY | TSS



Features

- Highly Accurate & Reliable
- Durable Construction
- Automatic Temperature Compensation (ATC)
- Low Maintenance Design
- Wide Measurement Range
- Long Service Life
- Fast Response Time
- Flexible Installation
- Analog & Digital Output Options

The Wellkonix WXDO7001 Dissolved Oxygen (DO) Sensor is a high-precision sensor designed for continuous dissolved oxygen measurement in a variety of industrial and environmental applications.

Built with advanced polarographic measurement technology, this sensor ensures highly accurate and stable readings even in demanding conditions.

With its durable UPVC or stainless steel body, integrated temperature compensation, and low maintenance design, the WXDO7001 is the ideal choice for water treatment, aquaculture, food and beverage processing, and environmental monitoring.

Applications

- Wastewater Treatment – Monitoring dissolved oxygen levels for effective aeration control in sludge tanks.
- Aquaculture (Fish Farming) – Ensuring optimal oxygen levels for fish health and feed optimization.
- Food & Beverage Industry – Quality control in beverages like beer and bottled water.
- Environmental Monitoring – Assessing water quality in natural and industrial settings.





Technical specifications

Measurement Principle	Polarographic Sensor
Measuring Range	0.01 – 20 mg/L
Resolution	0.01 mg/L
Response Time	3 min (90% at 20°C)
Polarization Time	1 hour
Minimum Flow Rate	2.5 cm/s
Drift	<2% per month
Measurement Error	<±0.1 mg/L
Output Current	20-25 nA per 0.1 mg/L (Max: 3.5 μA)
Zero Oxygen Reading	<0.1 mg/L (after 5 min)
Calibration Interval	>60 days
Temperature Compensation	PT1000/PT100 sensor
Operating Temperature Range	0 – 60°C
Electrode Material	UPVC or Stainless Steel
Lifetime	>1 Year

Working principle

The polarographic sensor operates by detecting a change in this current caused by the variable pressure of oxygen while the potential is held constant at 0.8V. The more oxygen passing through the membrane and being reduced at the cathode, the greater the electrical signal (current) read by the probe. As oxygen increases, the signal increases and, conversely, as oxygen decreases, the signal decreases. Chemically, this is described as the oxidation of the silver and reduction of oxygen at the gold cathode as follows:

Silver Anode Reaction: $4Ag + 4Cl^- \rightarrow 4AgCl + 4e^-$
 Cathode Reaction: $O_2 + 2H_2O + 4e^- \rightarrow 4OH^-$
 Overall reaction: $O_2 + 2H_2O + 4Ag + 4KCl \rightarrow 4AgCl + 4KOH$

Applications

Wastewater Treatment Plants

In modern wastewater treatment, dissolved oxygen levels play a crucial role in aeration control, biological nutrient removal (BNR), and sludge digestion. The WXDO7001 sensor provides real-time oxygen concentration data, enabling operators to optimize aeration systems, reduce energy consumption, and improve effluent quality.

Aeration tank monitoring –

Ensures oxygen levels are maintained for efficient microbial activity.

Sludge tank control –

Prevents excessive aeration, minimizing energy costs.

Compliance assurance –

Helps meet regulatory requirements for treated water discharge.

Food & Beverage Industry

Many food and beverage processes require strict control over dissolved oxygen levels to ensure product quality and shelf life. The WXDO7001 is ideal for monitoring:

Brewing and fermentation –

Helps optimize oxygen content for yeast activity in beer and wine production.

Bottled water & soft drinks –

Monitors oxygen infusion in premium "oxygenated water" products.

Dairy & juice processing – Prevents oxidation and spoilage of sensitive food products.



Installation & Maintenance

Installation Guidelines

- ✓ Install the WXDO7001 sensor in a vertical position to ensure stable readings.
- ✓ The sensor can be used in both submerged and inline configurations depending on the application.
- ✓ Ensure proper electrical connections using the color-coded cable system:

Cable Color	Function	Connection Point
Red	Temperature Sensor	TEMP
Yellow	Temperature Sensor	TEMP
Black (Small)	Electrode Anode	DO-
White	Electrode Cathode	DO+
Black (Large)	Ground	GND

Maintenance & Calibration

Proper maintenance is essential for optimal sensor performance. The WXDO7001 is designed for low maintenance but requires periodic checks.

Membrane & Electrolyte Replacement

Replace the Teflon membrane and electrolyte solution every 6 months for accurate readings. Follow the step-by-step membrane replacement guide in the user manual.

Electrode Cleaning

If the sensor response time is slow, or measurement drift is observed, clean the gold cathode using fine sandpaper (0.04mm). Use a mild detergent solution to clean the membrane surface if contamination occurs.

Calibration & Re-Polarization

After membrane/electrolyte replacement, perform electrode re-polarization for at least 2 hours before recalibrating. Calibration should be performed every 60 days using a zero-oxygen solution (sodium sulfite) and a saturated air sample for 100% calibration

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