Fluorescent Dissolved Oxygen Sensor Series

—User Manual—

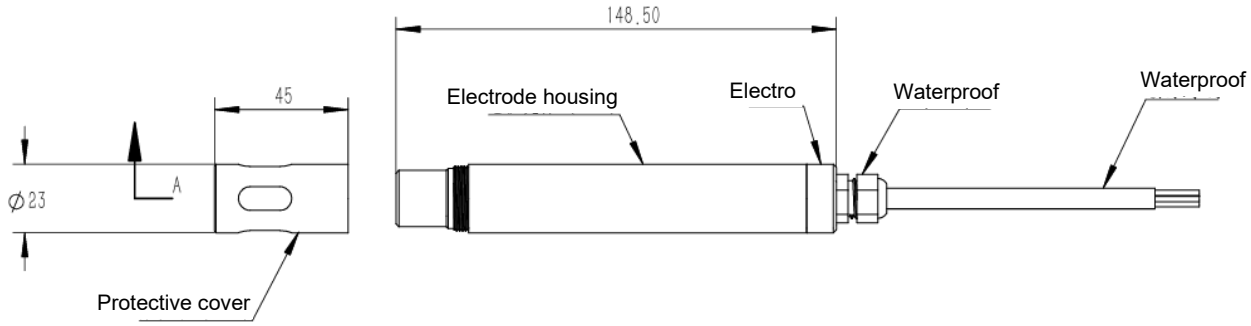
Version No.: 25.1.v1.1

Product features: The fluorescent dissolved oxygen (FDO) sensor designed and manufactured by Hyphive Smart Sensors utilizes fluorescent quenching technology to convert the interaction between oxygen and fluorescent molecules into optical signals and obtains stable and sensitive changes in oxygen concentration or oxygen partial pressure through a self-developed 3D algorithm. Compared to the traditional electrochemical measurement technology, the fluorescent oxygen sensor offers higher measurement accuracy, plug-and-play response time and eliminates the need for any chemical reagents at maintenance. It is an ideal choice for water quality testing in industries such as chemical engineering, biomedicine, power plants, wastewater treatment and aquacultures.

Core technology: Patented sensor membrane manufacturing technology, patented algorithm and electronic circuit hardware and software systems.

Measurement indicators: Dissolved oxygen or oxygen partial pressure.

Configurations (OEM /Customizable)



Wiring connection

Output wire color	Function/wiring method
Red	DC power supply (+) 6-36 V
Black	DC power supply (-) 6-36 V
White	Modbus RS-485A
Green	Modbus RS-485B

Specifications

Measuring range	Accuracy
Oxygen concentration: 0-25mg/L Saturation: 0-250% Working temperature: 0-60℃ (0-140°F) Storage temperature: -20-80℃ (-4-176°F) Working pressure: 0-150kPa	Oxygen concentration: ±0.1mg/L or ±1% (0-100%); ±0.2mg/L or ±2% (100-250%) Temperature: ±0.2℃ Pressure: ±0.1kPa
Response time	**Waterproof rating**
T90＜60 seconds (25℃/77°F) T95＜90 seconds (25℃/77°F) T99＜180 seconds (25℃/77°F)	Fixed installation: IP68 High pressure version available on request Underwater application: Max. 1000m
Dissolved oxygen compensation	**Materials**
Auto Temperature: 0-60℃ (0-140°F) Pressure: Instrument-end program or manual Salinity: Instrument-end program or manual	Membrane cap: stainless steel 316L+PMMA Housing: Stainless steel 316L
Calibration	**Data output**
One-point calibration: saturation 100% Two-point calibration: **1st** point saturation 100% (Saturation water) **2nd** point saturation 0% (oxygen-free water)	Digital signal Modbus-RS485 Optional 4-20mA
Power input	**Warranty**
DC power supply 6-36 V	Fluorescent membrane cap: 1 year (service life 2 years)
Wire length	**Power consumption**
Standard 5 meters (optional: 10-100 meters)	<4mA (12V DC power supply)

Probe calibration

When the sensor calibration cannot be completed or if the sensing membrane is damaged thus affecting normal use, it is necessary to promptly replace the sensing membrane or sensor and do the calibration again.

a) **100% Saturation Calibration or User On-site Open Air Calibration:** after rinsing the membrane cap with clean water, cover the sensor (including the membrane cap) with a damp cloth

or wet towel. Wait until the reading stabilizes (data fluctuations within 0.1 mg/L for less than 2 minutes) before completing the calibration.

b) **0% Saturation (Anoxic or Zero Oxygen Water) Calibration:** immerse the sensor in an Oxygen free water until the sensor reading drops to the lowest value and stabilizes. Then, input the dissolved oxygen data under these temperature and pressure conditions into the sensor and save it. Alternatively, passing nitrogen gases into the constant-temperature water bath while immersing the sensor until the sensor reading drops to the lowest value and stabilizes before saving the calibration data.

Probe maintenance

Depending on the usage environment and operating time, during the first month, regular checks on the cleanliness of the membrane cap should be conducted to provide a routine time for the following maintenance cycle.

1. Membrane cap

a) Wash with clean water or drinking water and wipe off any dirt with a paper towel or cloth. Avoid using brushes or hard objects to clean the dirt.
b) When the sensor readings fluctuate significantly, unscrew the membrane cap to check if any water ingress or if the cap is broken.
c) If the membrane cap has been continuously working for over a year, it is recommended to replace the membrane cap if readings are unstable or inaccurate.
d) Calibration is required after each replacement of the membrane cap.

2. Housing and wires

Wash with clean water or drinking water and wipe off any dirt with a soft paper towel or cloth. Avoid using brushes or hard objects to remove dirt.

Product warranty

Under conditions of proper transportation, storage and standard usage, if the product fails to operate normally due to manufacturing quality issues, the company will provide repairs free of charge. During the warranty period, if the instrument is damaged or fails to work normally due to improper use by the user, failure to follow the operating manual, or other reasons, the company will still repair the instrument, but the materials and travel expenses will be borne by the user. After the warranty period, the company will still be responsible for repairs, but will charge for materials costs and travel expenses.

Consumables: Fluorescent caps

The warranty period is 1 year (2 years of normal service life)