Aquaculture Optical Dissolved Oxygen Sensor

User Manual (Version V1.1)

Introduction

Thanks for choosing instrument！

Please read this manual carefully before using this product, and keep this manual in safe place for future reference.

Please follow the instructions and procedures stated in this manual.

To ensure after sales warranty coverage, please follow the user instructions and maintenance procedures stated in this manual. Any damage and lost caused by improper use of this product will not be covered by factory warranty. Please keep all documents, and if you have any questions, please do not hesitate to contact customer services.

Remove the instrument from package material and examine it to make sure that there is no damage occurred during shipment. If there is any damage, please contact Customer Service immediately. Save all materials until you are sure that the instrument functions properly. Any damage or defective items must be returned in their original packaging material.

ODO Optical Dissolved Oxygen Sensor

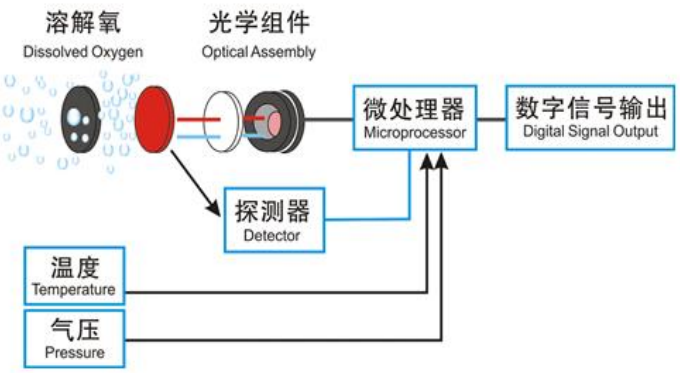
DO monitoring is the most critical water quality parameter in aquaculture. ODO series aquaculture optical dissolved oxygen sensor is specially designed for aquaculture applications. With embedded temperature sensor and robust RS485 digital signal output, the sensor can be seamlessly connected to online controller. The sensor can be easily integrated into wireless sensor network and automation controls.

Features

- Digital output, support RS485 / MODBUS
- No membrane， No electrolyte, No chemical interference, No frequent calibration required
- No oxygen consumption, No flow dependent
- Specially designed for aquaculture application

Principle of Operation：

Optical dissolved oxygen sensor measures dissolved oxygen using the principle of oxygen dynamic luminescence quenching technique. When blue light excites sensor film, the sensing film emits red light. The phase difference between the blue excitation and returned red emission is measured, and the result is used to calculate DO concentration.



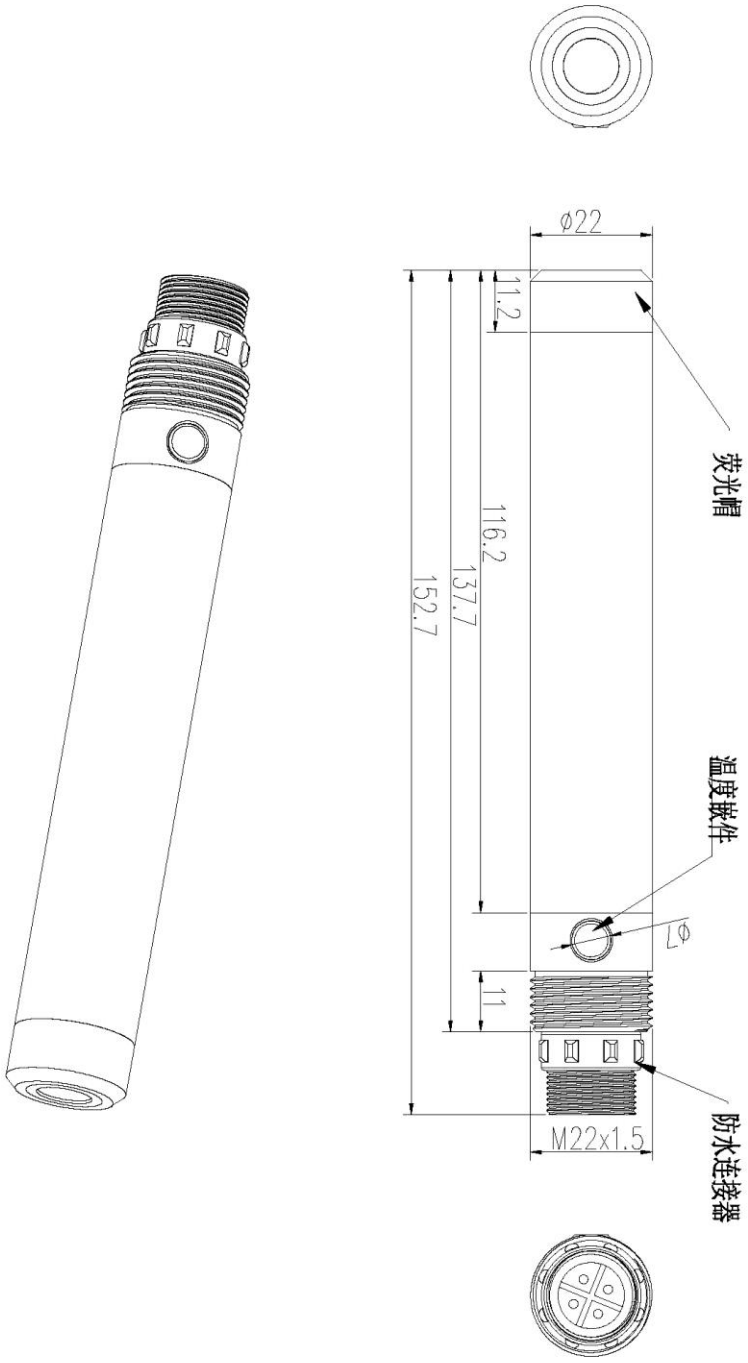
Ordering：

Model	Description
	Aquaculture Optical Oxygen Sensor
	Self-cleaning wiper

Accessory：

Model	Description
	ODO replacement Cap

ODO Sensor Dimensions



ODO sensor outline

ODO Technical Specifications

Range	0-20mg/L or 0-200% Saturation
Response Time	1 min
Housing IP Rating	IP68
Accuracy	5%
Drift	<5% per year
Working Temperature Range	0 ~ 50℃
Temperature Accuracy	±0.5℃
Interface	Support RS-485， MODBUS protocols
Construction	M22*1.5 mm
Power Requirements	DC 6~12V +/-5%， current <50mA
Temperature Sensor Type	NTC
Sensor OD	22mm
Sensor Length	188.3 mm
Cable Length	10m standard; 5m, 15m, and 30m optional
Calibrations	Support one point and two-points calibrations
Sensor Cap Lifetime	1 Year（at normal use）
Body materials	316L and Stainless steel

* PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE

ODO Maintenance

1.Maintenance Schedule

Unlike traditional electrical chemical sensors, optical DO sensors require low maintenance. There are no need for frequent solution filling and calibrations.

Maintenance task	Frequency
Sensor cleaning	Every 30 days
Sensor and sensor cap inspection	Every 30 days
Sensor cap replacement	Every one year
Calibration（if required of agency）	Calibration based on required schedule

Note：above schedule is only for reference, customers should make on their own judgment based on their applications. sensor cap may be used longer than one year, we recommend to replace the sensor cap per year to ensure performance.

2.Routine Maintenance

DO Probe:

•Inspect all sensor connectors for corrosion and replace sensors if necessary.
•Inspect sensor o-rings and replace if necessary
•After prolonged storage, calibration of the sensor is required.
•After use, rinse the sensor body with tap water, dry it, and put on storage cap. Keep DO sensor storage cap wet to moisturize DO membrane surface.
•DO NOT DRYOUT DO SENSOR CAP!
•Inspect the sensor for scratches or cracks, if any are present , replacement of sensor cap may be needed.

Cable:

Cable's minimum bending radius is 15mm. The wires inside the cable may break if it is under long term stressed condition.

3.Sensor Cap care and Storage

Sensor cap storage：if the senor do not in use, store the sensor in its storage cup. Store the sensor cap in water saturated air. If sensor cap has been dried out, please submerge the sensor cap in warm (about 40 -50ºC) water for 48 hours。

Do not expose sensor cap under direct sunlight, keep surface clean, dirty or scratch will cause inaccurate reading.

If DO membrane surface is dirty, try to rinse the surface with tap water first. If necessary, please gently wipe the surface with lens cleaning tissues that has been moistened with clean water. Do not use organic solvents to clean the sensor cap.

ODO Cable

1、DO Sensor Dimensions

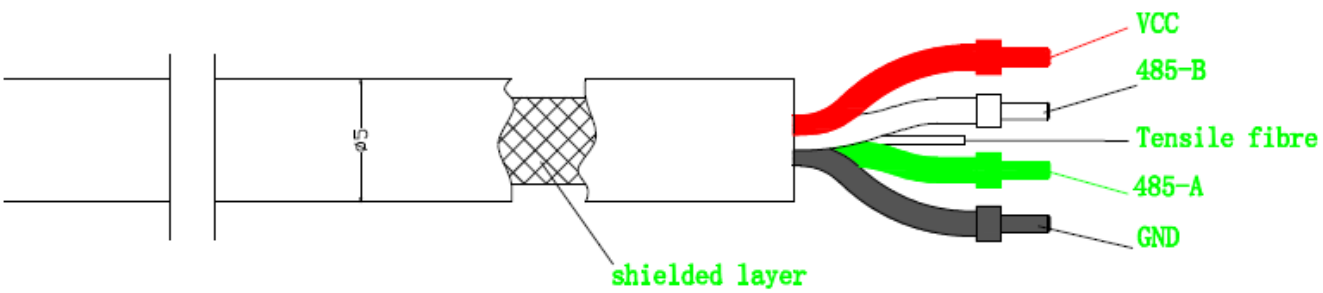
22x188.3 mm(Φ xL)

2、Power Supply Requirements

Power Supply DC 6~12V +/-5%, Current <50mA

3、Sensor Cable

4 wire AWG-24 or AWG-26 shielding wire. OD=5mm



1: Red—Power (VCC)

2: White—485 Date_B (485_B)

3: Green ---485 Date_A (485_A)

4: Black --- Ground (GND)

5: Bare wire ---- shield

Common Trouble Shootings

Error	Possible Cause	Solution
No data displayed on controller (if sensors are connected)	Connection issue	Reconnect sensor to controller
	Cable failure	Contact customer service
	Bad sensor cap or loose sensor cap	Reinstall sensor cap or replace
Unstable DO reading	Dirty sensor cap	Clean sensor cap
	Damaged sensor cap	Replace sensor cap
	Sensor cap expired	
Bad Temperature reading	Bad connection	Reconnect sensor to controller
	Dirty temperature sensor	Clean sensor

Warranty

online dissolved oxygen sensor and controller are warranted for one (1) year from date of purchase against any material and manufacturing workmanship. Within the warranty period, Environmental Technologies will repair or replace, free of charge, any product that determines to be covered by warranty.

Limitation of Warranty

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alternation, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to fire, improper packing and shipping, lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from any unauthorized tampering with this product, any repairs attempted by anyone unauthorized.

This limited warranty does not cover cost of shipping the product back, or any travel cost related the repair work.

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.