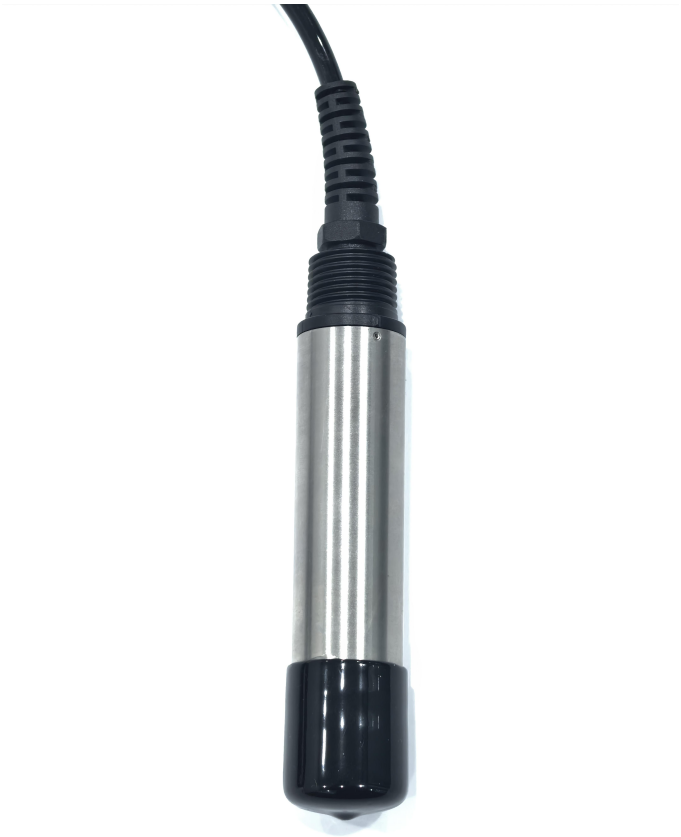
Agrinovo

AGRINOVO-DO-110

Dissolved Oxygen Sensor



1. Overview

The AGRINOVO-DO-110 is a digital dissolved oxygen sensor using RS485 Modbus-RTU protocol. It provides DO concentration and temperature readings with salinity compensation capability. Data is returned as little-endian float32 values.

Key Features

- DO range: 0–20 mg/L
- Temperature: 0–50°C
- IP68 waterproof rating
- Little-endian float32 data
- Salinity compensation (ppt)
- Pressure compensation (kPa)
- RS485 Modbus-RTU
- 9V DC power supply

Applications

- Aquaculture monitoring
- Water quality analysis
- Environmental monitoring
- Industrial process control

2. Specifications

Parameter	Specification
DO Range	0–20 mg/L
Temperature Range	0–50°C
Protection Rating	IP68
Supply Voltage	9 VDC

Compensation

Type	Method
Temperature	Automatic
Salinity	Manual input (ppt)
Pressure	Manual input (kPa)

3. Wiring

Wire Color	Function	Description
Black	V-	Power Ground (9V-)
Red	V+	Power Supply (9V+)
Yellow/White	RS485-A	Data+
Green	RS485-B	Data-

> **Note:** If your RS485 transceiver labels A/B opposite, swap the connections.

4. Communication Settings

Parameter	Value
Protocol	Modbus-RTU
Baud Rate	9600 bps
Data Bits	8
Parity	None
Stop Bits	1
Default Address	0x01

5. Register Map

Data Encoding

DO and Temperature values are **float32** in **little-endian byte order**.

Measurement Registers (Function 0x03)

Address	Registers	Description
0x0000	4	DO (float32) + Temperature (float32)
0x000A	2	Production Serial Number
0x0010	1	Slave Address (via 0xFF request)
0x0011	2	Field Calibration Parameter
0x0062	1	Salinity (ppt, integer)

Configuration Registers (Function 0x10)

Address	Description	Notes
0x0010	Set Slave Address	Range: 1–247
0x0011	Field Calibration	Pressure in 0.01 kPa
0x0021	Cancel Field Calibration	Write 0x1400
0x0062	Set Salinity	Value in ppt

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6. Reading Data

Read DO + Temperature (Float)

Read 4 registers from 0x0000:

```
Request:  01 03 00 00 00 04 44 09
Response: 01 03 08 48 E1 0A 41 F6 28 B4 41 59 5A
```

Decoding (Little-endian float32):

Value	Bytes Received	Reordered	Result
DO	48 E1 0A 41	41 0A E1 48	**8.68 mg/L**
Temperature	F6 28 B4 41	41 B4 28 F6	**22.52°C**

7. Address Configuration

Read Current Address (Using 0xFF)

```
Request:  FF 03 00 10 00 01 90 11
Response: FF 03 02 03 00 91 60
```

Response shows current address = 0x03

Set New Address

Write to 0x0010 using function 0x10:

```
01 10 00 10 00 01 02 14 00 AB C0
```

8. Calibration

Field Calibration (Pressure)

Place probe in air-saturated DO, wait for stability. Write pressure to 0x0011.

Pressure: kPa × 100 (e.g., 101.33 kPa = 10133 = 0x2795)

```
01 10 00 11 00 01 02 95 27 8A 5B
```

Cancel Field Calibration

Write 0x1400 to register 0x0021:

```
01 10 00 21 00 01 02 14 00 AF E1
```