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.

Features

- DO range: 0 to 20 mg/L
- Temperature: 0 to 50°C
- IP68 waterproof rating
- Little-endian float32 data
- Salinity compensation (ppt)
- Pressure compensation (kPa)
- RS485 Modbus-RTU
- 12-24V DC power supply

Applications

Aquaculture monitoring
Water quality analysis
Environmental monitoring
Industrial process control

2. Specifications

Parameter	Specification
DO Range	0 to 20 mg/L
Temperature Range	0 to 50°C
Protection Rating	IP68
Supply Voltage	12-24 VDC

Compensation

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

3. Wiring

Wire Color	Function	Description
Black	V-	Power Ground (12-24V DC-)
Red	V+	Power Supply (12-24V DC+)
Yellow/ White	RS485-A	Data+
Green	RS485-B	Data-

Note: 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 to 247
0x0011	Field Calibration	Pressure in 0.01 kPa
0x0021	Cancel Field Calibration	Write 0x1400
0x0062	Set Salinity	Value in ppt

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
```

9. Maintenance

- Calibration interval depends on the water type and the amount of biofouling and algae. Under normal conditions, calibrate every 6-8 months.
- Clean the membrane cap regularly between calibrations.
- The membrane cap is replaceable, typically after 2+ years of use.

10. Ordering Information

Part number	Description
AGRINOVO-DO-110	Dissolved Oxygen Sensor

11. Revision History

Rev	Date	Changes
1.0	June 2026	Initial release
1.1	August 2026	Layout revision
1.2	October 2026	New layout

Modular IoT sensors and controllers for agriculture and aquaculture. Specifications subject to change without notice.