Agrinovo

AGRINOVO-DO-100

Fluorescence Dissolved Oxygen Sensor

1. Overview

The AGRINOVO-DO-100 is a digital fluorescence-based dissolved oxygen sensor for continuous water quality monitoring. It provides DO concentration, temperature, and saturation percentage through RS485 Modbus-RTU interface with automatic temperature compensation.

Key Features

- Fluorescence DO measurement
- DO range: 0–20 mg/L
- Saturation: 0–200%
- Accuracy: ±2% of range
- Automatic temp compensation
- IP68 waterproof rating
- RS485 Modbus-RTU
- Low power: ≤0.5W

Applications

- Aquaculture and fish farming
- Wastewater treatment
- Environmental monitoring
- Industrial process control

2. Specifications

Parameter	Specification
DO Range	0–20 mg/L
Saturation Range	0–200%
Temperature Range	0–50°C
Accuracy	±2% of range
Repeatability	±1%
Response Time (t90)	~60 seconds
Protection Rating	IP68

Compensation

Type	Method
Temperature	Automatic
Pressure	Manual input (default: 101.3 kPa)
Salinity	PSU input (optional)

3. Electrical Characteristics

Parameter	Specification
Supply Voltage	7–24 VDC
Power Consumption	≤0.5W
Operating Temp	0–50°C
Operating Humidity	≤85% RH

4. Wiring

Wire Color	Function	Description
Red	V+	Power Supply (7–24V DC)
Black	GND	Power Ground
Yellow	RS485-A	Data+
Green	RS485-B	Data-

5. Communication Settings

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

CRC16: Standard Modbus (polynomial 0xA001, init 0xFFFF), low byte first.

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6. Register Map

Measurement Registers (Function 0x03)

Address	Description	Data Type	Scaling
0x0000	DO + Temp (Integer)	4 × int16	See decoding
0x0004	DO Saturation (Integer)	2 × int16	See decoding
0x0006	DO + Temp (Float)	2 × float32	Big-endian
0x000A	DO Saturation (Float)	float32	Big-endian

Configuration Registers (Function 0x06)

Address	Description	Range/Notes
0x1000	Zero Calibration	Write 0 to auto-calc
0x1004	Slope Calibration	Write 0 to auto-calc
0x1008	Zero Offset (Manual)	Value × 1000 (signed)
0x1009	Slope (Manual)	Value × 1000
0x1020	Salinity Compensation	PSU × 10 (0–500)
0x2002	Slave Address	1–127
0x2064	Atmospheric Pressure	kPa × 100

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7. Reading Data

Integer Mode (Recommended)

Read 4 registers from 0x0000:

```
Request:  01 03 00 00 00 04 44 09
Response: 01 03 08 03 64 00 02 08 CC 00 02 [CRC]
```

Register	Hex	Decimal	Decimals	Result
DO Value	0x0364	868	2	**8.68 mg/L**
Temp Value	0x08CC	2252	2	**22.52°C**

Formula: `Value = Raw / (10 ^ Decimals)`

Float Mode

Read 4 registers from 0x0006 (big-endian float32):

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

8. Calibration

Zero Calibration (Auto)

Place probe in zero-oxygen water, wait for stability:

```
01 06 10 00 00 00 8D 0A
```

Slope Calibration (Auto)

Place probe in air-saturated DO environment:

```
01 06 10 04 00 00 CC CB
```