Agrinovo

AGRINOVO-ORP-110

Industrial ORP Sensor

1. Overview

The AGRINOVO-ORP-110 is an intelligent industrial ORP (oxidation-reduction potential) sensor designed for continuous measurement and control of water quality. It features enhanced stability with internal axial capacitor filtering and 100MΩ input impedance, four-layer isolation for interference resistance, a PTFE-bodied electrode, and an IP68 waterproof rating.

Key Features

- ORP range: -1999 to +1999 mV
- Accuracy: ±3 mV
- Resolution: 1 mV
- IP68 waterproof
- Four-layer isolation
- 100MΩ high impedance
- RS485 Modbus-RTU output
- 3/4” NPT mounting, both ends

Applications

- Agricultural irrigation and fertigation
- Aquaculture and RAS disinfection control
- Greenhouses and hydroponics
- Sewage and process water treatment
- Environmental monitoring

2. Specifications

Parameter	Specification
Measurement Range	-1999 to +1999 mV
Resolution	1 mV
Accuracy	±3 mV
Stability	≤2 mV / 24 hours
Power Consumption	≤0.5W
Protection Rating	IP68
Operating Temp	0-60°C
Operating Humidity	≤85% RH
Electrode Body	PTFE

3. Physical Dimensions

Parameter	Dimension
Total Length	160 mm
Probe Diameter	28 mm
Mounting Thread	3/4” NPT, front and back
Probe Head	50 mm
Body	90 mm
Tail	20 mm

4. Electrical Characteristics

Output Type	Supply Voltage
RS485	7-24 VDC

5. Wiring

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

6. Communication Settings

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

7. Register Map

Measurement Registers (Function 0x03)

Address	Description	Scaling
0x0000	ORP Value	Direct (mV), two's complement for negative values

Configuration Registers (Function 0x06)

Address	Description	Notes
0x000A	Intercept/Offset	Direct (mV), two's complement for negative values
0x0050	Slave Address	0x01-0xFE; broadcast 0xFE with one device connected

8. Calibration

The ORP-110 uses single-point offset calibration. Place the cleaned sensor in an ORP standard solution (for example +220 mV), read the sensor value, and write the difference to the offset register 0x000A: a positive correction as the plain hex value, a negative correction in two's complement. Example: reading +200 mV against a +220 mV standard requires a +20 mV offset, written as 0x0014.