Agrinovo

AGRINOVO-PH-110

Industrial pH Sensor

1. Overview

The AGRINOVO-PH-110 is an intelligent industrial pH sensor designed for continuous measurement and control of water quality. It features enhanced stability with internal axial capacitor filtering and 100MΩ impedance, four-layer isolation for interference resistance, and IP68 waterproof rating.

Key Features

- pH range: 0–14.00
- Accuracy: ±0.02 pH
- IP68 waterproof
- 100MΩ high impedance
- Four-layer isolation
- RS485 + Analog outputs
- 3-point calibration
- 3/4” NPT mounting

Applications

- Agricultural irrigation
- Greenhouses and hydroponics
- Sewage treatment
- Chemical industry
- Environmental monitoring

2. Specifications

Parameter	Specification
Measurement Range	0–14.00 pH
Resolution	0.01 pH
Accuracy	±0.02 pH
Stability	≤0.02 pH / 24 hours
Power Consumption	≤0.5W
Protection Rating	IP68
Operating Temp	0–70°C
Operating Humidity	≤85% RH

3. Physical Dimensions

Parameter	Dimension
Total Length	175 mm
Probe Diameter	28 mm
Mounting Thread	3/4” NPT
Probe Head	65 mm
Body	90 mm
Tail	20 mm

4. Electrical Characteristics

Output Type	Supply Voltage
0–2V DC	12-24 VDC
0–5V / 0–10V DC	12-24 VDC
4–20mA	12-24 VDC
RS485	12-24 VDC

5. Wiring

RS485 Interface

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

Analog Interface

Wire Color	Function
Red	Power +
Black	Power -
Yellow	Signal +
Green	Signal -

6. Communication Settings (RS485)

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	pH Value	Value ÷ 100

Configuration Registers (Function 0x06)

Address	Description	Notes
0x0009	Intercept/Offset	Value ÷ 100
0x0050	Slave Address	0x01–0xFE
0x005A	9.18 pH Cal	Write 0x000A
0x005B	6.86 pH Cal	Write 0x000B
0x005C	4.00 pH Cal	Write 0x000C

8. Reading pH Value

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Request:  01 03 00 00 00 01 84 0A
Response: 01 03 02 02 AE 38 98
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Decoding: 0x02AE = 686 → 686 ÷ 100 = **6.86 pH**

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9. Three-Point Calibration

Solution	Register	Command
9.18 pH	0x005A	`01 06 00 5A 00 0A [CRC]`
6.86 pH	0x005B	`01 06 00 5B 00 0B [CRC]`
4.00 pH	0x005C	`01 06 00 5C 00 0C [CRC]`

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10. Analog Output Conversion

Voltage to pH

Output	Formula
0–2V DC	pH = V × 7
0–5V DC	pH = V × 2.8
0–10V DC	pH = V × 1.4

Current to pH

Output	Formula
4–20mA	pH = (A - 4) × 0.875

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11. Installation Notes

Safety

- Do not hot-plug
- Verify connections first
- Use 3/4” NPT fittings

Sensor Care

- Rinse with distilled water
- Avoid air bubbles
- No sharp objects