AGRINOVO-PH-100

Digital pH Sensor

1. Overview

The AGRINOVO-PH-100 is a digital pH sensor for continuous water quality monitoring. It provides high-accuracy pH measurements through RS485 Modbus-RTU interface with three-point calibration capability.

Features

- pH range: 0 to 14.00
- Resolution: 0.01 pH
- Accuracy: ±0.02 pH
- Stability: ≤0.02 pH/24h
- 3-point calibration
- RS485 Modbus-RTU
- Low power: ≤0.5W
- 12-24 VDC supply

Applications

Agricultural irrigation
Hydroponics and greenhouses
Water quality testing
Aquaculture
Wastewater treatment

2. Specifications

Parameter	Specification
Measurement Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy	±0.02 pH
Stability	≤0.02 pH / 24 hours
Power Consumption	≤0.5W
Supply Voltage	12-24 VDC
Operating Temp	0 to 60°C

3. Wiring

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

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

Measurement Registers (Function 0x03)

Address	Description	Scaling
0x0000	pH Value	Value ÷ 100

Configuration Registers (Function 0x06)

Address	Description	Notes
0x0009	Intercept/Offset	Calibration offset
0x0050	Slave Address	0x01 to 0xFE
0x005A	9.18 pH Calibration	Write 0x000A
0x005B	6.86 pH Calibration	Write 0x000B
0x005C	4.00 pH Calibration	Write 0x000C

6. Reading pH Value

Read 1 register from 0x0000:

```
Request:  01 03 00 00 00 01 84 0A
Response: 01 03 02 02 AE 38 98
```

Decoding:

Hex	Decimal	Scaling	Result
0x02AE	686	÷100	6.86 pH

7. Three-Point Calibration

Clean electrode with distilled water between each buffer.

Step	Solution	Register	Command
1	9.18 pH	0x005A	Write 0x000A
2	6.86 pH	0x005B	Write 0x000B
3	4.00 pH	0x005C	Write 0x000C

Calibration Commands

9.18 pH:

```
01 06 00 5A 00 0A 29 DE
```

6.86 pH:

```
01 06 00 5B 00 0B B9 DE
```

4.00 pH:

```
01 06 00 5C 00 0C 49 DD
```

Calibration Procedure

1. Clean electrode with distilled water
2. Place in buffer solution
3. Wait for reading to stabilize
4. Send calibration command
5. Repeat for each buffer

8. Address Configuration

Change Address (0x01 → 0x02)

```
01 06 00 50 00 02 08 1A
```

Broadcast Discovery

Use address 0xFE with only one device connected.

9. Installation Notes

Safety

- Do not hot-plug
- Verify wiring before power

Sensor Care

- Clean with distilled water
- Avoid air bubbles
- No bare hand contact

10. Ordering Information

Part number	Description
AGRINOVO-PH-100	Digital pH 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.