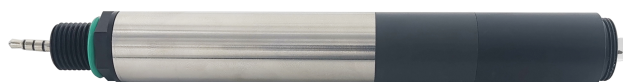


WATER QUALITY SENSOR / DATA SHEET

SS307-01

Digital pH Sensor

Plug-and-play digital pH measurement with a user-replaceable electrode, integrated electronics and RS485 / Modbus output.



pH 0-14 Measurement range	0.01 pH Resolution	0-45 °C Operating temperature	IP68 / 10 m Ingress / max. depth
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Introduction

The SpeSense digital pH sensor integrates digital electronics for plug-and-play operation with multi-parameter sondes and PLC systems through an IP68 connection. Its design combines a user-replaceable pH sensor tip with a reusable sensor base that houses the processing electronics, helping simplify maintenance and reduce replacement cost.

Key Advantages

- Glass-electrode pH sensor with KCl solution
- Capillary-fiber junction material
- Amplifier chip and battery built into the electrode
- Integrated isolator and NTC10K temperature element
- User-replaceable pH electrode with reusable sensor base
- RS485 output with Modbus protocol
- IP68 connector
- Designed for simplified field maintenance

Sensor Construction



USER-REPLACEABLE

pH Electrode Module

Replaceable glass-electrode tip with a reusable sensor base containing the digital processing electronics.

PERFORMANCE

Technical Specifications

Item	Specification
Measurement Method	pH glass electrode / Ag-AgCl reference
Range	pH 0-14
Resolution	0.01 pH; 1 mV
Accuracy	±0.2 pH (2-12 pH, 10-30 °C)
Operating Temperature	0-45 °C
Storage Temperature	-10-50 °C
Minimum Detection Limit	NA
Warranty	1 year (sensor base); 3 months (pH electrode)
Depth	IP68; 10 m maximum
Power	DC 5 V, 50 mA normal
Output	RS485 and Modbus protocol
Materials	PVC and SS316
Dimensions	Length 185.5 mm; diameter 22 mm
Flow Rate	< 3 m/s
Response Time	Minimum 30 s, T90
Field Life*	Sensor base ≥2 years; electrode ≥8 months
Recommended Calibration / Maintenance Frequency*	4 weeks

Note: *Field life and calibration frequency depend on site conditions.

INTERFACE

Default Communication Settings

Setting	Default
Baud rate	9600, 8N1
Data format	32-bit IEEE 754 floating-point value, little-endian
Default Modbus address	0x01

DIGITAL INTERFACE

RS485 Physical interface	Modbus Communication protocol	32-bit float IEEE 754 data
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MODBUS

Register Map

Address	Length	Type	Access	Description
0x0009	4	Char	R	SN number, e.g. V0403021
0x000E	1	UShort	R/W	MODBUS address; default 0x01
0x0012	1	UShort	R/W	Baud rate: 0-1200; 1-4800; 2-9600 (default); 3-19200; 4-38400; 5-115200
0x0605	1	UShort	R/W	Float format: 0-DCBA; 1-BADC; 2-CDAB; 3-ABCD (default, little-endian)
0x0048	2	Float	R	Temperature, °C
0x004A	2	Float	R	pH reading
0x004C	2	Float	R	pH or ORP mV reading, mV
0x0060	2	Float	R/W	pH user-calibration slope K; default K=1.0
0x0062	2	Float	R/W	pH user-calibration offset B; default B=0

INTEGRATION

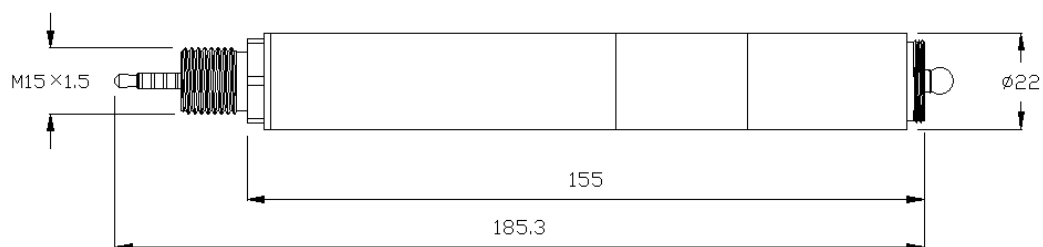
Operating Notes

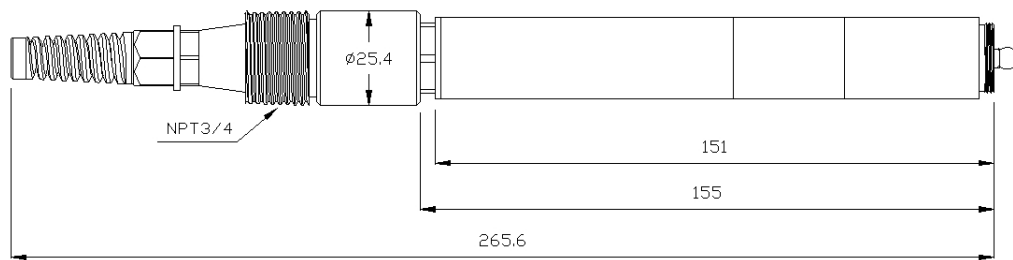
- Do not access registers not listed in this document.
- Normal flow: power on → delay 50 ms → read SN (optional) → delay 2 s or longer → read sensor data. Do not use one frame for discontinuous addresses. Delay 2 s or longer before the next read.
- Read and write user-calibration data in ONE frame.
- Example read frame: 01 03 00 60 00 04 44 17.
- Example write/set frame: 01 10 00 60 00 04 08 9A 99 99 3F CD CC 4C BF 34 CF; sets K=1.2 and B=-0.8.

MECHANICAL

Outline Dimensions

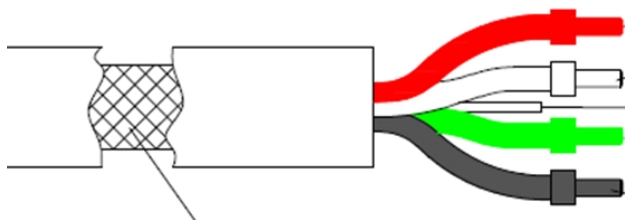
Unit: mm | Tolerance: ±0.2 mm





INSTALLATION

Cable Wiring



Wire	Function
Red	VCC
White	RS485-B
Bare	Shielding
Green	RS485-A
Black	GND

MECHANICAL / MATERIAL OPTIONS

185.5 mm Specified sensor length	Ø22 mm Sensor body diameter	PVC / SS316 Sensor materials
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SERVICE

Maintenance Schedule

Sensor	Clean*	Clean**	Check humidity	Replace O-ring	Calibration	Consumable
Optical DO	1-4 days	4-8 weeks	6 months	12-24 months	6 months	24-36 months
Conductivity	4-8 weeks	4-8 weeks	6 months	12-24 months	6 months	No consumable part
Turbidity	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
Chlorophyll a	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
BGA	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
NH4-N	0.5-3 days	4-8 weeks	6 months	12-24 months	2-3 weeks	3-6 months
pH	0.5-3 days	4-8 weeks	6 months	12-24 months	4-8 weeks	6-12 months
UV254 COD	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
Oil in water	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
CDOM/fDOM	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
Wiper	4-8 weeks	4-8 weeks	NA	18 months	NA	18 months***

Maintenance Notes

- * Without wiper system.
- ** With wiper system.
- *** Dynamic sealing parts.
- The O-ring between sensor and wiper must be replaced every 12 months.
- Field life and calibration frequency depend on site conditions.

CONFIGURATION

Ordering Information

Part Number	Description
PN 620413-P	Digital pH sensor
PN 720412-P	pH electrode
PN 810002	PUR cable

CONTACT / SUPPORT



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