

PHG-202 online PH transmitter user manual



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First, Application environment

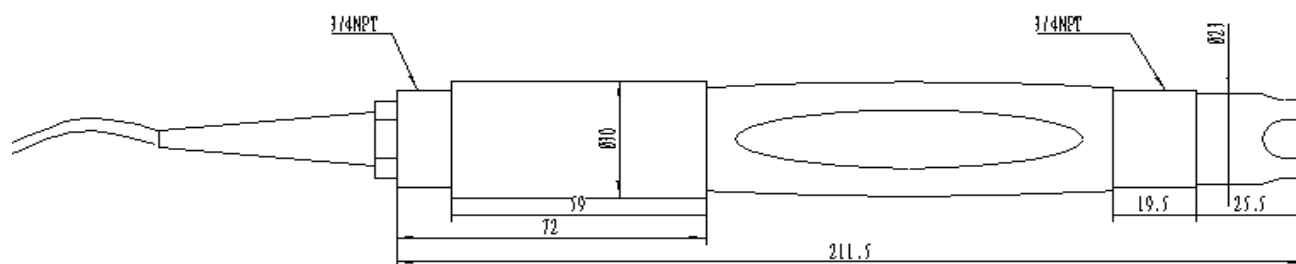
- For acid / base / salt solution, chemical reactions, industrial processes, it is possible to meet the most demanding requirements of industrial applications online PH measurement.
- Signal output: RS485 (Modbus / RTU protocol).
- Easy connection to a PLC, DCS, industrial control computer, universal controller, paperless recording instruments or touch screen and other third-party devices.
- Dual high-impedance differential amplifier, strong anti-jamming, fast response.
- The patented pH probe, the internal reference at least 100KPa (1Bar) pressure than the extremely slow oozing fluid from the porous salt bridge, the forward oozing continued for 20 months. Such a system is very stable reference electrode life more than doubled to extend common electrode industry.
- Easy Installation: 3/4 inch NPT (pipe thread) for mounting on pipes and tanks. Probe and a display portion can be separated via a cable connection.
- IP68 protection grade.

Second,

1. Technical parameters

Model	PHG-202
Measuring range	0~14pH
Resolution	0.01pH
Accuracy	±0.01pH
Working temperature	0~65℃
Working pressure	<0.2MPa
Temp com	N(NTC)
Power supply	12VDC~24VDC ±10%
Output signal	RS485(Modbus /RTU)
Wetted	PPR
Mounting	3/4 "NPT thread, immersion mounting
Cable length	5m, other lengths can be customized
Calibration method	Two-point calibration
Protection class	IP68

2.Size



Modbus communication default data format: 9600, n, 8,1 (baud rate 9600bps, 1 start bit, 8 data bi

3. Communication Protocol

3.1 Data Format

Modbus communication default data format: 9600, n, 8,1 (baud rate 9600bps, 1 start bit, 8 data bits, no parity, 1 stop bit).

Baud rate and other parameters can be customized.

3.2 Frame format information

a) Read data command frame

```

06          03          xx xx          xx xx          xx xx
Address  Function  Start address  Register number  CRC code (low byte in front)
  
```

b) read data response frame

```

06          03          xx          xx ..... xx          xx xx
Address  Function  Byte  Response data  CRC code (low byte in front)
  
```

c) Write data command frame

```

06          06          xx xx          xx xx          xx xx
Address  Function  Register Address  Write data  CRC code (low byte in front)
  
```

d) Write data response frame (with write data command frame)

```

06          06          xx xx          xx xx          xx xx
Address  Function  Register Address  Write data  CRC code (low byte in front)
  
```

3.3 Register Address

Register Address	Name	Explanation	The number of register	Access method
40001 (0x0000)	Temperature measurement	4-byte integer, respectively, the measured value, the measured value of decimal places, temperature, temperature scale.	4 (8 byte)	Read
44097 (0x1000)	Zero calibration	In the standard solution PH 6.86 in the calibration data is written to zero.	1 (2 byte)	Write
44099 (0x1002)	Slope calibration (4PH)	In the standard solution PH 4.00 in the calibration data is written to zero.	1 (2 byte)	Write
44101 (0x1004)	Slope calibration (9PH)	In the standard solution PH 9.18 in the calibration data is written to zero.	1 (2 byte)	Write
44103	Zero calibration value	Returns zero value calibration.	1 (2 byte)	Read

temperature value with a decimal.

a) the calibration instructions:

Zero calibration. Role: PH electrode set zero calibration, zero value 6.86PH standards for the calibration standards, see the following examples;

Request frame: 06 06 10 00 00 00 8C BD

Response frame: 06 06 10 00 00 00 8C BD

Slope calibration.

Role: set the pH electrode calibration slope value; slope calibration is divided into high and low calibration, the alkaline solution is measured at a high point calibration; measured in acidic solution at low calibration standard solution here respectively high point 9.18pH, low 4.00pH standard solution for the calibration reference, for example:

High standards 9.18pH calibration:

Request frame: 06 06 10 04 00 00 CD 7C

Response frame: 06 06 10 04 00 00 CD 7C

Calibration standards 4.00pH lows:

Request frame: 06 06 10 02 00 00 2D 7D

Response frame: 06 06 10 02 00 00 2D 7D

3.5 Error response

If the sensor can not properly execute the PC command will return the following message formats:

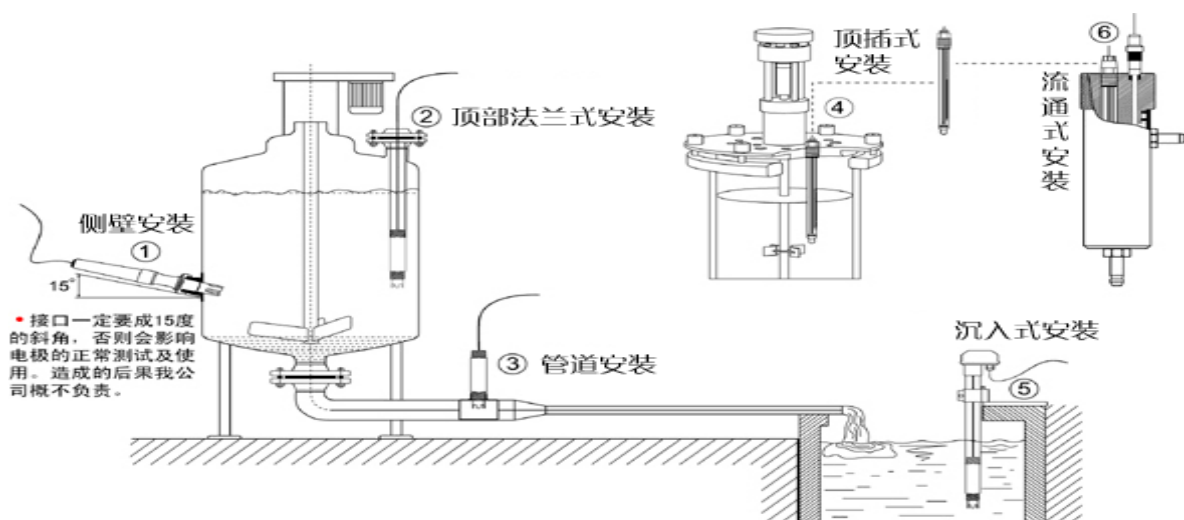
Definition	Address	Function Code	CODE	CRC checksum
Data	ADDR	COM+80H	xx	CRC 16
Byte count	1	1	1	2

a) CODE: 01 - Function code wrong

03 - Data error

b) COM: The function code is received

4. Installation



5. Wiring

5.1 Cable Information

Connection of which is defined as:

- a) red line - the power cord (12 ~ 24V)
- b) black wire - ground (GND)
- c) blue line -485A
- d) white line -485B
- e) bare wire - shielded cable

5.2 Cable Specifications

Taking into account the long-term immersion in water, cable (including seawater) or exposed to air, the cable requires a certain corrosion resistance. Cable outer diameter $\Phi 6$ mm, all interfaces are required to do waterproofing.

5. Quality assurance

The company provides one year starting from the date of sale of the unit Warranty, but does not include damage caused by improper use, if necessary repairs or adjustments, please return, but shipping needs conceited, good packaging when returned to be determined to avoid shipping damaged in transit, the company will free repair damaged equipment.

6. Accessories and Spare Parts

This product includes:

- Transmitter with sensor 1
- electrolyte 3 package
- a manual
- a certificate

7. PH electrode use and maintenance

When measuring pH electrode, should be positive in distilled water (or deionized water) in a clean, dry filter paper with water to prevent impurities into the test solution, the electrode should be 1/3 immersed in the liquid.

Wash the electrodes when not inserted into a protective sleeve plus 3.5mol / L potassium chloride solution, or electrode inserted into the container added 3.5mol / L potassium chloride solution.

Check at the terminals is dry, if the stain, wipe with ethanol, dry after use. Avoid long-term immersion in distilled water or a protein solution, and prevent contact with silicone grease. Use longer electrode which may become translucent glass film or with sediment, washed with dilute hydrochloric acid can be used at this time, and rinsed with water. The electrode using a longer time, measurement error, must be compatible with the instrument calibration, correction.

When the electrodes when maintenance and repair in the above manner can not be calibrated and measured, indicating electrode has expired, replace the electrode.

Standard buffer pH cross-reference table

TEMP ^{°C}	4.00	4.01	6.86	7.00	9.18	10.01
0	4.00	4.00	6.98	7.12	9.46	10.32
5	4.00	4.00	6.95	7.09	9.39	10.25
10	4.00	4.00	6.92	7.06	9.33	10.18
15	4.00	4.00	6.90	7.04	9.28	10.12
20	4.00	4.00	6.88	7.02	9.23	10.06
25	4.00	4.01	6.86	7.00	9.18	10.01
30	4.01	4.02	6.85	6.99	9.14	9.97
35	4.02	4.02	6.84	6.98	9.17	9.93
40	4.03	4.04	6.84	6.97	9.07	9.89
45	4.04	4.05	6.83	6.97	9.04	9.86
50	4.06	4.06	6.83	6.97	9.02	9.83

The actual value of the standard instrument sometimes ± 1 count error

8. Service commitment

- Supplier quality inspection departments should establish a standard test procedure, with advanced detection equipment and tools, and in strict accordance with the test procedures for products that do 72 hours aging test, stability test, not a substandard products factory.
- Consignee for failure rate of 2% of the production batch direct return, all costs incurred by the supplier. Consider the standard reference suppliers to provide product descriptions.
- Consignee requires the supplier to ensure that the number of supply and delivery speed.