pH+EC Sensor

Product Manual

1 Introduction

The water pH + EC sensor is a new generation of intelligent sensors developed by our company, featuring high stability, excellent repeatability and high measurement accuracy, which can accurately measure the pH, EC and temperature values in solutions.

2 Characteristics

(1)Internal use of axial capacitor filtering, 100MΩ resistor to increase impedance and enhance stability.
(2) Small size, low power consumption, easy to carry.
(3) Truly low cost, low price and high performance.
(4) High integration, long life and high reliability.
(5) As many as four isolation, can resist the complex interference situation in the field, waterproof grade IP68.
(6) Electrodes using high-quality low-noise cable line, can make the signal output length of more than 20 meters.
(7) Waterproof, rail, PLC, Adam and other appearance, suitable for a variety of installation environments.

3 Application

Suitable for water-saving agricultural irrigation, greenhouses, flowers and vegetables, grasslands and pastures, water quality rapid testing, plant cultivation, scientific experiments, urban sewage treatment plants, chemical engineering, printing and dyeing, papermaking, pharmaceuticals, electroplating, and environmental protection fields.

4 Product Data

Measured Parameters: pH, EC, Temperature
Measuring Range:pH: 0~14pH

EC: 0~2000μS/cm

Temperature: 0~60°C

Accuracy:±0.02pH;±1.5%FS;±0.2°C

Resolution: 0.01pH;0.1μS/cm;0.1°C

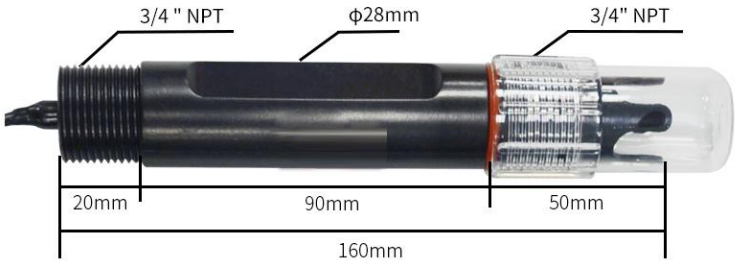
Output Signal: RS485 (Standard Modbus-RTU protocol, device default address: 01)

Supply Voltage: 7~24V DC

Working Environment: Temperature: 0~60°C; Humidity: ≤100%RH

5 外形规格 Form Factor

pH Electrode/Temperature Compensation Electrode

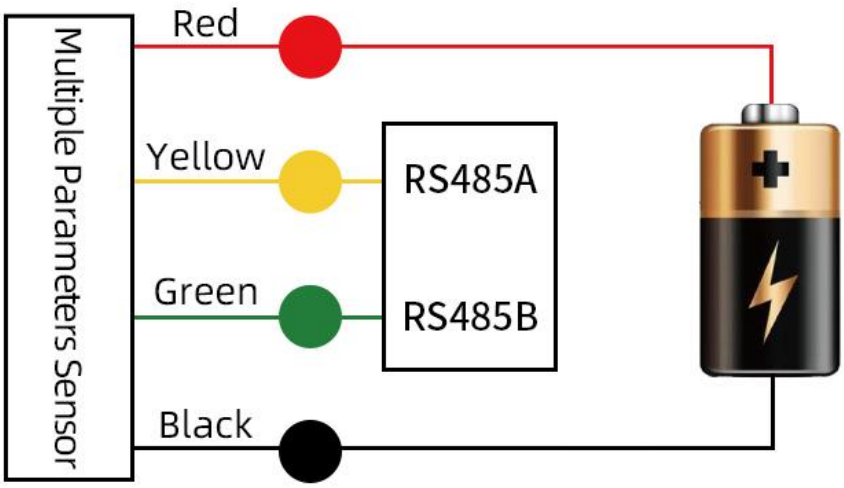


EC Plastic Electrode

EC Stainless Steel Electrode

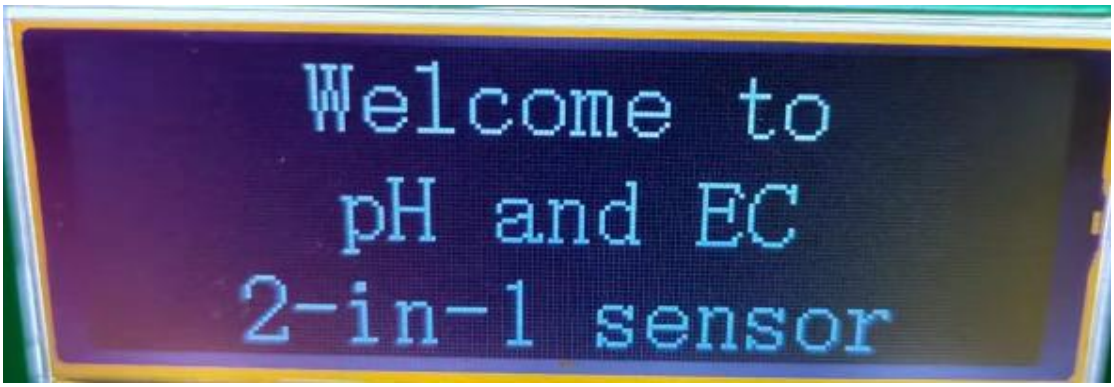
6 Usage

Water Quality pH+EC Sensor can be connected to various data collectors with differential input, data acquisition cards, remote data acquisition modules and other equipment. The wiring method is as follows:



8 Display interface operation instructions (no display version, please ignore this content)

8.1 Power On

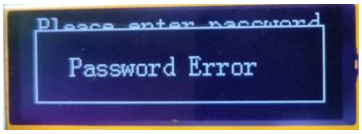


When the meter is powered on, it displays the startup screen (you can customize the boot logo as required), and it will automatically enter the main interface after 3 seconds.

8.2 Main Interface

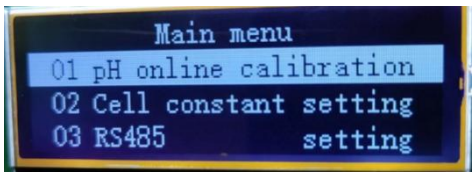
8.3 Password Input (The interface is as follows)

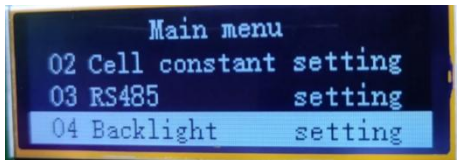
In the main interface, press the confirm key to enter the password item setting, as shown in the figure below.



Enter the correct password through the up and down keys and then press the confirm key (the factory default password is 10000, if the password is wrong, an error dialog box will be displayed, and you can return to the password input screen later, you can re-enter the password; if the password is verified correctly, the system will enter the main menu option).

8.4 Main menu options (interface as shown in the figure below)





Enter the "main menu" display interface, after entering the parameter setting menu, use the up and down keys to select the item menu to be modified, press the enter key to enter the corresponding submenu item, and press the return key to return to the main interface.

8.5.3 pH Online Calibration Setting

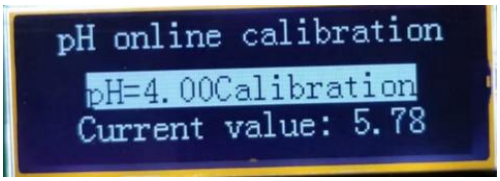
The calibration method is carried out step by step according to the system prompts. After the calibration is completed, the system automatically detects the calibrated parameters and judges the performance of the current electrode.

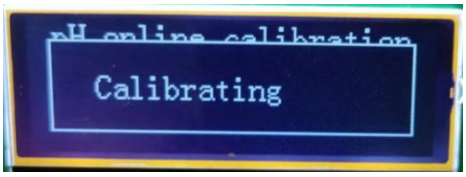
Taking 4.00 calibration as an example:

The first step is to clean the pH electrode with clean water for 5 minutes.

Step 2, place the pH electrode in the 4.00 calibration solution.

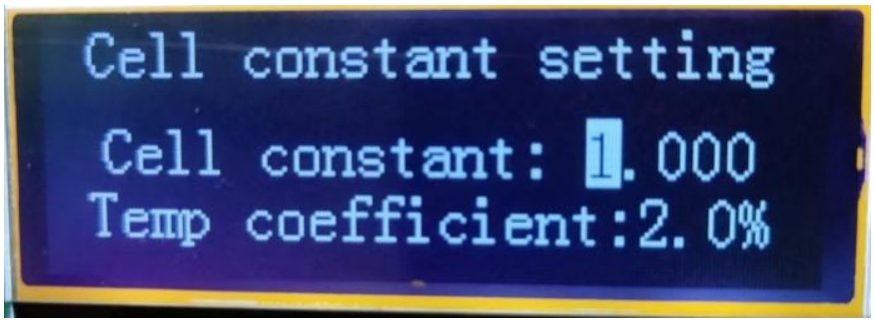
Step 3, select 4.00 calibration and press the confirm button





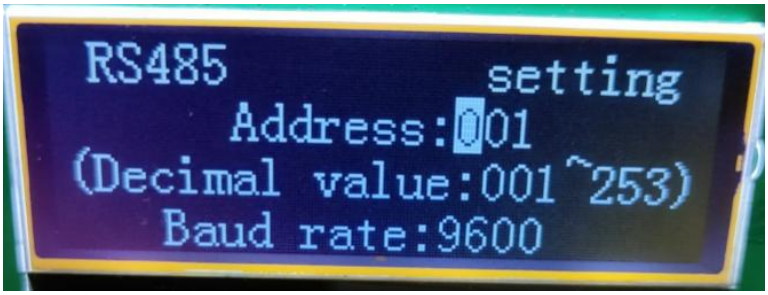
Calibrate the electrodes in the order of 4.00, 6.86, and 9.18, using the calibration method described above. If calibration failure is displayed, check if the standard solution is used incorrectly and select whether the compiled data matches the standard solution.

8.5.2 EC Electrode constant setting



Each electrode is labeled with an electrode constant during wiring, and input the electrode constant into this interface

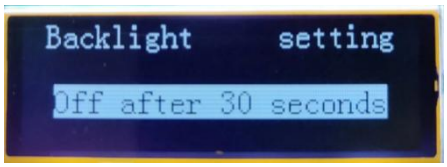
8.8.1 Device address/baud rate settings



Address setting range: 001~253

Baud rate setting: 2400、 4800、 9600 、19200、 57600 、115200

8.8.3 Backlight Setting



The backlight setting can be turned on or off according to user needs.

9 Data Conversion Method

RS485 signal (default address 01):
Standard Modbus-RTU protocol, baud rate: 9600; check bit: none; data bit: 8; stop bit: 1

9.1 Modification Address

For example: Change the sensor with address 1 to address 2, host→slave

Original Address	Function Code	Start Register High	Start Register Low	Start Address High	Start Address Low	CRC16 Low	CRC16 High
0X01	0X06	0X00	0X30	0X00	0X02	0X08	0X04

If the sensor receives the correct data, the data will be returned in the same way.

Note: If you forget the original address of the sensor, you can use the broadcast address 0XFE instead. When using 0XFE, the host can only connect to one slave, and the return address is still the original address, which can be used as an address query method.

9.2 Query Data

9.2.1 Query the data (PH value, EC value) of the sensor (address 1), host→ slave.

Address	Function Code	Start Register Address High	Start Register Address Low	Register Length High	Register Length Low	CRC16 Low	CRC16 High
0X01	0X03	0X00	0X00	0X00	0X02	0XC4	0X0B

If the sensor is received correctly, it will return the following data, slave→host.

Address	Function Code	Data Length	Register 0 Data High	Register 0 Data Low	Register 0 Data High	Register 0 Data Low	CRC16 Low	CRC16 High
0X01	0X03	0X04	0X02	0XAE	0X01	0X94	0X9A	0XA5
			pH Value: 6.86		EC Value: 404μS/cm			

10 Precautions for Use

(1) In order to ensure the correct measurement of the electrode on the pipeline, data inaccuracy caused by air bubbles between the measurement cells should be avoided.
(2) Please check whether the packaging is in good condition, and check whether the product model is consistent with the selection.
(3) Do not connect when the wire is live. After the wiring is completed, the power can be turned on after checking.
(4) Do not arbitrarily change the components or wires that have been welded after the product leaves the factory.
(5) The sensor is a precision device, please do not disassemble it by yourself, or touch the surface of the sensor with sharp objects or corrosive liquids, so as not to damage the product.

11 Warranty

The warranty period of this product is one year, and the electrode warranty is three months. From the date of delivery, the company is responsible for free maintenance or replacement of the malfunction caused by the quality of the instrument within 12 months or the quality of the electrode within 3 months (non-human damage). After the warranty period is exceeded, only the cost price will be charged.