VFA ELEKTRONİK

ECG-2090Pro

Online Conductivity Meter

User Manual

Content

Product description

ECG-2090Pro Online Conductivity Meter is to measure conductivity,TDS,salinity,resistivity and temperature. It's independently developed and manufactured by Shanghai BOQU Instrument Co., Ltd. Complete functions, stable performance, easy operation, low power consumption, safety and reliability are the outstanding advantages of this instrument.

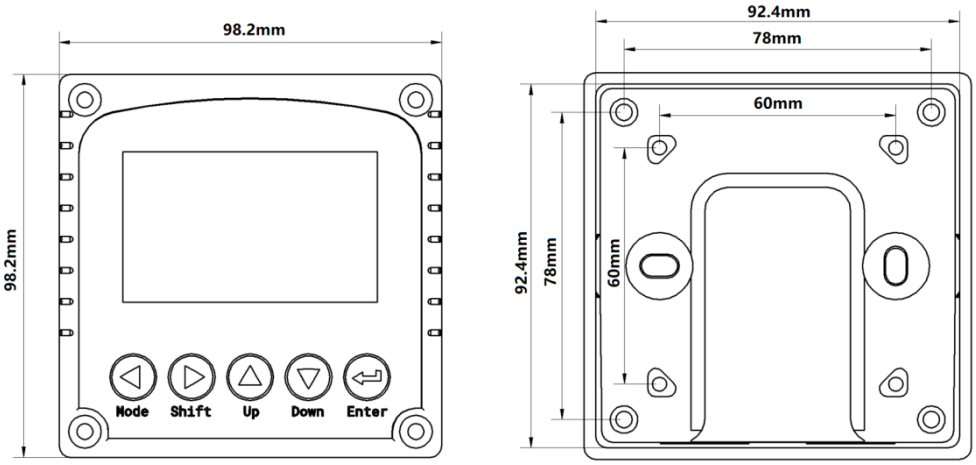
This instrument uses matching analog conductivity electrode, which can be widely used in industrial occasions such as thermal power generation, chemical industry, metallurgy, environmental protection, pharmaceutical, biochemical, food and tap water.

Product Specification Sheet

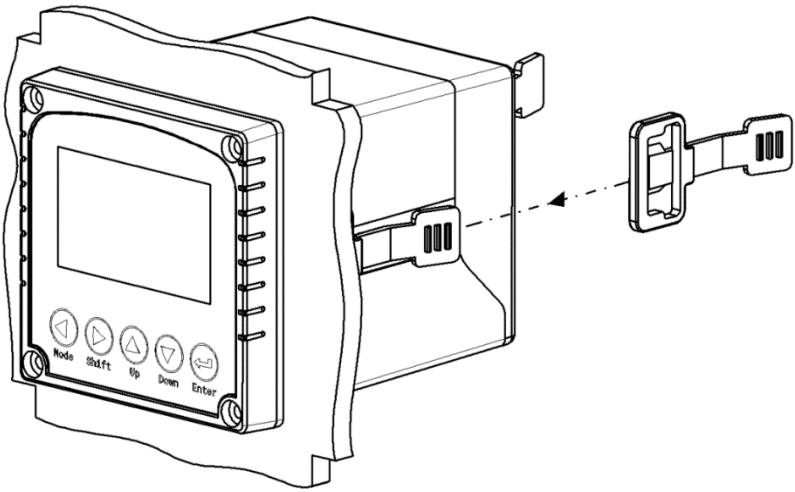
Specification	details
Name	ECG-2090Pro Conductivity meter
Range	Conductivity:0 ~2000000 us/cm(0 ~2000 ms/cm) Salinity:0 ~80 g/L(ppt) TDS: 0 ~130000 mg/L(ppm) Rresistivity : 0 ~20 MΩ Temperature: -40 ~200 □
Accuracy	2% ±0.5□
Shell material	ABS Plastic
Output	Two Ways 4-20mA ,RS485
Relay	Two relays : 5A/250V AC 5A/30V DC
Communication	RS485 Modbus RTU
Power Supply	90 – 260V AC 50/60Hz , 4W
Protection	IP65
Dimension	98.2×98.2×128.3mm
Hole size	92*92mm

Installation and wiring

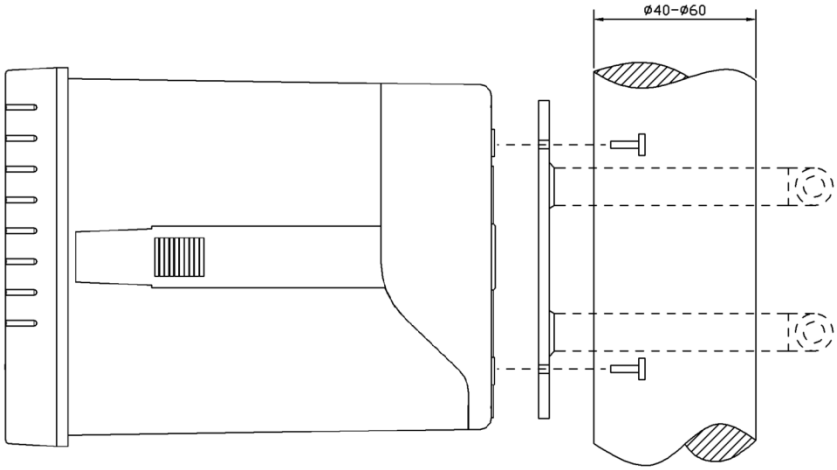
Instrument size chart



Embedded installation diagram

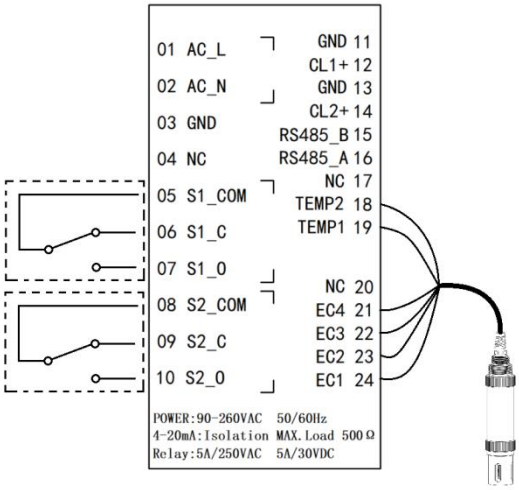


Pipeline installation diagram



Wiring diagram

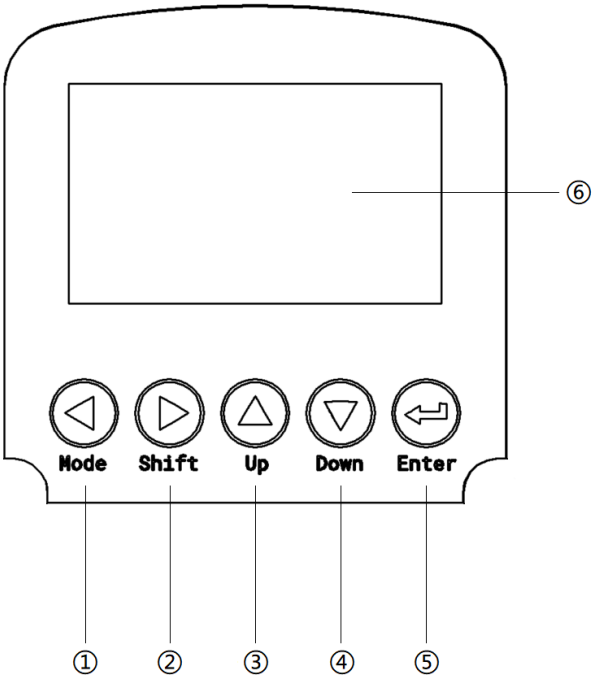
Two-ring electrode connection/Four-ring electrode connection



1. Operation panel

The main panel of the pH controller has 2 modules, the LED LCD display module and the button module.

The user can set and adjust the parameters of the instrument through the 5 keys on the panel.



Picture 1 Operation Interface

①Set/Exit button

②Select/change button

③Up selection button

④Down selection button

⑤Confirm button

⑥Instrument display

1. Measurement interface

After the start-up animation ends, enter the main measurement interface. When the meter is working normally, the LED display shows the following contents

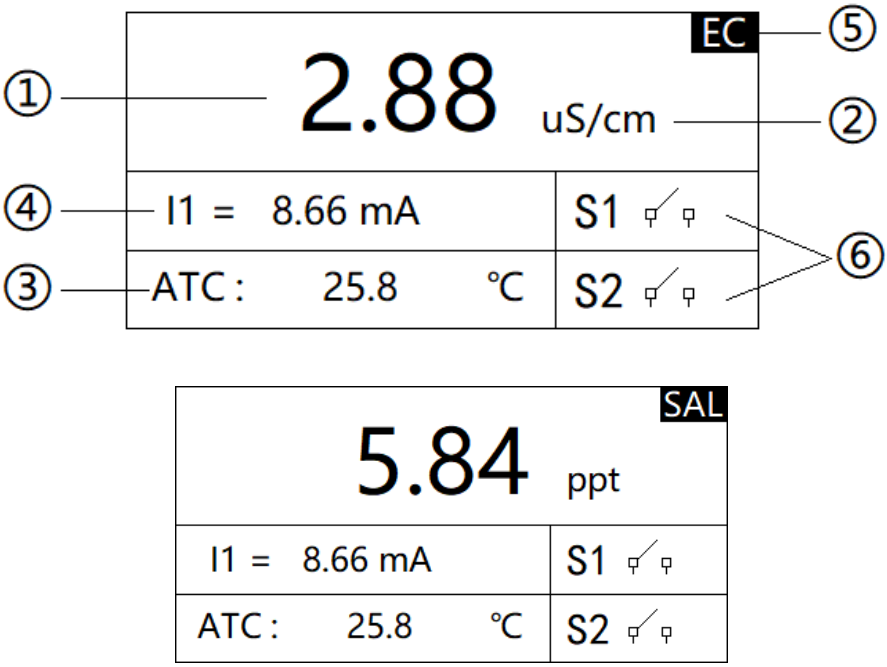


Figure 2 The main interface of measurement display

①Measurement reading

②Measurement unit

③Measure temperature

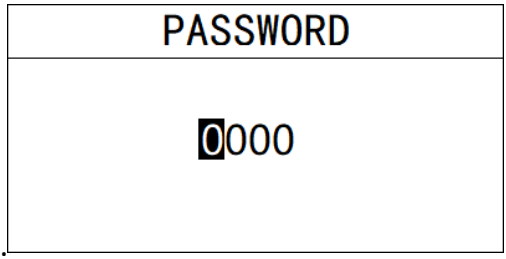
④ 4-20mA corresponding value of conductivity

⑤Measurement mode

⑥Alarm reminder when the upper/lower limit is exceeded

2.settings

Press the "Set/Exit button" to enter the password input interface



3 Password

Enter settings:

Enter the password "3700" to enter the setup menu.

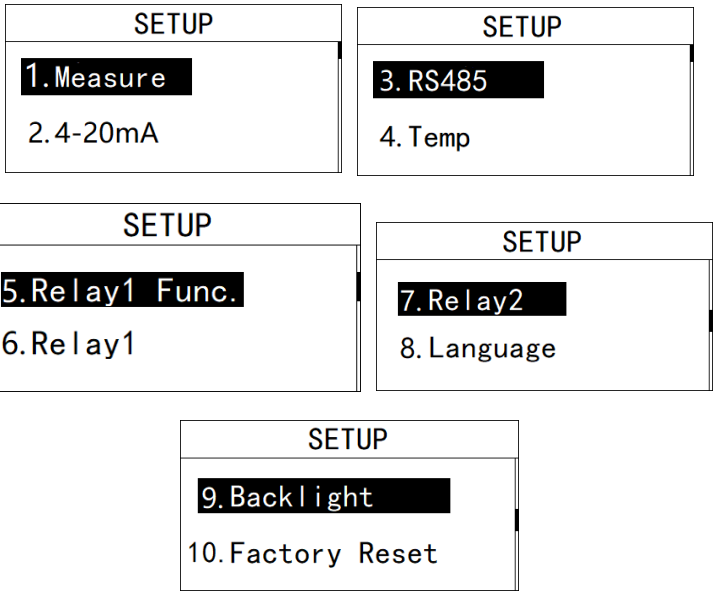


Figure 4 Settings

3.1 Measurement settings

In this menu, the user can change the measurement mode. After confirming the measurement mode, you can select the measurement unit for that mode.

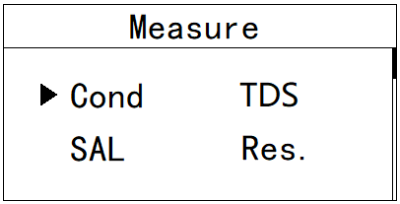


Figure 3.1.1 Measurement settings

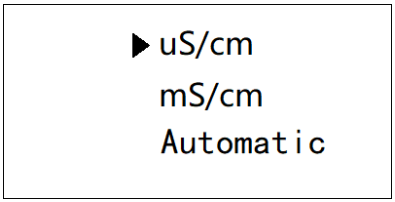
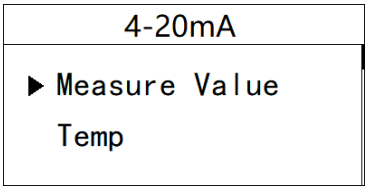
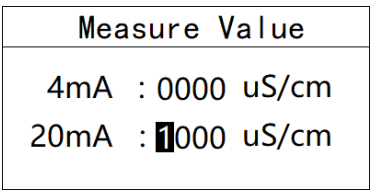


Figure 3.1.2 Unit setting

3.2 4-20mA setting

In this menu, the user can change the corresponding value of 4-20mA and set the corresponding effective range. Please refer to 3.1 to set the unit of the value.





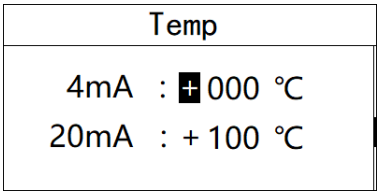


Figure 3.2 4-20mA setting

3.3 Communication settings

In this menu, the user can change the communication address and communication speed.

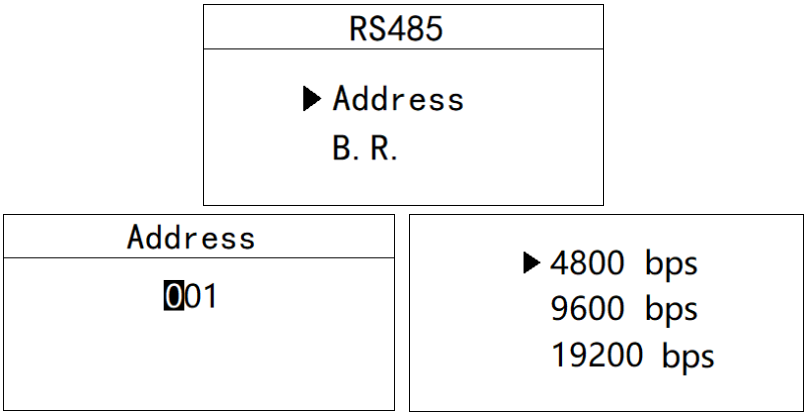


Figure 3.3 Communication settings

3.4 Temperature setting

In this menu, the user can set the temperature offset and manually set the temperature.

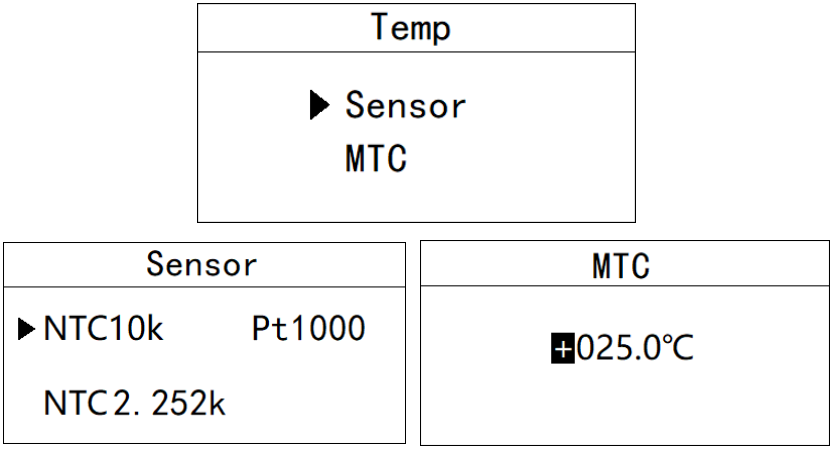


Figure 3.4 Temperature setting

3.6 Relay 1 setting

In this menu, the user can switch the relay 1 function, set the parameter alarm upper limit value, alarm return difference value, and alarm delay time.

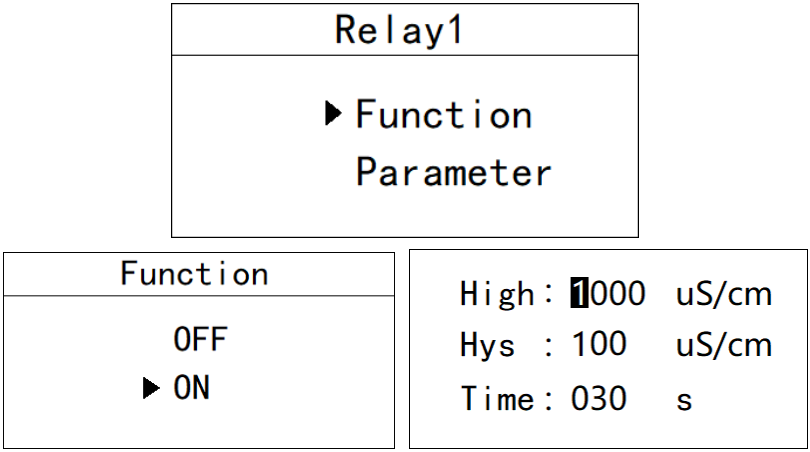


Figure 3.6 Relay 1 setting

3.7 Relay 2 setting

In this menu, the user can switch the relay 2 function, set the parameter alarm lower limit, alarm return difference, and alarm delay time.

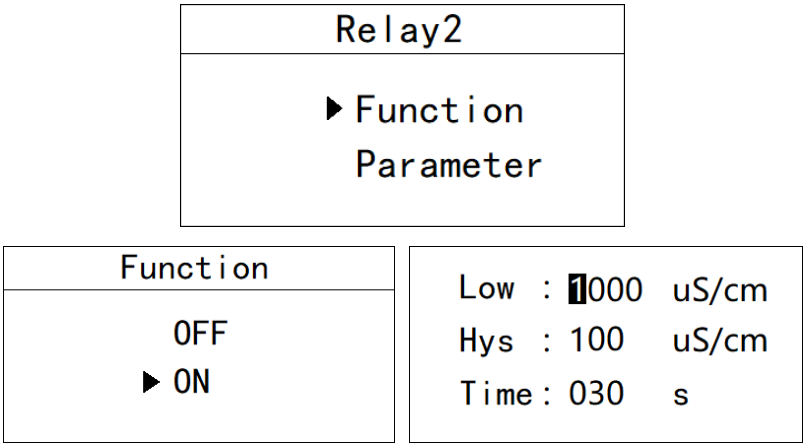


Figure 3.7 Relay 2 setting

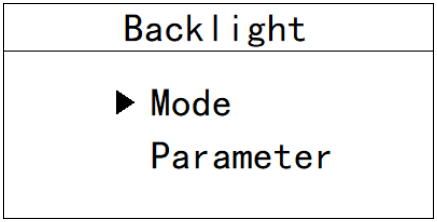
3.11 Language setting

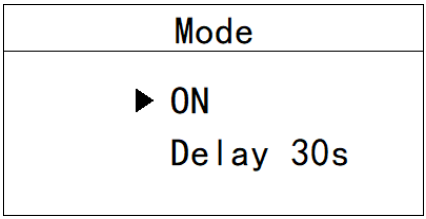
In this menu, users can change the language of the system interface. Simplified Chinese and English are built-in.

Figure 3.11 Language Setting

3.12 Backlight setting

In this menu, the user can change the backlight mode of the LCD screen, select the backlight to be always on or delay to turn off (the default is delayed off), change the backlight brightness (brightness level 1-5, brightness increase), and change the contrast.





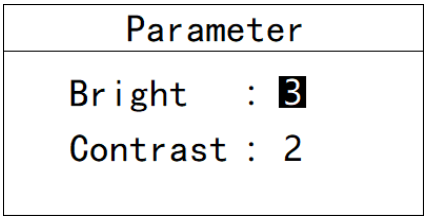


Figure 3.12 Backlight setting

3.13 Restore factory settings

In this menu, users can restore all current output and relay parameters to factory parameters.

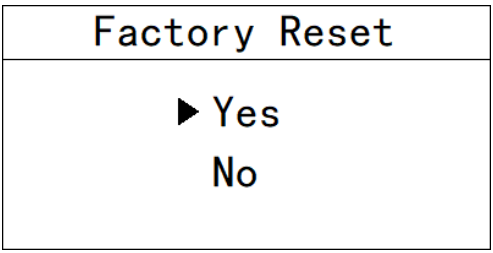


Figure 3.13 Restore factory settings

Four, calibration

Press the "Set/Exit button" to enter the password input interface.

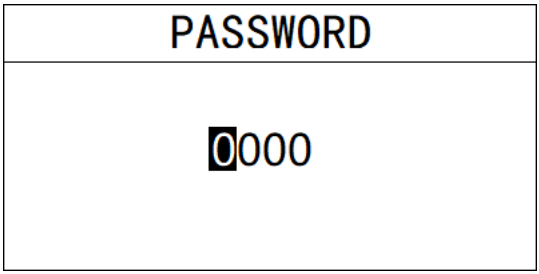


Figure 5 Enter the password

Enter calibration:

Enter the password "3900" to enter the calibration menu.

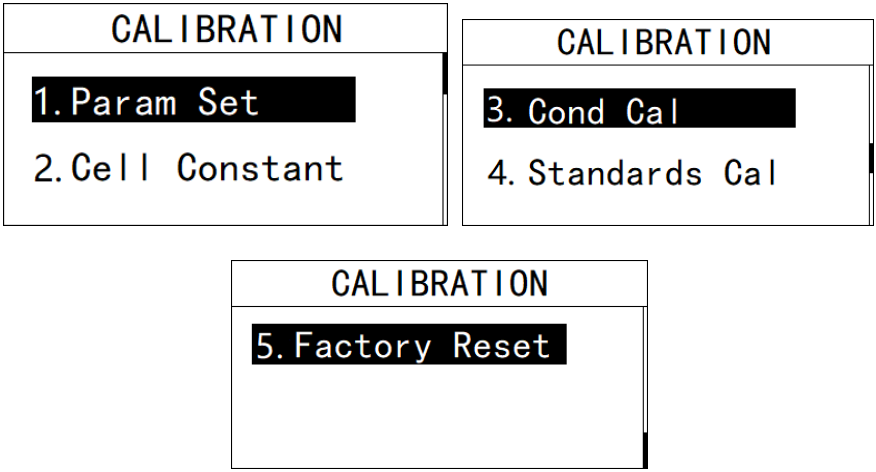


Figure 6 Calibration menu

4.1 Parameter setting

In this menu, the user can modify the reference temperature and temperature coefficient.

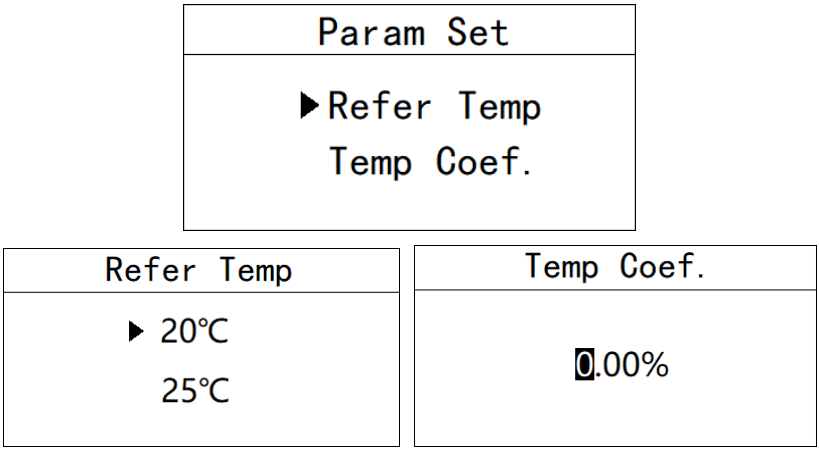


Figure 4.1 Parameter setting

4.2 cell constant

In this menu, the user can modify the electrode value to the current electrode value.

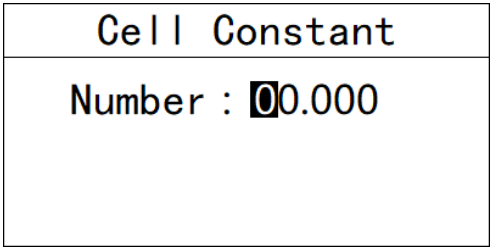


Figure 4.2 Cell constant

4.3 Calibration of Known Conductivity

In this menu, the user can manually modify the known conductivity value to the current value.

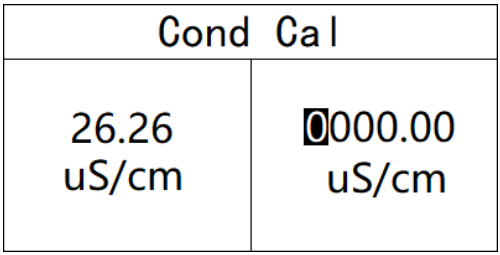


Figure 4.3 Calibration of known conductivity

4.4 Standard solution calibration

In this menu, the user can calibrate the electrode with different standard solutions.

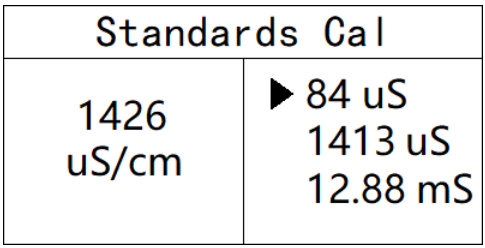


Figure 4.4 Standard solution calibration

4.5 Restore factory settings

The calibration parameters can be initialized to factory parameters.

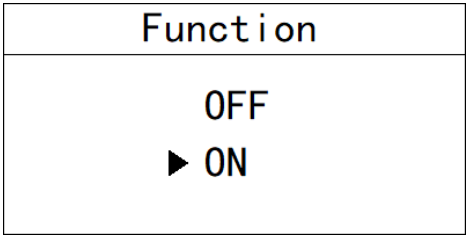


Figure 4.5 Restore factory settings

Appendix

1. Communication protocol

Communication parameters:

Baud rate: 4800, 9600, 19200 (default is 9600)

Serial data format: 8N1 (8 data bits, no parity, 1 stop bit)

Function code: 03

Device address: pH/ORP controller defaults to 1

Register definition:

Register address(10 hex)	Register definition	R/W	illustrate
0，1	Temp	R	×1.0 ℃，FP32 AB CD，High and low bytes are not reversed
2，3	EC	R	×1.0 us/cm，FP32 AB CD，High and low bytes are not reversed
8	RTU Address	R/W	Modbus Communication address, the default conductivity is 2
9	Baud rate	R/W	4800，9600，19200，The default is 9600
26，27	TDS	R	FP32 AB CD，High and low bytes are not reversed
28，29	MoHM	R	FP32 AB CD，High and low bytes are not reversed
30，31	ppt	R	FP32 AB CD，High and low bytes are not reversed

address	function code	Register start address	Number of read registers	CRC Check code
02	03	0002	0002	65F8

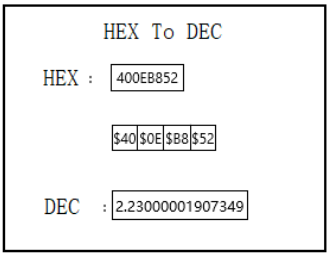
Data return instruction:

Address + function code + data length + data + CRC check code (hexadecimal)

For example, Rx:02 03 04 40 0E B8 52 4E CD

address	function code	Register start address	Conductivity value	CRC Check code
02	03	04	400EB852	4ECD

Convert the hexadecimal number 400EB852 to decimal by a floating-point number converter, and get the value 2.23



2. Electrode parameter table for industrial online conductivity controller

Model	DDG-0.01	ECG-0.1	ECG-1.0	ECG-10	ECG-30
Cell constant	0.01	0.1	1.0	10	30
Range	0-20μS/cm	0-200μS/cm	0-2000μS/cm	0-20000μS/cm	30-600mS/cm
Temp	0 -100 ℃	0 -100 ℃	0 -100 ℃	0 -100 ℃	0 -100 ℃
Accuracy	2%，±0.5℃				
Pressure	0.4MPa				
waterproof	IP68/NEMA6P				

It’s ok to work with Graphite Electrodes and Quadrupole Conductivity Electrodes.

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