

CWT-BL Water PH transmitter Manual



CWT-BL PH temperature transmitter adopt double high-impedance three-electrode system, with online one-key calibration, real-time temperature compensation, electrode loose alarm, electrode good or bad alarm during calibration, and power-off protection (the calibration result and preset data will not be lost due to shut down or power failure), Overcurrent protection, overvoltage protection, high measurement accuracy, fast response, long life and so on.

The user-friendly online one-key calibration function is convenient for users to calibrate and correct the electrode regularly. Combined with temperature compensation and power-off protection functions, it can effectively complete the conversion, processing, and other processes of measurement data.

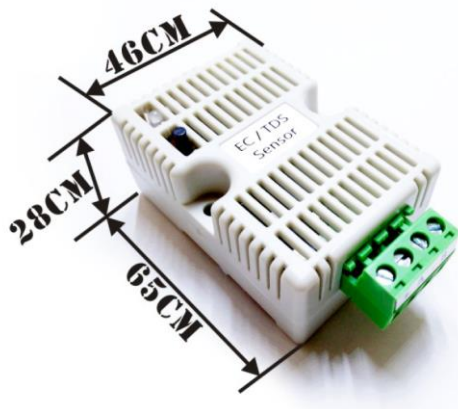
The product is small in size, light in weight, easy to install and maintain, and the standard industrial signal output (0-5V, 0-10V, 4-20mA, ModbusRTU485) can meet the limit of on-site connection to various real-time monitoring equipment.

Application

This product is suitable for: electroplating, yeast, food processing, sewage treatment, metallurgy, environmental protection and other occasions.

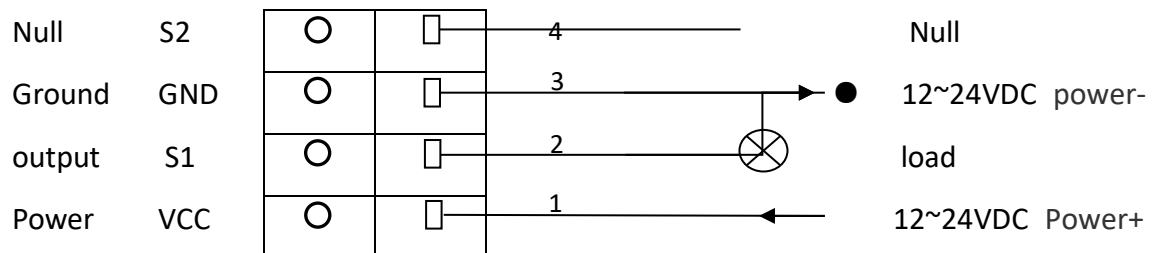
Items	Parameters
Temperature measurement range	-20°C ~ +80°C
Temperature measurement accuracy	±0.5°C
Measurement PH range	0.0 ~ 14.0PH
Measuring PH Accuracy	±0.01PH
Power supply	DC 12V-24V
Output	0-5V / 0-10V / 4-20mA / RS485
load resistance	Voltage output: R load ≥ 10K Ω Current output: R load ≤ (Uvcc-3)/0.02Ω
Consumption	<1W
Storage condition	10-50°C (-20-+80C peak) 20-60%RH
Working environment	-20°C ~ +80°C
dimension	65 X 46 X 28.5mm ³

Size



Wiring

1. Analog output:



The linear relation between analog signals and the corresponding physical value:

0-5v output: PH=PH output voltage*2.8, temperature=temperature output voltage*20.0-20.0;

0-10v output: PH=PH output voltage*1.4, temperature=temperature output voltage*10.0-20.0;

4-20mA output: PH= (PH output current-4.0)*0.875, temperature=(temperature output current-4.0)*6.25-20.0;

PH	0.0~14.0PH														
PH	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00
0-5V output	0.00	0.36	0.71	1.07	1.43	1.79	2.14	2.50	2.86	3.21	3.57	3.93	4.29	4.64	5.00
0-10V output	0.00	0.71	1.43	2.14	2.86	3.57	4.29	5.00	5.71	6.43	7.14	7.86	8.57	9.29	10.00
4-20mA output	4.00	5.14	6.29	7.43	8.57	9.71	10.86	12.00	13.14	14.29	15.43	16.57	17.71	18.86	20.00

temperature	-20~80℃										
temp(℃)	-20	-10	0	10	20	30	40	50	60	70	80
0-5V output	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
0-10V output	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.0	10.0
4-20mA output	4.00	5.60	7.20	8.80	10.40	12.00	13.60	15.20	16.80	18.40	20.00

2. RS485 output

Wiring

1	+	DC 12-24V power+
2	A	RS485+ (A+)
3	-	DC 12-24V power-
4	B	RS485- (B-)

RS485 communication Default parameters: 9600,n,8,1

Default device address is 1

Modbus RTU protocol

Read PH and temperature

Register map						
Register address (Hex)	PLC Address (decimal)	meaning	Number of bytes	Function code	R/W	Scale
0000	40001	temperature	2	0x30	Read	0.1
0001	40002	PH	2	0x30	Read	0.1

master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x00	0x00	0x02	0xC4	0X0B

Sensor responds

Address	Function Code	Number of byte	Temperature value	PH value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x04	0x00 0xFB	0x00 0x64	0x8A	0x29

Temperature=00FBH/10=251/10=25,1℃

PH=0064H/10=100/10=100

If temperature is negative value, calculate by complement.

For example, if sensor responds temperature is FF33H

temperature=(FF33H-FFFFH)/10=(65331-65536)/10=-20.5℃

Set slave ID, master sends

Address	Function Code	Start Address	Number of Points	Number of bytes	ID	Error Check
0~247	10H	0002H	0001H	02H	0001H~00F7H	

Due to the PH electrode in the measurement environment vulnerable to pollution cause electrode signal affected, in order to ensure the PH sensor can normally use for a long time, usually need to make a correction on a regular basis through the calibration of transducer (once a month). Depending on the water samples of specific calibration cycle.