Datasheet

Online pH/ORP Controller

PC-pH6.5

POWER CORPORATION

Datasheet

Online pH/ORP Controller
PC-pH6.5

This product is a self-developed instrument for online monitoring of pH/ORP value. It is output to the monitoring room through RS485 or current transmission for record keeping.

The pH/ORP controller is an intelligent online chemical analysis instrument, which is widely used in thermal power, chemical fertilizer, metallurgy, environmental protection, pharmaceutical, biochemical, food and tap water industries to continuously monitor the pH value or ORP value and temperature in the solution. The continuous monitoring data is connected to the recorder through the transmission output to realize remote monitoring and recording. It can also be connected to the RS485 interface to communicate with the computer through the Modbus-RTU protocol, so as to realize the computer monitoring and recording of the instrument.

Applications

- Sewage Treatment
- Exhaust Gas Treatment
- Dyeing Wastewater
- Strong Acid And Base
- Metal Surface Treatment
- Fertigation System
- Food Processing
- Power Plants

Features

- Easy operation
- Modular design
- Automatically Temperature Compensation
- Directly switchable to PH or ORP
- Set buzzer, LCD backlight switch function
- Using isolated transmission output, less affected by interference
- Set high and low alarm and hysteresis functions
- RS485 communication Relay output

Online pH/ORP Controller

Parameters

Parameters	Details
Dimensions Size (mm):	100mm×100mm×150mm
Hole Size(mm)	92.5mm×92.5mm
Range	pH:(0.00 ~ 14.00)pH ORP:(-1000 ~+1000)MV,(-2000~+2000)MV
Communications	RS485、Modbus-RTU、Isolated
Output	Current (4-20 mA)
Accuracy	pH±0.02PH ORP±1Mv
Temperature compensation	NTC10K (-10~60)℃,±0.3℃ (60~130)℃,±2℃ PT1000 ±0.3℃ (-10~130)℃ Manual / Auto
Transmit output	Isolated 4-20mA output maximum loop is 750Ω,±0.2%FS
Relay	2 relays AC250V/3A
Relative humidity	(5%~95%)RH(No condensation)
Operating temperature	(0 ~ 60)℃
Power supply	AC：220V±10%，50HZ/60HZ DC：24V±20%，Input Power≥6W
Storage temperature	(-15~65)℃
Input impedance	$\geqslant 10^{12}\Omega$

Display

1 Temperature：Compensation temperature

2 Analyst output：Analyst output

3 Measured value：Real-time measurements value

4 High alarm：High alarm

5 Low alarm：Low alarm

6 ESC：Check related warning status on the “monitoring page”
Return to previous level page in the up& down level page linked to “menu page”

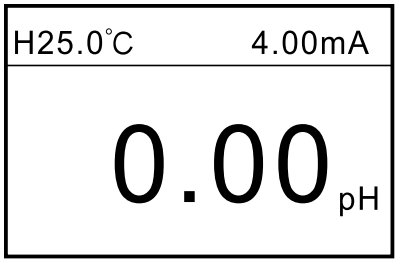
7 Menu：Enter the MENU on the “monitoring page”
Exit the MENU on the “menu page”

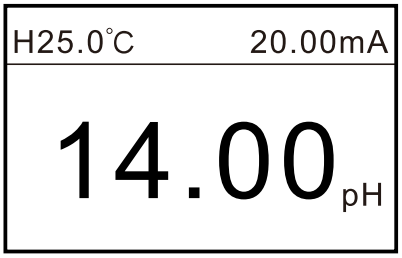
8 Choose：“MOVE RIGHT” and “MOVE DOWN”

9 Enter：Enter the sub-menu or confirm modification on the “menu page”

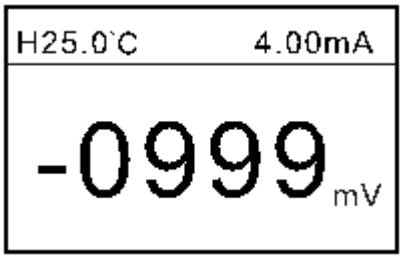
Monitor page

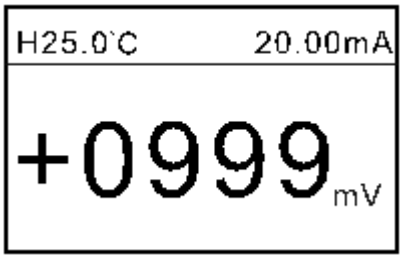
★ **pH monitor：**



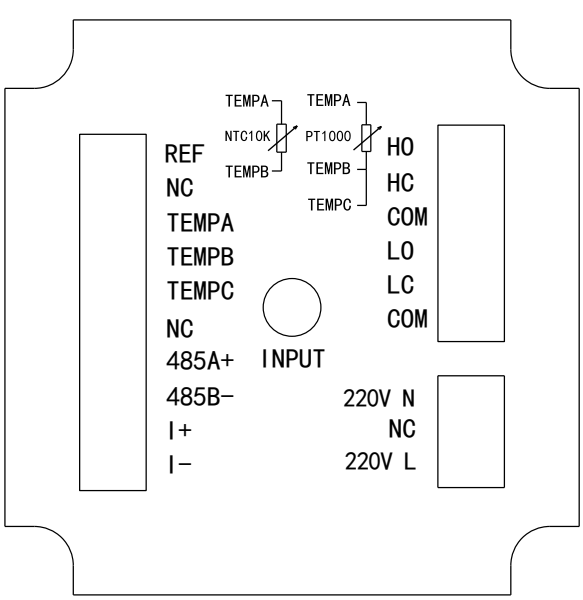


★ **ORP monitore**

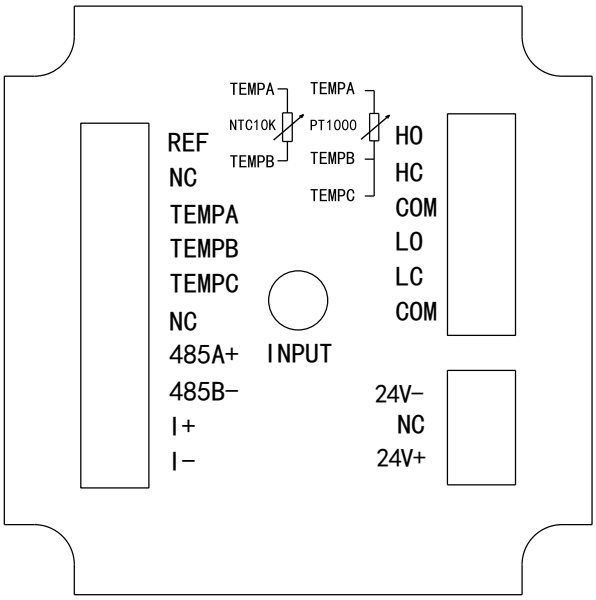




Wiring



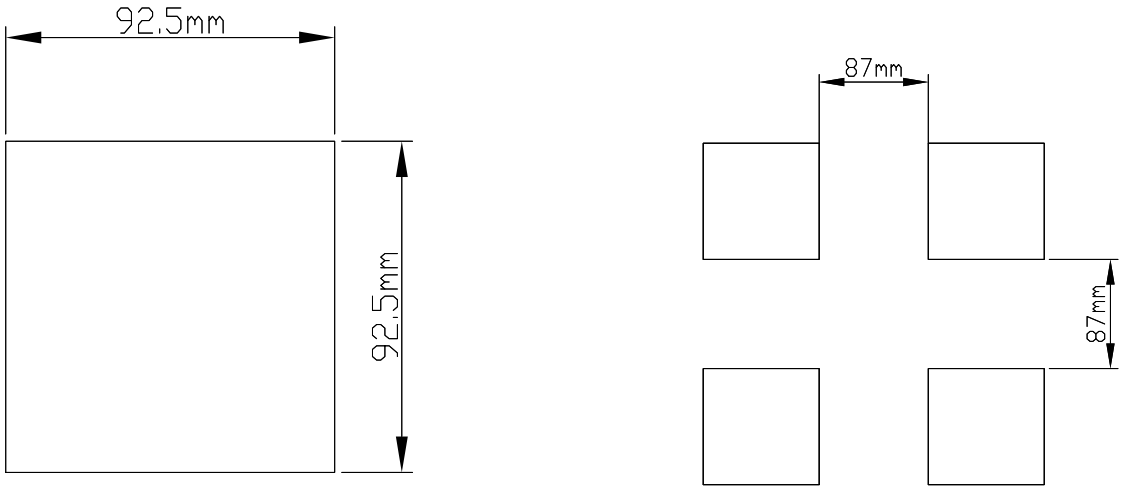
220VAC wiring diagram



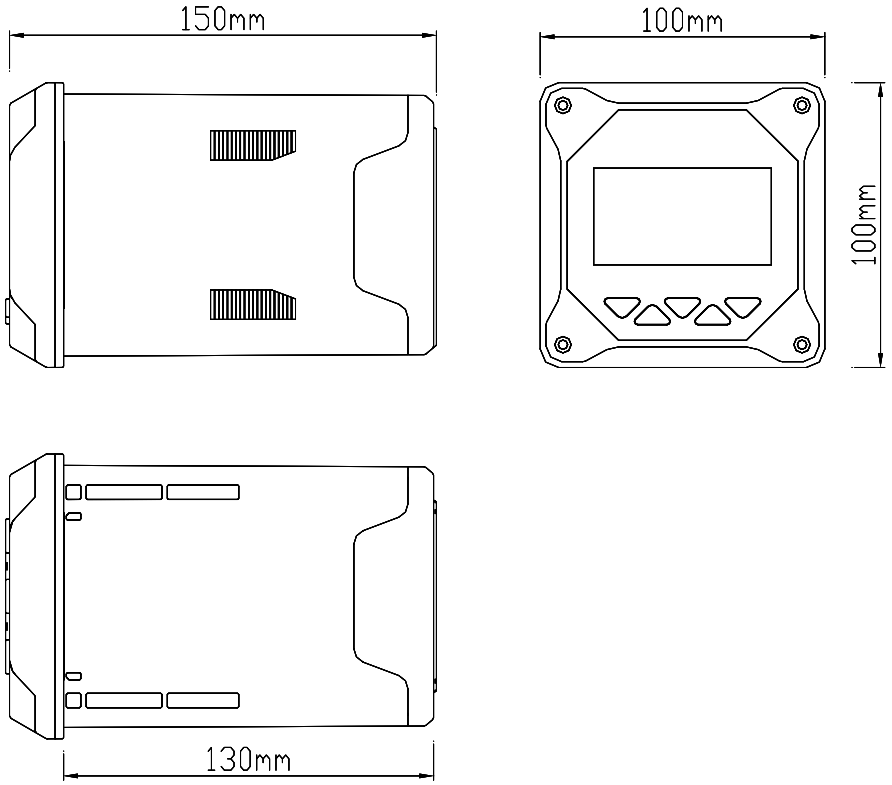
24VDC wiring diagram

- INPUT: Measuring terminal of the electrode
- REF: Reference terminal of the electrode
- TEMPA: Temperature Compensation Terminal A
- TEMPB: Temperature Compensation Terminal B
- TEMPC: The temperature compensation terminal C, the temperature ground of the PT1000 three-wire system, should be shorted to B when connected to the PT1000 two-wire system, and the C terminal should be left floating when connected to the NTC10K
- NC: Unidentified
- RS485 (A +): RS485 communication interface A +
- RS485 (B -): RS485 communication interface B-
- I+：4-20mA output end+
- I-：4-20mA output end -
- HO：High alarm normally open relay
- HC：High alarm normally closed relay
- COM：relay common terminal
- LO：Low alarm normally open relay
- LC：Low alarm normally closed relay
- 24V+: 24VDC +
- 24V-: 24VDC -
- 220V N: AC220V power terminal
- 220V L: AC220V power terminal

Dimensions



Opening size and minimum distance between square holes of distribution box



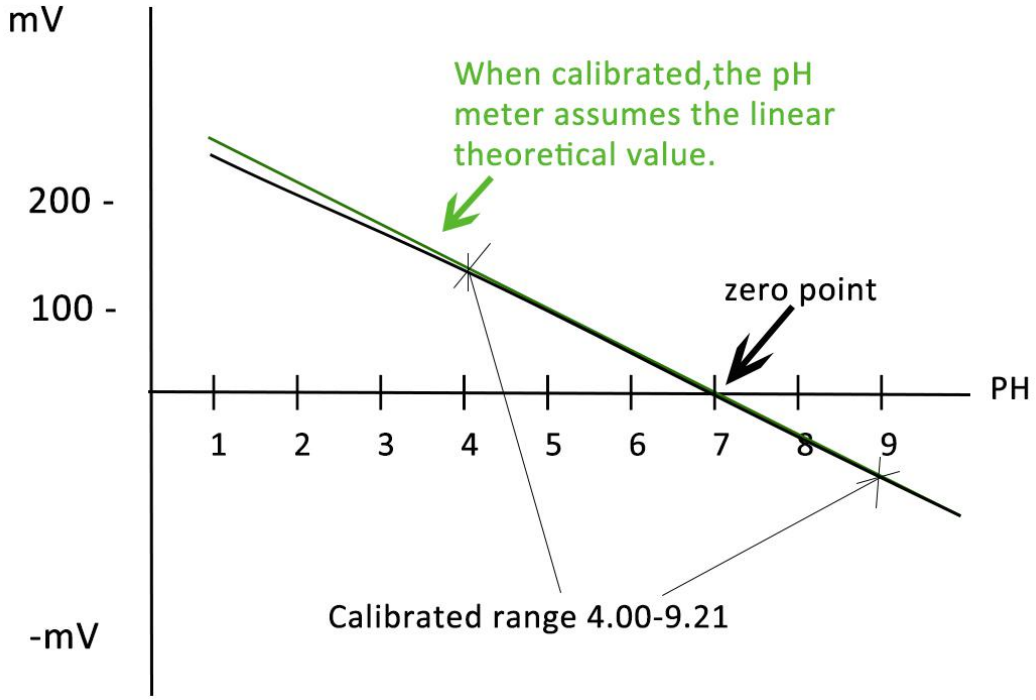
Instrument dimensions

Multi-point calibration

To achieve the best possible accuracy, the calibration should cover the range of the desired measurement values. If the readings go beyond the calibrated range, the pH meter assumes linearity and simply extrapolates the value to be displayed. The true value may be slightly different.

More advanced pH meters will let the user calibrate at three, four or five and even higher numbers of pH values. A multi-point calibration mean, in comparison to a two-point calibration, that you can calibrate your pH tester on both sides of the zero point (pH 7.00). This will expand your pH measurement range without the need of recalibrating.

Example) Three-point calibration ar pH 4.00, 7.0 and 9.21



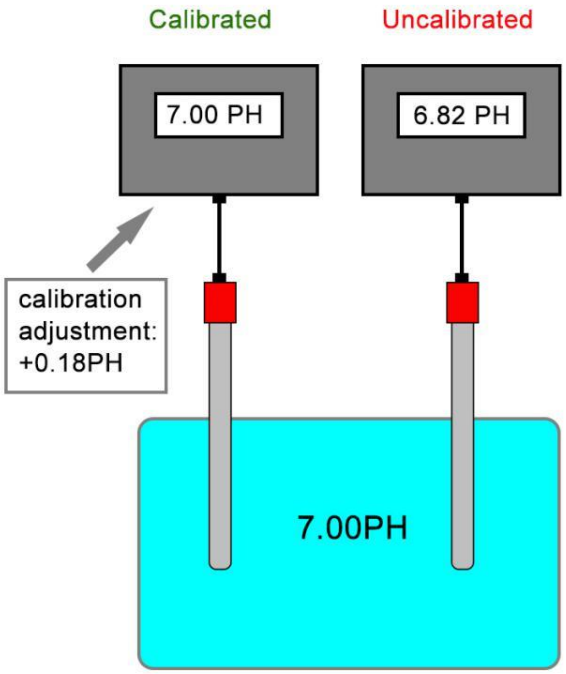
pH calibration

A pH calibration is the procedure of adjusting the pH meter by measuring solutions of known pH values.

Why you need to calibrate:

The characteristic of a pH electrode will change with time due to electrode coating and aging. And even a pH electrode would be stable over time, pH electrodes cannot be produced with identical characteristics.

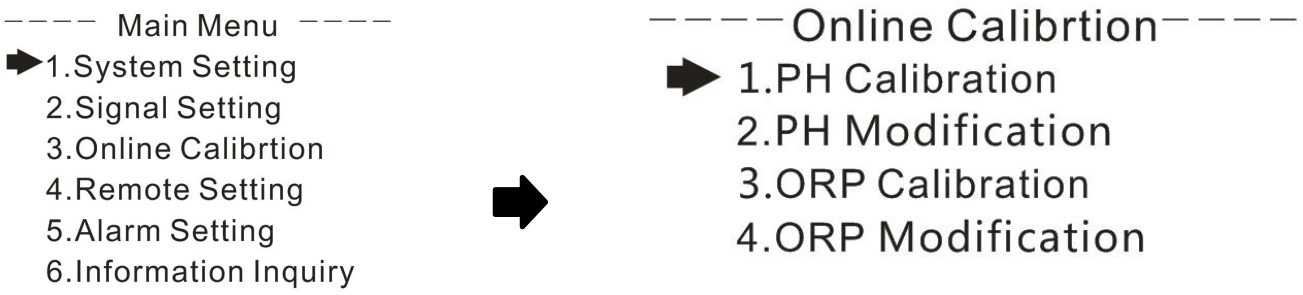
In practice the response of a real pH sensor does not exactly follow the Nernst equation. This difference between the theoretical and actual behavior of a pH electrode must be compensated for. A calibration is required to match the pH meter to the current characteristics of the used pH sensor.



well defined solution(buffer) : 7.00 PH

pH calibration

How to calibrate: Main Menu- Online Calibration- PH Calibration



- **PH Calibration**: Enter the PH calibration screen, the first PH electrode into the 4.00PH standard solution, standing for a moment, to be stable after the show, press the【ENT】, then the PH electrode into the 6.86PH standard solution Set the PH electrode into the 9.18PH standard solution, put it aside for a moment, after the test is stable, press【ENT】, the display shows the success of the calibration, the whole process of PH calibration completes.

- **PH Modification**: The measured PH can be modified between 2 PH values.

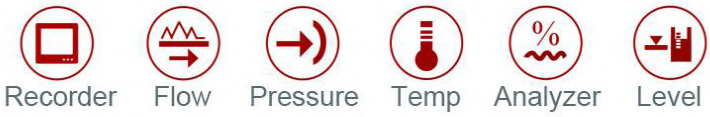
- **ORP Calibration**: enter the ORP calibration screen, the first ORP electrode into the 86mV standard solution, standing for a moment, to be shown after the stability, press the【ENT】, then the ORP electrode into the 256mV standard solution, static Set a moment, after the display is stable, press the【ENT】display calibration is successful, ORP calibration process is over.

- **ORP Modification**: The measured ORP can be modified between 300mV.

- **Temperature correction**: You can correct the temperature of the automatic temperature compensation, the correction range is ± 20.0 ℃.

Ordering code

PC-pH6.5-RT1-O1-D1-A2-V2															Description
PC-pH6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Range	RT1														（0～14）pH，（-1000～1000）MV
	RT2														（0～14）pH，（-2000～2000)MV
Transmit output		O1													（4～20）MA
Communication			D1												RS485
Relay output				A2											2 relay output
Power supply					V1										24VDC
					V2										220VAC
					V4										110VAC



Datasheet

Conductivity Controller

PC-TDS210-B

POWER CORPORATION

Datasheet

Conductivity controller for water measurement
PC-TDS210-B EC/ TDS/ Resistivity

The model PC-TDS210-B is used for the conductive measurement/control of electrolytic conductivity, resistivity or the TDS value.Conductivity is a function of ion concentration, ionic charge, and ion mobility. Ions in water conduct current when an electrical potential is applied across electrodes immersed in the solution. A controller system consists of a microprocessor-based controller and a conductivity probe.

3 Electrode cells （K=0.01,0.1 and 1.0）can be connected to the device. Temperature serves as the second input variable, measured by a NTC10K/ PT1000 probe. Depending on the measured variable, it is therefore possible to implement specific, automatic temperature compensation.

All adjustments to the current outputs, alarm relays, and calibration of the conductivity and temperature inputs can be made using the controller's membrane keypad.

Application

- Reverse Osmosis
- Process Control
- Seawater Desalination
- Waste Treatment
- Food Processing
- Plating
- Power Plants
- Laboratories

Features

PROS

- DirDirect change over to
  - Conductivity (µS/cm)
  - TDS measurement (ppm)
- Automatic temperature compensation
- 4-20 mA Isolated Output
- Large LCD display with background lighting
- IP54 water resistant and corrosion proof enclosure
- Using the setup program: user-friendly programming
- RS485 communication
- Relay output

Conductivity Controller

Benefits

- Affordable
- Ease of operation
- Low maintenance
- Ensures product quality

Parameters

Power supply	
Power supply	AC:220VAC±10% or 110VAC 50Hz/60Hz DC:24VDC±20% Input power≥6W

Range	
Measure range:	0.00~2000μS/cm(max.20000μS/cm)
Temperature range:	-10~130℃

Communications	
Serial communications	RS485
Output	Current (4-20 mA)

Measurement Accuracy	
EC/TDS/Resistivity:	±1%FS
NTC10K:	±0.3℃
PT1000:	±0.3℃

Operating Environment	
Relative humidity	5 ~ 95%RH(No condensation)
Operating temperature	0℃~60℃
Storage	-15℃~ 65℃

Appearance	
Screen size	2.8inch
Dimension	Overall dimension: 100mm*100mm*150mm(H*W*D) Cutout dimension：92.5mm*92.5mm(H*W)
Weight	0.65Kg
Ingress protection	IP54

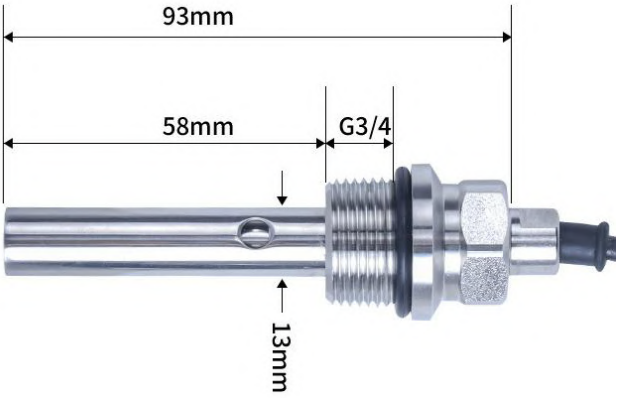
Temperature compensation	
Type:	NTC10K/PT1000
Model:	Manual/automatic

Function	
Output	Isolated 4-20mA output maximum loop is 750Ω,±0.2%FS
Relay	2 relays AC250V/3A

Parameters

Electrode selection: PC-TDS7001/7001-H	
Cell constant	Corrosion Resistance
K=0.01	Suitable for pure water ultrapure water testing
K=0.1	Suitable for conventional water testing
K=1.0	Suitable for industrial water and recycling ring testing
The device offers a dynamic range on the input side, the range must be matched to the operating range of the cell. The standard temp range for PC-TDS7001: 0℃~50℃,the high temp range for PC-TDS7001-H: 0℃~100℃	

Electrode selection						
Cell constant	**Material**	**Length**	**Diameter**	**Hole size**	**Thread**	**Recommended/practical measuring span(depending on the conductivity cell)**
0.01	SS316L	93mm	13mm	6mm	G3/4	0.01 ~ 20 μS/cm
0.1	SS316L	93mm	13mm	6mm	G3/4	0.1~ 200.0μS/cm
1.0	SS316L	93mm	13mm	6mm	G3/4	1.00 ~ 2000μS/cm
A measurement is to be carried out in the 0.01μS/cm to 1μS/cm range. A conductivity cell with the cell constant K = 0.01 0.1 1 is chosen.						



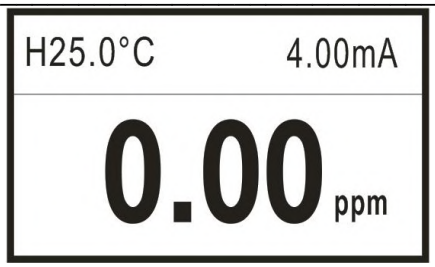
Display

1. Temperature：Compensation temperature
2. Analog output：Analog output
3. Measured value：Real-time measurements value
4. High alarm：High alarm
5. Low alarm：Low alarm

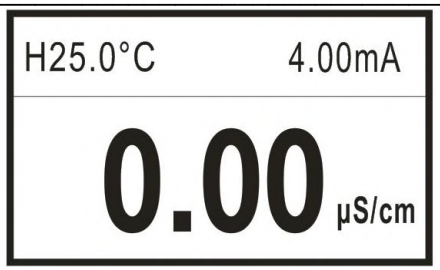
Sign		Name of the key	Function description
7	MENU	MENU	Enter the MENU on the “monitoring page” Exit the MENU on the “menu page”
6	ESC	EXIT	Check related warning status on the “monitoring page”; Return to previous level page in the up& down level page linked to “menu page”
8	▶	RIGHT	Enter the menu under “monitoring interface” Exit the menu under “monitoring interface”
8	▼	DOWN	Relevant menu is selected under the “menu interface” Relevant numerical value is modified under the setup status
9	ENT	ENTER	Enter the sub-menu or confirm modification on the “menu Page”

Monitor page

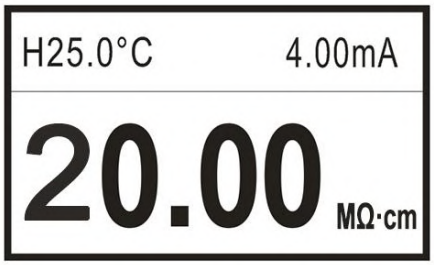
★ **TDS monitor page**



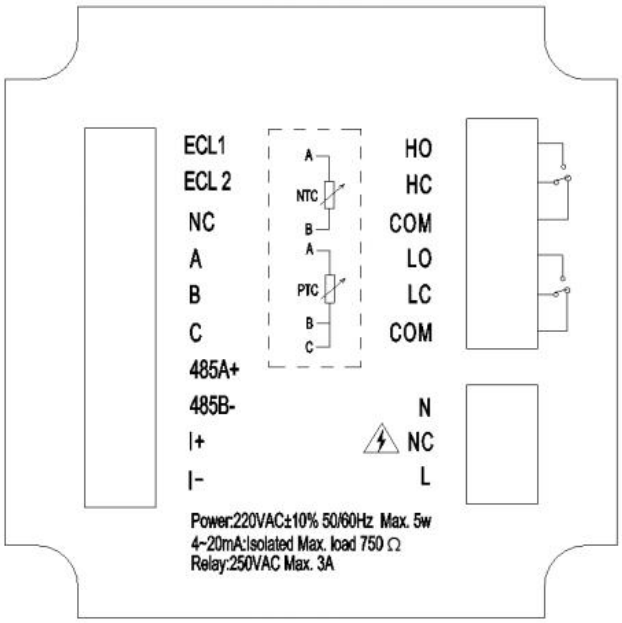
★ **EC monitor page**



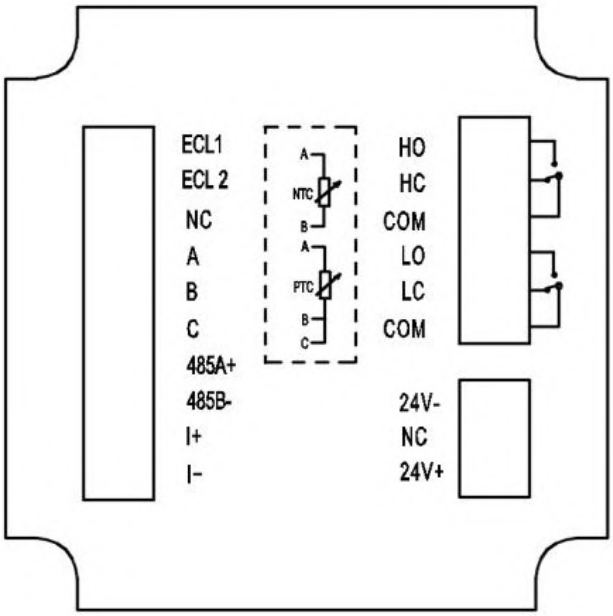
★ **Resistivity monitor page**



Wiring



220VAC wiring diagram



24VDC wiring diagram

- ECL1：Measuring terminal of the electrode
- ECL2：Reference terminal of the electrode
- NC：Unidentified
- A：Temperature compensation terminal A,NTC10K and PT1000 connect here
- B：Temperature compensation terminal B, NTC10K and PT1000 connect here
- I+：4-20mA output end+
- I-：4-20mA output end -
- HO：High alarm normally open relay
- HC：High alarm normally closed relay
- COM：high alarm common
- LO：Low alarm normally open relay
- C：Temperature compensation terminal C, PT1000 three-wire temperature grounding, PT1000 two-wire need to be short-connected to TEMPB, not NTC10K.
- 485A+：RS485 communication interface A+
- 485B-：RS485 communication interface B-
- LC：Low alarm normally closed relay
- COM：low alarm common
- N：AC220V/AC110V neutral wire
- L：AC220V/AC110V live wire
- 24V+: 24VDC +
- 24V-: 24VDC -

Ordering code

PC -TDS210-B-RT1-K1-O1-D1-A2-V1											Description
PC-TDS210-B	-	-	-	-	-	-	-	-	-	-	
Range	RT1										0-2000μS/cm
Cell constant		K1									K=0.01~ 20.00μS/cm
		K2									K=0.1~ 200μS/cm
		K3									K=1.0 ~ 2000μS/cm
Transmit output			O1								4-20mA
Communication				D1							RS485
Relay output					A2						2 relay output
Power supply						V1					24VDC
						V2					220VAC
						V4					110VAC

Datasheet

Digital analyser monitor (Universal Controller)

PC-DC2000

POWER CORPORATION

Datasheet

Digital analyzer monitor
PC-DC2000

PC-DC2000 Digital analyser monitor is a general-purpose water quality controller. It is suitable for use with multiple water quality series digital sensors. It is used to monitor water quality parameters including pH, ORP, conductivity, dissolved oxygen, turbidity, sludge concentration, etc. The parameters are output to the monitoring room through RS485 or current transmission for record keeping.

Applications

Can be used with the following instruments:

- PH sensor
- Conductivity sensor
- Oxygen sensor
- Turbidity sensor

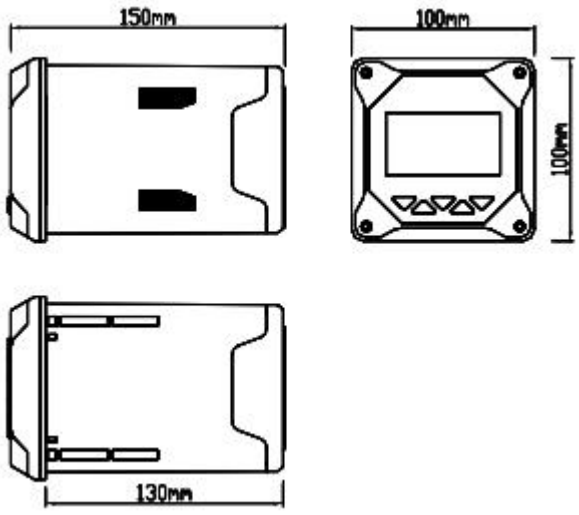
Digital Analyser Monitor

Features

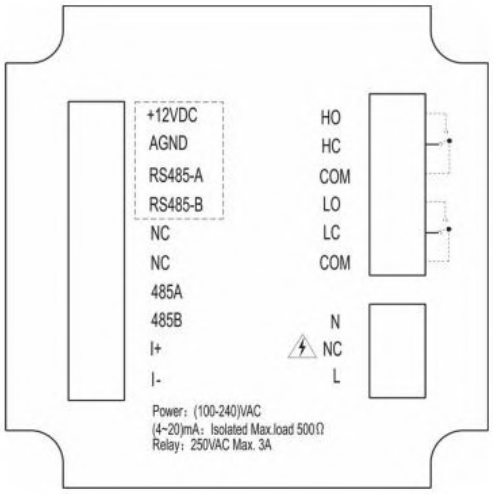
- The isolated transmission output is adopted, which is less affected by interference
- Adopt isolated RS485 communication technology
- With high and low alarm output function.
- With sound and light alarm function.
- With LCD backlight switch control function

Parameters	
Display	2.8-inch monochrome LCD screen, resolution 128*64
Dimension	100mm×100mm×150mm
Hole size	92.5mm×92.5mm
Monitoring parameters	pH/ORP/Conductivity/DO/Turbidity/Sludge concentration
Display range	pH：(0～14)pH
	ORP：(-2000～2000)mV
	DO：(0～40)mg/L
	Saturation：(0～200)%
	Conductivity:(0～600)mS/cm
	Turbidity:(0～4000)NTU
	Sludge concentration:(0～120000)mg/L
Current output	(4～20)mA load capacity 500Ω, output accuracy ±0.2%FS
RS485 output	Isolated, Modbus-RTU communication
Alarm	2 channels, capacity AC250V/3A
Distribution output	12V/125mA
Relative humidity	(10 ~ 85)% (no condensation)
Working temperature	(0 ~ 60)℃
Input	AC：(100～240)VAC DC：24VDC(Optional)
Storage conditions	Temperature:(-15 ~ 65)℃ Humidity(5 ~ 95)% (no condensation) Height:<2000M

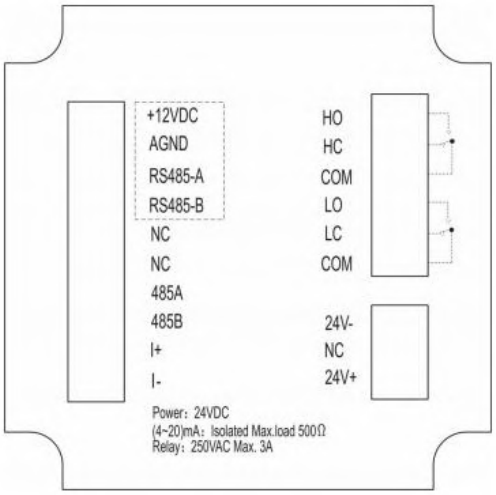
Dimension



Wiring



220VAC wiring diagram



24VDC wiring diagram

- 12VDC:12V power supply +
- AGND: 12V power supply -
- RS485-A: Sensor RS485 communication port A
- RS485-B: Sensor RS485 communication port B
- NC: Unidentified
- RS485 A : RS485 communication interface A +
- RS485 B: RS485 communication interface B-
- I+：4-20mA output end+
- I-：4-20mA output end -

- HO：High alarm normally open relay
- HC：High alarm normally closed relay
- COM：relay common terminal
- LO：Low alarm normally open relay
- LC：Low alarm normally closed relay
- COM：relay common terminal
- L:Power port L
- N:Power port N
- 24V+: 24VDC +
- 24V-: 24VDC -

Ordering code

PC-DC2000-A-B-4-1-E															Description
PC-DC2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Measure range: pH：(0～14)pH ORP：(-2000～2000)mV DO：(0～40)mg/L Saturation：(0～200)% Conductivity:(0～600)mS/cm Turbidity:(0～4000)NTU (0～120000)mg/L
Input	A														RS485
Output		B													4-20mA+RS485
Alarm Output			4												2 Channels SPDT
Electrical Interface				1											M16×1.5 Cable Gland×2+M12×1.5 Cable Gland
Power Supply					E										220VAC
					C										24VDC

Datasheet

Online Turbidity Analyzer

PC-PTU300

POWER CORPORATION

Datasheet

Online turbidity analyser
PC-PTU300

The PC-PTU300 online turbidity analyser is a patent product with independent intellectual property rights for on-line monitoring of drinking water quality. It has the characteristics of ultra-low turbidity detection limit, high precision measurement, long time maintenance-free equipment, water saving and digital output. It supports remote monitoring of cloud platform and mobile phone data, and RS485-modbus communication.

Applications

- Rare water
- Sewage sedimentation tank
- Food industry
- Water purification plant
- Thermal power
- Chemical
- Fertilizer
- Environmental protection

Online turbidity analyser

Features

- Small size, easy system integration
- Ultra-low turbidity detection limit
- Optional measuring range
- Low range, high accuracy
- Water saving
- Digital output
- Remote monitor

Principle

PC-PTU300 turbidity meter adopts 90° scattering detection principle, and designs unique photoelectric receiving structure, as well as automatic temperature and light compensation method, which greatly improves the accuracy and accuracy of turbidity detection. The sensor ARM7 built-in data processor, and adopts efficient digital filtering algorithm to avoid noise interference. At the same time, it adopts standard Modbus digital signal output and 4-20 mA analog output, which is convenient for users to access the computer monitoring system.

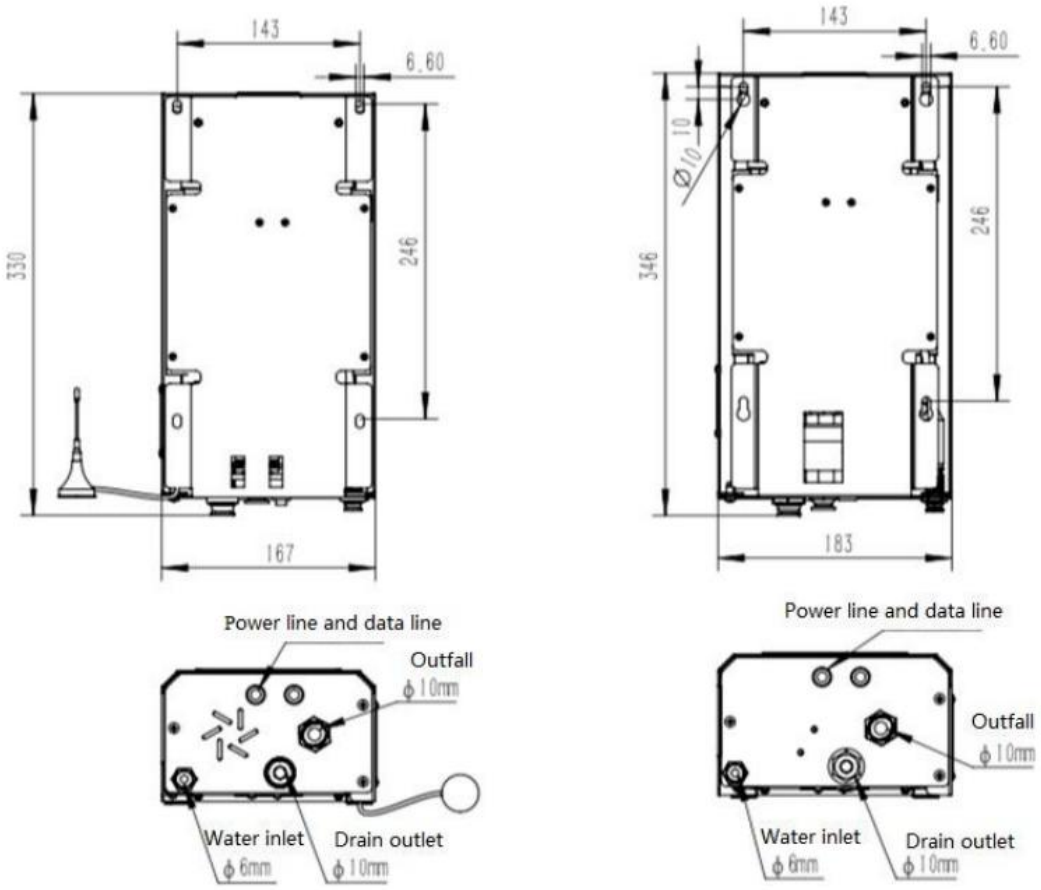
Parameters	
Range	0-20 NTU
	0-1 NTU
Operating range	DC 24V (19-30V voltage range)
Measurement	90° scattering
Working mode	Continuous monitoring of drainage, intermittent automatic discharge
Zero drift	≤±0.015 NTU
Value error	≤±2% or ±0.015 NTU larger
Discharge mode	Automatic
Calibration	Formalhydrazine standard liquid calibration (factory calibrated)
Water pressure	0.1 Kg/cm3-8Kg/cm3, flow not exceeding 300 mL /min
Digital output	RS485Modbus protocol (baud rate 9600,8, N 、1)
Analog output	4-20 mA
Storage temperature	-20℃-60℃
Working temperature	0-50℃
Sensor material	Composite
Maintenance cycle	6-12 months recommended (depending on site water quality environment)

Wiring

485Modbus interface wiring mode as below table.

Color	Function
Green	485A
Yellow	485B

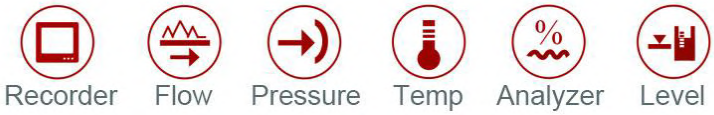
Dimension



Installation Dimensions (left: A, right B)

Ordering code

PC-PTU300-RT1-O0-V2				Description
PC-PTU300	-	-	-	
Range	RT1			0-1 NTU
	RT2			0-20 NTU
	RT3			0-100 NTU
Output		O0		Non
		O1		4-20 mA
Power supply			V2	24VDC



Datasheet

Multi-parameter Water Analyser

PC-MPP1000

POWER CORPORATION

Datasheet

Multi-parameters water analyser
PC-MPP1000

Multi-parameter water analyser is a new generation of drinking water quality monitoring equipment independently developed and manufactured by our company. This equipment can be widely used in urban or rural water supply plants, tap water pipeline networks, tap water secondary water supply, user taps, Online monitoring of water quality such as large-scale water purification equipment and direct drinking water is an indispensable online analysis equipment in the fields of water plant production process control, water conservancy and water management, and sanitation supervision.
The monitoring parameters include turbidity, residual chlorine dioxide, pH,temperature.conductivity, dissolved oxygen, ORP, etc.

Application

- Urban/rural water supply plants
- Sewage treatment
- Tap water
- Secondary water supply
- Indoor swimming pools
- Online monitoring of water quality
- Water conservancy
- Water management
- Sanitation supervision

Features

- Multi-parameters
- High precision
- High reliability
- Low maintenance
- Self-protection
- Easy integration
- Strong environmental adaptability
- Highly customized

Multi-parameter water analyser

Parameters

Working power	(220±22)VAC，(50±1)Hz
Power	30W
Cabinet size	800mm*506mm*180mm(standard version)
Weight	15kg
Storage temperature	4℃~+50℃
Working temperature	4℃~+50℃/-25℃~+50℃
Working humidity	≤95%RH (no condensation)
Inlet flow	500 ~ 1000 mL/min
Inlet pressure	< 3kg/cm^2
Communication interface	RS485 Modbus RTU communication protocol + air data interface
Display	7-inch color touch screen, Chinese/English
Working power	(220±22)V AC，(50±1)Hz
Cabinet size	800mm*506mm*180mm(standard version)

Turbidity	
Measurement method	90° light scattering method
Range	0-1NTU / 0-20NTU / 0-100NTU / 0-4000NTU
Resolution	0-1NTU/0-20NTU/0-100NTU：0.001NTU 0-4000NTU：0.01NTU
Lower detection limit	0.02NTU；0.1NTU（0-4000NTU）
Zero drift	≤1.5%
Repeatability	≤3%
Response time	≤120s
Recommended maintenance period	3-12 months (depending on the water quality on site)

Residual chlorine/chlorine dioxide	
Measurement method	Amperometric method/ polarography(automatic temperature and pH compensation) Chlorine dioxide adopts special membrane head and electrolyte, which can effectively shield the interference of residual chlorine, and the maximum shielding amount is 2mg/L.
Range	0-5mg/L / 0-20mg/L
Resolution	0.01mg/L
Lower detection limit	0.05mg/L
Accuracy	±0.05mg/L or ±5% (DPD comparison error ±10%)
Response time	≤120 seconds
Recommended maintenance period	1-3 months or weekly calibration, 3-6 months to replace consumables
Measurement method	Amperometric method/ polarography (automatic temperature and pH compensation) Chlorine dioxide adopts special membrane head and electrolyte, which can effectively shield the interference of

	residual chlorine, and the maximum shielding amount is 2mg/L.
Measurement method	Amperometric method/ polarography （automatic temperature and pH compensation) Chlorine dioxide adopts special membrane head and electrolyte, which can effectively shield the interference of residual chlorine, and the maximum shielding amount is 2mg/L.

PH /ORP(optional)	
Measurement method	Electrode method (automatic temperature compensation)
Range	0-14pH, ±2000mV（ORP）
Resolution	0.01pH, ±1mV（ORP）
Accuracy	±0.1pH, ±20mV（ORP） or ±2%
Repeatability	±0.1pH, ±10mV（ORP）
Response time	≤60 seconds
Recommended maintenance period	1-3 months

Temperature	
Measurement method	Thermistor method
Range	-20℃ - 85℃
Resolution	0.1℃
Accuracy	±0.5℃
Repeatability	≤0.5℃
Response time	≤25 seconds
Recommended maintenance period	12 months

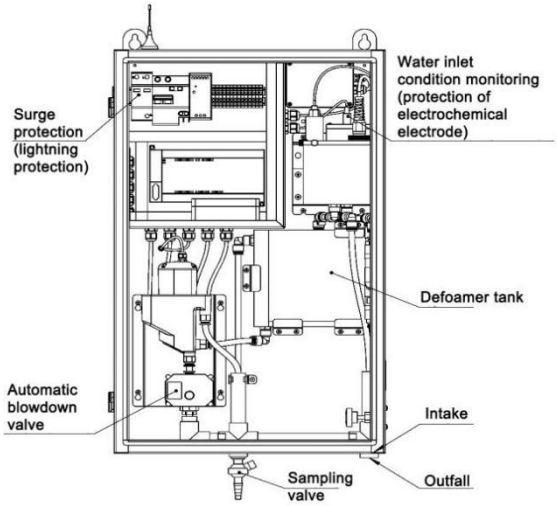
Conductivity (Optional)	
Measurement method	Conductivity cell method (automatic temperature compensation)
Range	1-2000uS/cm / 1~200mS/m
Accuracy	±1.5%FS
Repeatability	≤0.5%FS
Response time	≤30 seconds
Recommended maintenance period	3-6 months
Measurement method	Conductivity cell method (automatic temperature compensation)

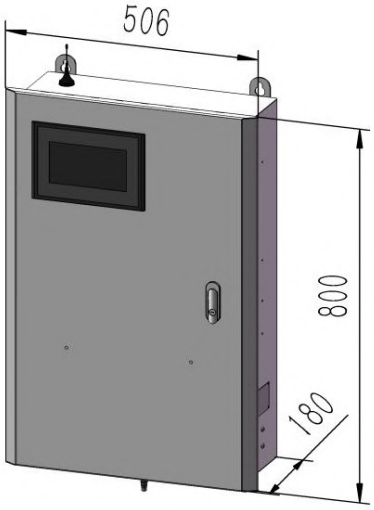
Dissolved oxygen (Optional)	
Measuring method	Fluorescence method (Optional coating ampere current method)
Range	0-20mg/L
Accuracy	±0.3mg/L
Repeatability	≤±1.5%
Response time	≤30 seconds
Recommended maintenance period	1-3 months

Expansion port	
Port type	RS485、4-20mA

Dimensions

- The main structure of the multi-parameter water analyzer is shown in the Figure.





Ordering code

PC-MPP1000-M1-O1-D1-V1														Description
PC-MPP1000-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Type	M1													Three parameters: turbidity, pH, stainless steel box
	M2													Three parameters: turbidity, pH, stainless steel box
	M3													Four parameters: turbidity, residual chlorine/chlorine dioxide, pH, stainless steel box
	M4													Five parameters: turbidity, dissolved oxygen, pH, conductivity, temperature, stainless steel box
	M5													Three parameters: turbidity, pH, temperature plastic box
	MX													X parameters
Transmit output		O0												No
		O1												4~20 mA
		O1												0~5V
Communication			D1											RS485
Power supply				V1										220VAC

Note：Parameters can be matched as follows: turbidity, chlorine dioxide/residual chlorine, temperature, pH, conductivity /TDS, dissolved oxygen,ORP

Datasheet

Residual Chlorine Controller

PC-TRC/ERC400

POWER

Datasheet

Residual chlorine meter
PC-TRC/ERC400

The residual chlorine controller has a built-in sensor, which has the characteristics of high measurement accuracy, fast response time and low maintenance cost. The residual chlorine meter outputs 4~20mA standard signal and RS485 signal, which can be connected to various regulators, and can be connected to two-position regulators, time proportional regulators, non-linear regulators and classic PID regulators according to requirements, which can be combined into various types. Residual chlorine control system.

Applications

- Secondary water supply
- Tap water
- Pool water
- Water works
- Agricultural drinking water

Residual chlorine controller

Features

- The electrode measurement is accurate and the response speed is fast
- LCD with backlight, easy and intuitive operation
- With automatic temperature compensation, pH manual compensation function
- Restore factory function to avoid data loss by misoperation
- Isolated 4-20mA standard signal can realize signal remote transmission
- Range can be switched manually
- A variety of calibration methods are convenient for on-site adjustment

Parameters

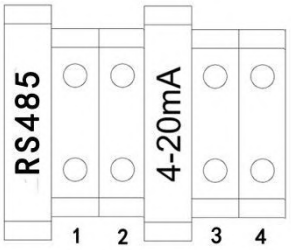
Residual chlorine meter	
Display	7 inch touch screen
Protective box size	Dimensions: 400mm×300mm×200mm Window size: 155mm×87mm
Measuring range	Residual chlorine: (0~5) mg/L Temperature: (0.1~40.0)℃
Transmit output	(4~20)mA (optional)
Communication	MODBUS RS485
Load Resistance	≤750Ω
Environment humidity	≤95% no condensate
Power supply	220VAC
Ingress protection	IP43

Residual chlorine electrode	
Measurement content	HCLO、CLO2
measuring system	Microelectronics MEMS technology, special membrane structure
Measuring range	(0~5）mg/L
Accuracy	When ≤0.1mg/L, the absolute error is ±0.01mg/L; When ≥0.1mg/L, ±5% of the measured value or ±0.02mg/L (whichever is greater)
Resolution	0.01
Polarization time	When using for the first time, first pass water for 2 hours in chlorinated water, and then power on for half an hour.
Response time	Less than 30s after polarization is completed
Minimum conductivity	≥100us/cm, can not be used for ultrapure water
Operating temperature	(0~40)℃ (non-condensing)
Temperature compensation	Pt1000 with built-in integrated automatic compensation
Max pressure	4bar
Recommended flow rate	≥0.03m/s in flow cell
pH range	(5~9) pH, below 5 will damage the membrane head
Maximum chlorine concentration	≥5ppm
Power supply	Standard 24V DC±2V; optional 12V DC±2V
Power consumption	1.56W
Digital communication	MODBUS RS485
Cable length	Standard 3 meters, others can be customized
Probe weight	210g
Thread size	NPT 3/4
Connection method	5-pin waterproof aviation plug
Moisture-proof material	PVC and Viton® O-ring seals

Wiring

Residual chlorine meter wiring definition

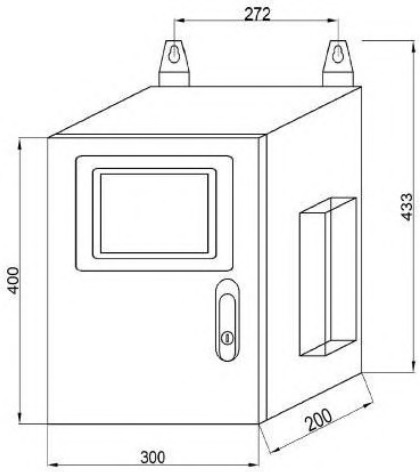
1 --- RS485A
2 --- RS485B
3 --- 4-20 mA +
4 --- 4-20 mA –

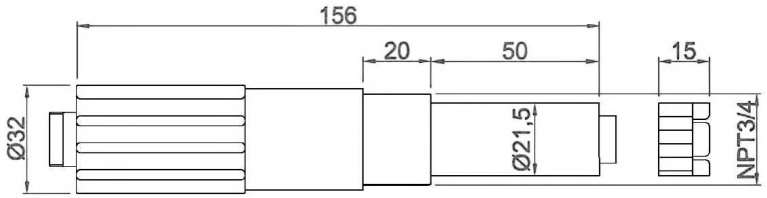


Sensor Wiring Definition

Core number	1	2	3	4	5
Sensor wire	Red	Black	Yellow	Green	White
Signal	+24VDC	-24VDC	RS485 A	RS485 B	Ground wire

Dimension





Unit：mm

Ordering code

PC-TRC400 -RT1-O0-D1-A2-V1													Description
PC-TRC400	-	-	-	-	-	-	-	-	-	-	-	-	
Type	RT1												（0～5）mg/L
Transmit output		O0											No
		O1											（4～20）mA
Communication			D1										RS485
Relay output				A2									2 relay outputs
Power supply					V1								220VAC(140~240VAC)

PC-ERC400 -ST1-C1-D1-V1-CS3													Description
PC-ERC400	-	-	-	-	-	-	-	-	-	-	-	-	
Type	ST1												Compact type
Compensation Type		C1											PT1000 temp compensation
Communication			D1										RS485
Power supply				V1									24VDC (22~26VDC)
				V3									12VDC (10~14VDC)
Cable length					CS3								3m
					CSXX								XXm

Datasheet

pH electrodes/ORP electrodes

POWER CORPORATION

Datasheet

pH electrodes/ORP electrodes

pH electrode is a high-quality sensor for the analysis and measurement of liquid components during industrial automation. These electrodes are known for their use of top-quality materials and components. They are designed as combined electrodes (the measuring electrode and the reference electrode are combined in one shaft).The temperature probe can also be integrated as an option.

Applications

- Wastewater
- Wet Wells
- Oil tanks
- Sumps
- Reservoirs
- Industrial wastewater
- Electroplating plants
- Paper industry
- Drinking water

Features

- Adopt international advanced solid dielectric and large area PTFE liquid junction, easy maintenance.
- Long distance reference diffusion path, extends electrode life greatly in harsh environments.
- Electrode is made of high quality low-noise cable, make signal output length greater than 40 meters or more, without interference.
- High accuracy, fast response, good repeat-ability.
- With silver ions Ag / Ag-Cl reference electrode.
- Side or vertically installation to the reaction tank or pipe.
- Electrode can be used interchangeably with similar electrodes.

Electrodes

Electrode model	Designation	pH and ORP range	Temperature range
PC-pH5011	Plastic pH electrode	2-14pH	0-60℃
PC-pH5013A	PTFE pH electrode	0-14pH	0-60℃
PC-pH5014	Glass pH electrode	0-14pH	0-130℃
PC-pH5015	High Temperature Glass	0-14pH	0-130℃
PC-pH5016	pH electrode	0-14pH	0-80/>100℃
PC-pH5017	Plastic pH electrode	0-14pH	0-130℃
PC-pH5018	Glass pH electrode	0-14pH	0-100℃
PC-pH5019	Glass pH electrode	0-14pH	0-80℃ for general cables
PC-pH5022	Glass pH electrode	0-14pH	0-130℃
PC-pH6001	Plastic pH electrode	2-12pH	0-80℃
PC-pH6002	Glass pH electrode	0-14pH	0-100℃
PC-pH7001	Desulfurization electrode	0-14pH	5-80℃
PC-pH7002	Plastic pH electrode	0-14pH	5-80℃
PC-ORP6041	Glass ORP electrode	-2000mV-2000mV	0-80℃
PC-ORP6050	Plastic pH electrode	-2000mV-2000mV	0-60℃

PC-pH5014

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
HF acid concentration range:⩽4000ppm
Electrode interface: S8, VP, K2, etc.
Zero potential point: 7 ± 0.5 pH
Conversion coefficient: > 98%
Membrane resistance: <50, 250MΩ
Practical response time: < 1 min
Salt bridge: Ceramic salt bridge
Pressure resistance: 0.25MPa
Thread Connection: PG13.5
Reference:Ag/AgCl

- **Application**

In the dilution control of hydrofluoric acid in semiconductor wafer fabrication and chip production; determination of pH value in petrochemical industry, iron and steel production wastewater and other strong corrosive systems.

PC-pH5015

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Connector: VP, S8M, K2, etc.
Zero potential point: 7 ±0.5 pH
Conversion coefficient: > 98%
Membrane resistance: general: <250MΩ
Practical response time: < 1 min
Salt bridge: Ceramic salt bridge
Pressure resistance: 0.25MPa
Thread Connection: PG13.5
Reference:Ag/AgCl
Material:Glass

- **Application**

In various chemical processes including microbial technology, pharmaceuticals, food and beverages, sugar manufacturing, chlor-alkali, mining and smelting, paper pulp, textiles, petrochemical industry and semiconductor electronic industry as well asfields such as wastewater treatment.

PC-pH5016

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Zero potential point: 7 ± 0.5 pH
Conversion coefficient: > 98%
Membrane resistance: <250MΩ
Practical response time: < 1 min
Salt bridge: salt bridge porous Teflon
Pressure resistance: 1 ~ 6 Bar at 25 ℃
Thread Connection: 3/4NPT

- **Application**

In wastewater treatment and in the fields including mining and smelting, papermaking, paper pulp, textiles, petrochemical industry, process of semiconductor electronic industry, and downstream engineering of biotechnology.

PC-pH5017

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Connector: VP, S8M, K2, etc.
Zero potential point: 7 ± 0.25 pH
Conversion coefficient: > 98%
Membrane resistance: <600MΩ
Practical response time: < 1 min
Pressure resistance: up to 6 Bar at 25 ℃
Thread Connection: PG13.5

- **Application**

In various chemical processes including chlor-alkali, mining and smelting, papermaking, paper pulp, textiles, petrochemical industry and semiconductor electronic industry as well as fields such as biotechnology and wastewater treatment.

PC-pH5018

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Pressure resistance: 0.25MPa
Connector: VP, S8M, K2, etc.
Zero potential point: 7 ± 0.5 pH
Conversion coefficient: > 98%
Membrane resistance: general: <250MΩ
Practical response time: < 1 min
Salt bridge: Porous ceramic core/ porous Teflon
Thread Connection: PG13.5

- **Application**

In various chemical processes including microbial technology, pharmaceuticals, food and beverages, sugar manufacturing, chlor-alkali, mining and smelting, papermaking, paper pulp, textiles, petrochemical industry and semiconductor electronic industry as well as fields such as sewage treatment.

PC-pH5019

- **Technical parameters**

Temperature compensation: 10 KΩ/2.252KΩ/Pt100/Pt1000
Zero potential point: 7 ± 0.5 pH
Conversion coefficient: > 98%
Membrane resistance: <250MΩ
Practical response time: < 1 min
Salt bridge: Ceramic salt bridge
Pressure resistance: 0.1 MPa～0.3 MPa at 25 ℃
Thread Connection: 3/4NPT
Material:Nylon 66 mixed glass fiber

- **Application**

In sewage treatment and fields including mining and smelting, papermaking, paper pulp, textiles, petrochemical industry, process of semiconductor electronic industry and downstream engineering of biotechnology.

PC-pH5013A

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Zero potential point: 7±0.25
Conversion coefficient: ≥95%
Membrane resistance: ＜500Ω
Practical response time: < 1 min
Salt bridge:Cyclic tetrafluoro salt bridge
Reference: Ag/AgCl
Pressure resistance: 0.3MPa
Thread Connection: 3/4NPT
Material: PTFE

- **Application**

Low-impedance glass sensitive film, wear-resistant, strong acid and alkali resistant, with protection ring in the the front to protect glass bulb and better precision and linearity.

PC-pH5011

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Zero potential point: 7±0.25
Conversion coefficient:≥95%
Membrane resistance: ＜500Ω
Practical response time:< 1 min
Reference: Ag/AgCl
Pressure resistance: 4 bar at 25 ℃
Thread Connection: 3/4NPT
Material: PPS/PC

- **Application**

Suitable for general industrial waste water and discharge solutions

PC-pH6001

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Pressure resistance: 0.4MPa
Reference: Ag/AgCl
Thread Connection: 3/4NPT
Salt bridge: Cyclic tetrafluoro salt bridge
Material:ABS

- **Application**

In various chemical processes including water treatment, waste gas treatment, aquaculture and dosing equipment supporting.

PC-pH7001

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Pressure resistance: 0.4MPa
Reference: Ag/AgCl
Thread Connection: 3/4NPT
Salt bridge: Ceramic salt bridge
Material:PPS

- **Application**

In various chemical processes including high suspended solids solution, lime pool and mining.

PC-pH7002

- **Technical parameters**

Temperature compensation: Pt100/Pt1000/NTC10K
Pressure resistance: 0.4MPa
Reference: Ag/AgCl
Thread Connection: 3/4NPT
Salt bridge: Cyclic tetrafluoro salt bridge
Material:PPS

- **Application**

In various industrial processes including sewage and waste gas treatment and fields.

PC-pH5022

- **Technical parameters**

Zero potential point:7 ± 0.5 pH
Conversion coefficient: > 96%
Installation size: PG13.5
Pressure: 1 ~ 6 Bar at 25 ℃
Temperature: 0 ~ 130℃ for general cables
Thread Connection:K8S

- **Application**

Industrial wastewater engineering including process measurements, electroplating plants, paper and drinks industry , wastewater containing oil.
Suitable for suspensions, varnishes, media containing solid particles and media containing fluorides (hydrofluoric acid) up to 1000 mg/l HF.

PC-ORP6041

- **Technical parameters**

Thread Connection: BNC
Material: Glass
Pressure resistance:
Reference:
Thread Connection:
Salt bridge:
Material:

- **Application**

In various industrial processes including water treatment, pure water industry, power plants, etc.

PC-ORP6050

- **Technical parameters**

Zero potential point: 7 ± 0.5 pH
Conversion coefficient: > 96%
Pressure resistance:≤0.6MPa
Thread Connection: 3/4NPT

- **Application**

In various industrial processes including sewage and waste gas treatment and fields.

PC-pH6002

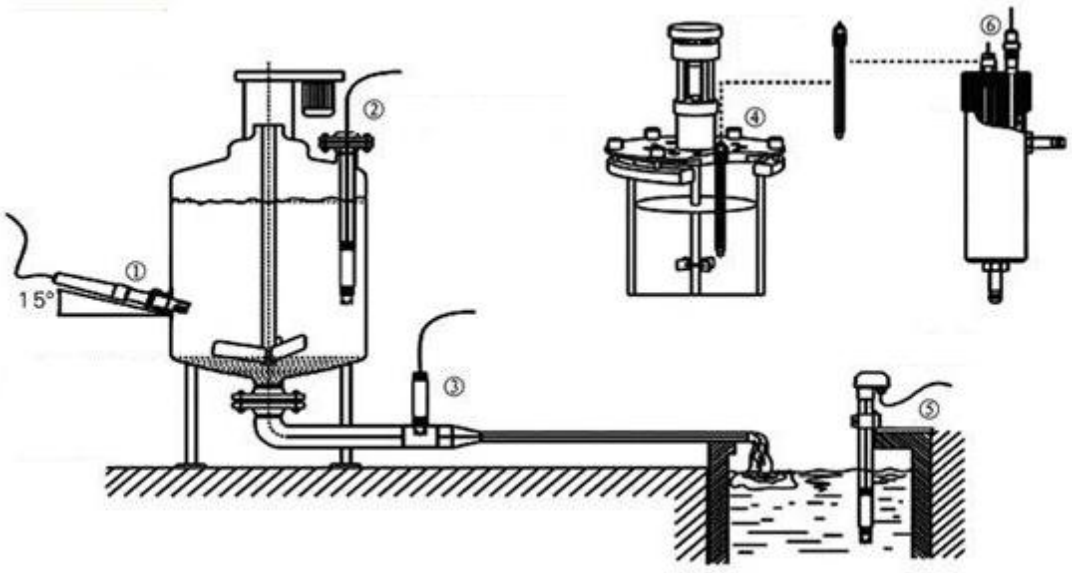
- **Technical parameters**

Measurement range:(0~14) pH
Temperature range:(0~100)℃
Pressure resistance:0.6MPa
Zero potential point:Eo=7pH
Electrode size: φ12x120, 225 or other sizes
Thread: PG13.5, international standard
Electrode outer tube material: glass
Wire: 5 meters (standard),optional
Temperature compensation resistance: Pt100, Pt1000, 2.252K, 10K, 22K, etc.

- **Application**

In various chemical processes including microbial technology, pharmaceuticals, food and beverages, sugar manufacturing, chlor-alkali, mining and smelting, papermaking, paper pulp, textiles, petrochemical industry and semiconductor electronic industry as well as fields such as sewage treatment.

Installation of electrode



Schematic diagram of common installation method

① Side wall installation

② Flange mounted at the top

③ Pipe installation

④ Top installation

⑤ Submersible installation

⑥ Flow-through installation

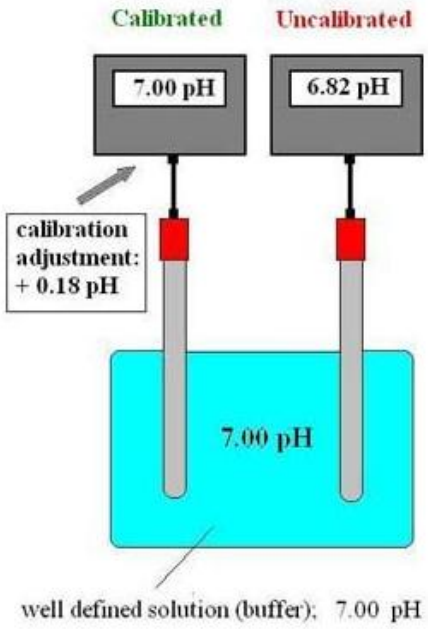
The interface must be in 5 oblique angle,or it will affect the normal test and use of the electrode.We won't be responsible for any results due to this.

pH Calibration

A pH calibration is the procedure of adjusting the pH meter by measuring solutions of known pH values.

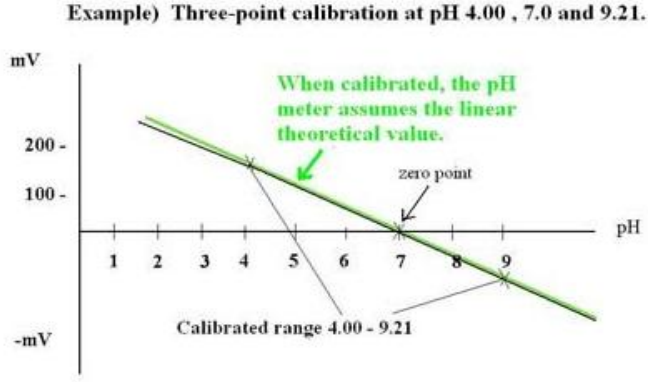
The characteristic of a pH electrode will change with time due to electrode coating and aging. And even a pH electrode would be stable over time, pH electrodes cannot be produced with identical characteristics.

In practice the response of a real pH sensor does not exactly follow the Nernst equation. This difference between the theoretical and actual behavior of a pH electrode must be compensated for. A calibration is required to match the pH meter to the current characteristics of the used pH sensor.



To achieve the best possible accuracy, the calibration should cover the range of the desired measurement values. If the readings go beyond the calibrated range, the pH meter assumes linearity and simply extrapolates the value to be displayed. The true value may be slightly different.

More advanced pH meters will let the user calibrate at three, four or five and even higher numbers of pH values. A multi-point calibration mean, in comparison to a two-point calibration, that you can calibrate your pH tester on both sides of the zero point (pH 7.00). This will expand your pH measurement range without the need of recalibrating.



Electrode slope: The slope of the glass electrode is 59.16 mV at 25 ℃ theoretically, i.e. potential change of 59.16 mV for each pH change in the solution. But in fact, neither glass electrode can reach the theoretical value 100%; in general, the electrode slope is more than 98% of the theoretical value (percentage slope). In addition, the mV difference corresponding to each unit pH value varies under different temperatures. The conversion of temperature to electric potential difference is as follows:

$$\triangle E=59.16*[（273+T）/298]*\triangle pH$$

Corresponding relationship between pH and millivolt at 25℃

Potentiometer(mV)	pH	Potentiometer(mV)	pH
414.12	0.00	-414.12	14.00
354.96	1.00	-354.96	13.00
295.80	2.00	-295.80	12.00
236.64	3.00	-236.64	11.00
177.48	4.00	-177.48	10.00
118.32	5.00	-118.32	9.00
59.16	6.00	-59.16	8.00
0.00	7.00	0.00	7.00