Datasheet

pH/ORP Controller

AI-MD-PH

Arka Instruments LLP

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This product is an instrument independently developed by our company for online monitoring of pH/ORP value. 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 monitoring and recording of the instrument by the computer.

Applications

- Wastewater
- Thermal power
- Chemical fertilizers
- Metallurgy,
- Environmental protection
- Pharmaceuticals,
- Biochemistry,
- Food and tap water

pH/ORP controller

Features

- Modular circuit design.
- Isolation and transmission output
- Strong anti-interference ability
- Isolate RS485 communication
- Support temperature manual/automatic compensation
- High and low alarm and hysteresis can be set

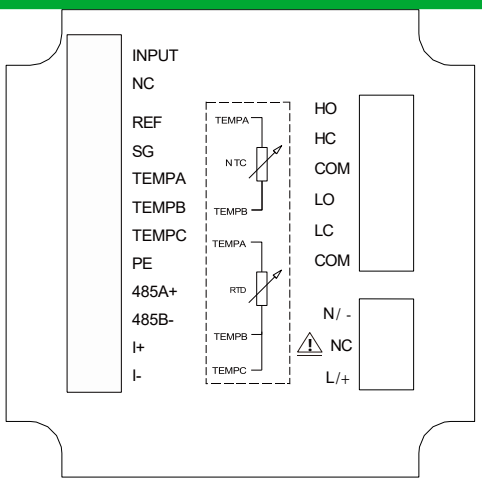
Buzzer, LCD backlight switchable

Principle

A pH controller works based on measurement and control principles. For measurement, it uses a pH electrode with a glass-membrane and a reference electrode. The glass membrane exchanges ions with hydrogen ions in the solution, generating a potential difference related to the hydrogen ion concentration (following the Nernst equation). The controller processes this signal and converts it to a pH value, with temperature compensation if needed. For control, users set a target pH value. The controller compares the measured pH with the target, calculates the deviation, and if the pH is too high (alkaline), it signals to add acid; if too low (acidic), it signals to add alkali. It continuously monitors and adjusts to keep the pH near the target value in a feedback loop.

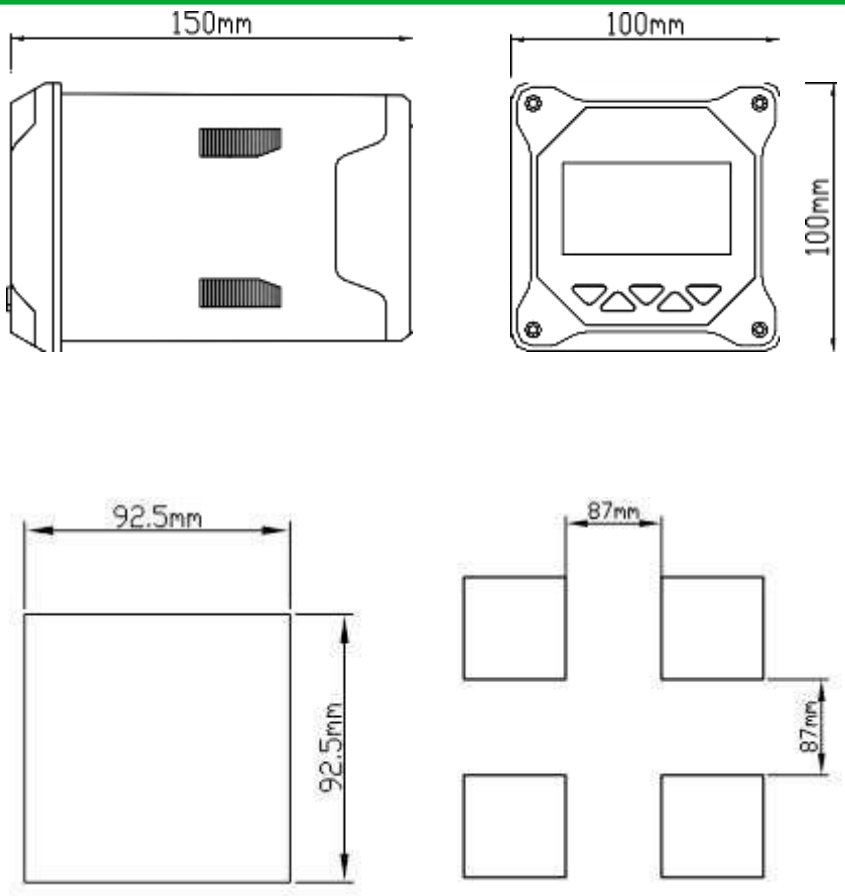
Parameters	
Measured variables	pH，ORP
Measuring range	pH：(0.00 ~ 14.00) pH ORP：(-2000 ~ 2000) mV
Input impedance	≥10^{12}Ω
Transmitter output	Isolated, (4~20)mA can be set corresponding to pH/ORP measurement range, maximum load 750Ω, output accuracy ±0.2%FS
Communication	isolated, RS485 output, Modbus-RTU communication protocol
Alarm output	2 relay dry contacts, contact capacity 250VAC, 3A
Power supply	AC: 220V±10%, 50Hz/60Hz, 110V±10% DC: 24V±10%
Power	≥6W
Resolution	pH: 0.01pH ORP: 1mV
Accuracy	pH：±0.02pH ORP：(-2000 ~ -1000)mV，±2mV (-1000 ~ 1000)mV，±1mV (1000 ~ 2000)mV，±2mV
Repeatability	0.02pH
Temperature compensation	NTC10K: (-10~60)°C accuracy ±0.3°C (60~130)°C accuracy ±2°C Pt1000: Accuracy ±0.3°C Pt100 (customized): accuracy ±0.3°C Range: (-10~130)℃ manual/automatic
Display	2.8-inch monochrome LCD display, resolution 128*64
Working environment temperature	(0 ~ 60) ℃
Relative humidity	10%~85% (no condensation)
Ingress protection	IP5X
Storage environment temperature	(-15~65)℃
Relative humidity	5%~95% (no condensation)
Altitude	<2000m

Wiring



- INPUT: electrode input terminal
- NC: undefined
- REF: electrode reference junction
- SG: electrode ground terminal
- TEMPA: temperature compensation terminal A
- TEMPB: temperature compensation terminal B
- TEMPC: temperature compensation terminal C, Pt1000, Pt100 (customized) three-wire temperature ground, connected to Pt1000, Pt100 (customized) two-wire system needs to be shorted to B, when connected to NTC10K, C terminal is suspended
- PE: instrument ground terminal
- 485A+: RS485 communication interface A+
- 485B－: RS485 communication interface B－
- I+: (4~20)mA output terminal+
- I－: (4~20) mA output terminal－
- 220V N/110V N/24V－: 220VAC power terminal/110VAC power terminal/24VDC power terminal negative
- 220V L/110V L/24V+: 220VAC power terminal/110VAC/power terminal 24VDC power terminal positive
- COM: contact common terminal
- LC: low alarm normally closed contact terminal
- LO: low alarm normally open contact terminal
- COM: contact common terminal
- HC: high alarm normally closed contact terminal
- HO: high alarm normally open contact terminal

Dimensions



Installation

Instrument installation

Please read the instruction of installation location and method of instrument as described during installation.

Notes for installation

- This product is tray mounted.
- Please install it indoors, avoiding wind, rain and direct sunlight.
- In order to prevent the internal temperature of this product from rising, please install it in a well-ventilated place.
- When installing this product, please do not tilt it to the left and right, try to install it horizontally (it can be tilted back <30 °).

The following places shall be avoided during the installation

- In direct exposure to sunlight and near thermal equipment.
- With ambient temperature over 60 degrees in operation.
- With humidity over 85% in operation.
- Nearby electromagnetic source.
- In strong mechanical vibration.
- With varying temperature and dew condensation.
- With oil smoke, steam, humidity, dust and corrosive gases.

Installation methods

Install a 92.5 * 92.5 mounting hole on the instrument cabinet or mounting panel, The thickness of the installation panel is 1.5mm~13mm.

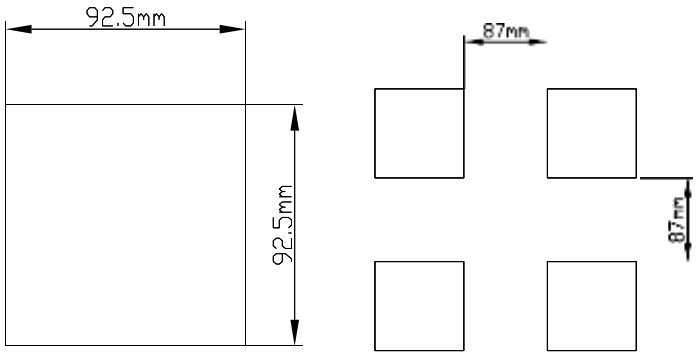


Fig.1

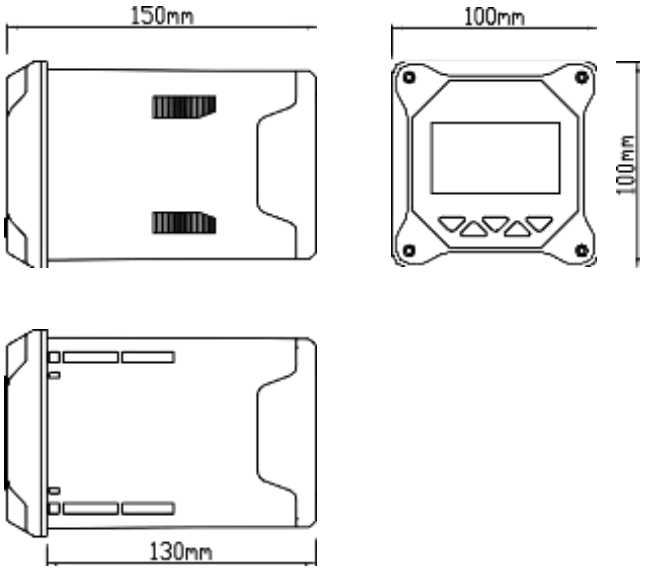


Fig.2 Dimension

The instrument into the mounting hole and then buckle on the Snap, as shown below

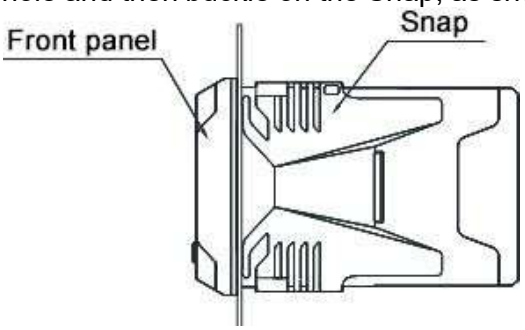


Fig.3

Electrode installation

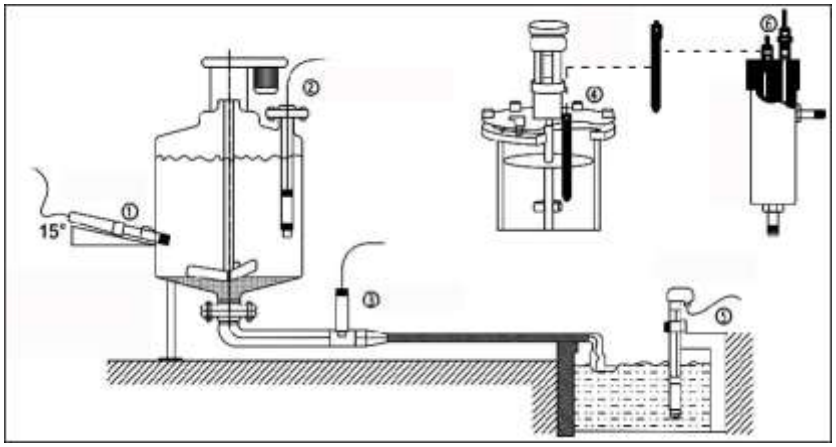


Fig.4 Schematic diagram of common installation method

①Side wall installation②Flange mounted at the top ③Pipe installation ④Top installation⑤Submersible installation ⑥Flow-through installation

The interface must be in 15°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.

Ordering Code

AI-MD-PH-HC-B-4-1-4-E-S2-P1	Description
AI-MD-PH - - - - - - - -	
Measurement Range HC	(0-14) pH, (-2000-2000) mV
Output B	4-20mA+RS485
Alarm Output 4	2-channel SPDT
Electrical InterfaceLevel of Protection 1	M16×1.5 cable gland×2+M12×1.5 cable gland
Level of Protection 4	IP54
Level of Protection 5	IP65
Power Supply E	220VAC
Power Supply C	24VDC
Power Supply D	110VAC
Instrument Type S2	Regular Type
Instrument Type S3	Electrode Grounding Type
Accessories P1	304SS Back Panel Mounting Bracket

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