Datasheet

pH/ORP Controller

SUP-MDC-PH

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The MDC-PH Controller is a smart, online pH/ORP transmitter. Its multi-mode channel functionality allows for the connection of both analog and digital sensors. Continuous monitoring data can be transmitted to a DCS system via output connections for remote tracking and recording. Alternatively, communication with computers is possible through an RS485 interface using the Modbus - RTU protocol, enabling computer-based monitoring and recording. This controller is widely used across various industries, including thermal power, chemical fertilizers, metallurgy, environmental protection, pharmaceuticals, biochemistry, food, wastewater treatment, semiconductors, and tap water.

Applications

- Thermal power
- Chemical fertilizers
- Metallurgy
- Environmental protection
- Pharmaceuticals
- Biochemistry
- Food
- Wastewater treatment
- Semiconductors
- Tap water

pH/ORP Controller

Features

- Hybrid mode in single-channel controllers, makes maintenance more economical in the later stage.
- IP66 ingress protection.
- NB IoT wireless communication function is optional, and the mobile app can view data in real-time.
- Automatic recognition of digital sensors.
- 4.3-inch full-view color display, quick toggle between digital display and real-time curve modes.
- Capacity for 500,000 data records.

Optically isolated (0/4~20) mA transmission output, offering strong anti-interference capabilities.

- Optically isolated RS485 communication.
- The design of power and signal grounds has improved the product's anti-interference ability.
- Manual temperature and various automatic temperature compensation features.
- High and low alarm functions; adjustable hysteresis and hysteresis time settings.

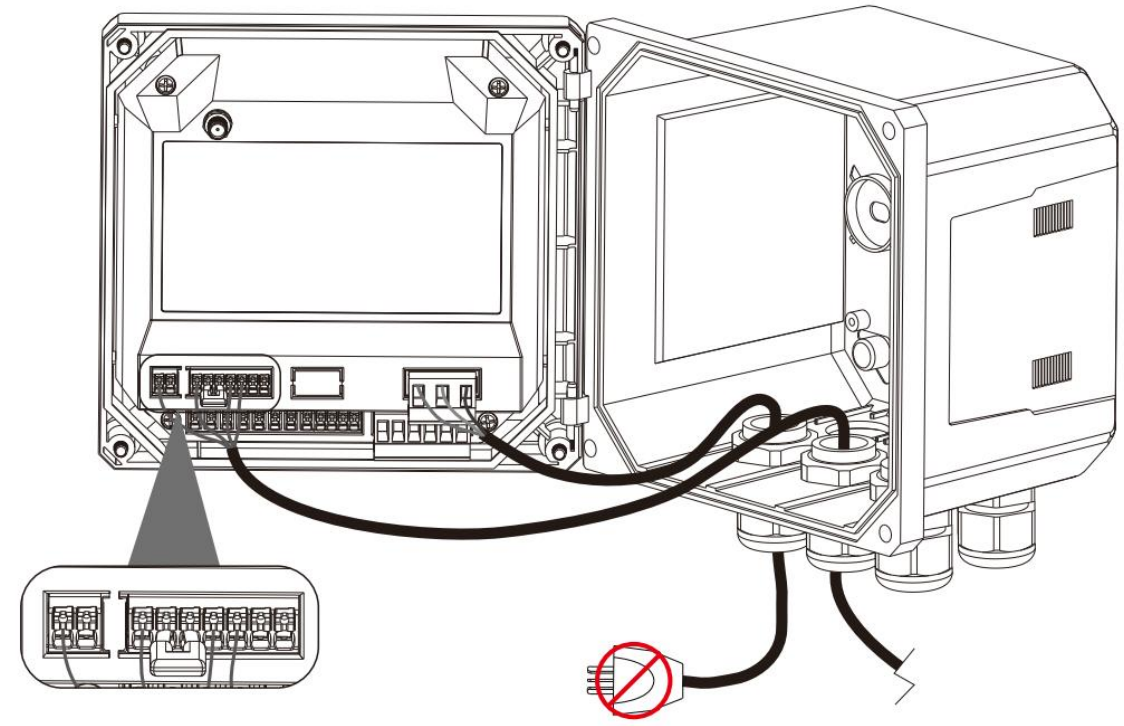
Principle

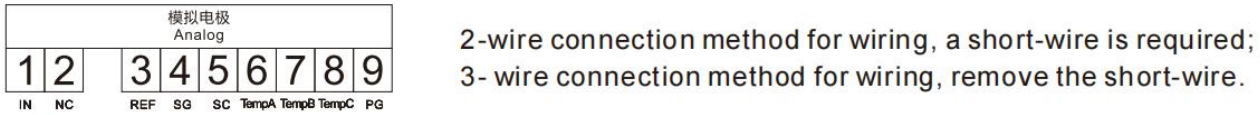
The pH/ORP controller measures the pH and ORP values of the solution, compares them with the set thresholds, and then controls external devices, such as dosing pumps or pH adjusting devices, through the controller's output signals (e.g., 4-20 mA current signals) in order to adjust the acidity and alkalinity or redox state of the solution, thus achieving the set control targets.

Parameters	
Measured variables	pH / ORP / Antimony
Measuring ranges	pH/Antimony：(-2.00 ~ 16.00) pH　　ORP：(-2000 ~ 2000) mV
Input impedance	≥10^{12}Ω
Temperature types	NTC10K，Pt1000，Pt100
Temperature range	(-10~130)℃
Accuracy	pH：±0.02pH Antimony：±0.2pH ORP：±2mV NTC10K：　(-10~60)℃, accuracy: ±0.3℃ (60~130)℃, accuracy: ±2℃ Pt1000: accuracy ±0.3℃ Pt100: accuracy ±0.3℃
Resolution	pH/Antimony：0.01pH； ORP：1mV
Repeatability	0.02pH
Temperature compensation	Manual compensation; Automatic compensation: Linear, Acid, Base, Pure
Measured variables	pH/ORP
Measuring ranges	pH: (0.00 ~ 14.00) pH ORP: (-2000 ~ 2000) mV Note: For the actual measurement range, refer to the technical specifications of the connected sensors.

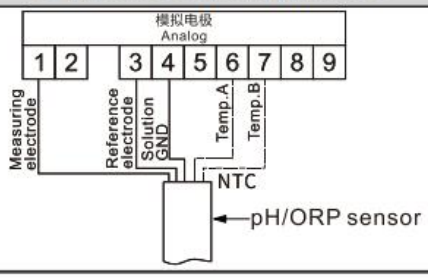
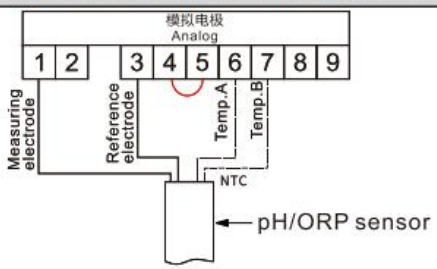
Current output	Isolated, 2 - channel (0/4~20) mA configurable to corresponding measurement ranges, load capacity 750Ω, output accuracy ± 0.1% FS, compliant with NAMUR NE 43 standards.
Communication output	Isolated, RS485 interface, Modbus-RTU communication protocol.
Alarm output	3-channel SPST (2 alarms + 1 cleaning), NO/NC type, capacity 250VAC, 5A.
Alarm relay delay	0~9999 seconds, adjustable.
Power supply	AC：(85~265)V，50/60Hz DC：(21.6~26.4) V
Power consumption	≤28W
Cable entries	M20*1.5 cable gland
Cable specification	Spring terminals: suitable for AWG16~AWG24（0.2mm^2~1.5mm^2）cables； Plug-in terminals: suitable for AWG12~AWG28（1mm^2~2.5mm^2）cables；
Operating environment	Temperature：(0 ~ 60)℃ Relative Humidity：10 %~85%（non-condensing）
Storage environment	Temperature：(-15~65)℃ Relative Humidity：5%~95%（non-condensing） Altitude：<2000m
Ingress protection	IP66
Flame Retardancy	UL94V-0

Wiring



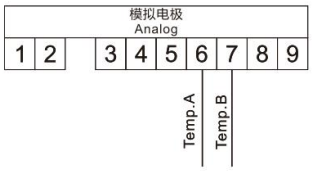
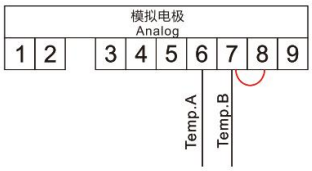
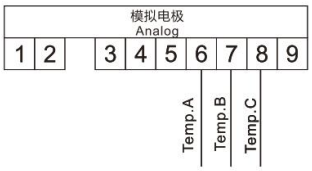


Analog sensor connection schematic

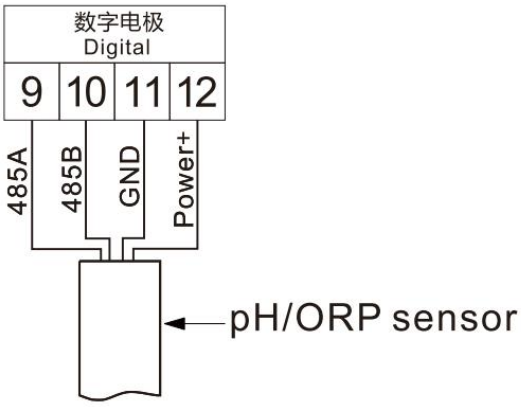
3-wire: Sensor with SG	2-wire: Sensor without SG
	
pH/ORP sensor with SG directly connects to terminal 4	pH/ORP sensor without SG need to short terminals 4 and 5 (the controller comes with a short-wire, or users can use a wire to connect them)

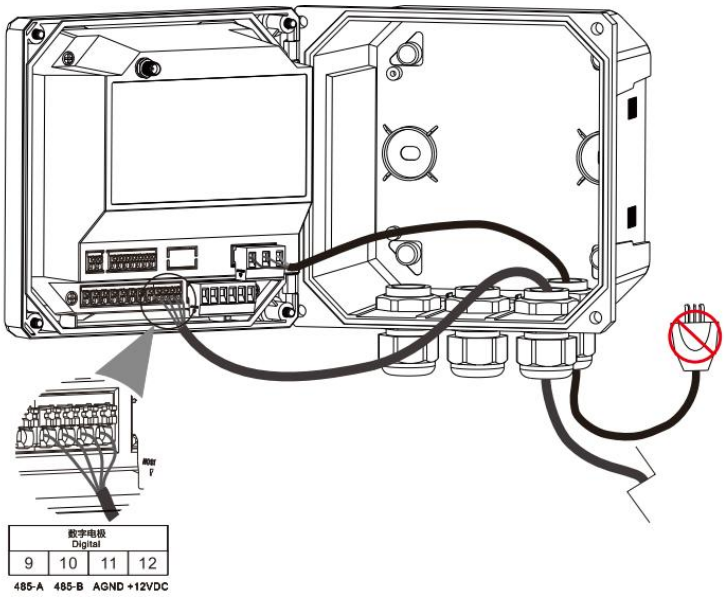
Analog sensor wiring instructions

Wiring

NTC TEMP.electrode	2-wire TEMP.electrode（Pt1000、Pt100）	2-wire TEMP.electrode（Pt1000、Pt100）
		
	2-wire TEMP.electrodes need to short terminals 7 and 8 (the controller comes with a short-wire, or users can use a wire to connect them)	

Temperature electrode wiring

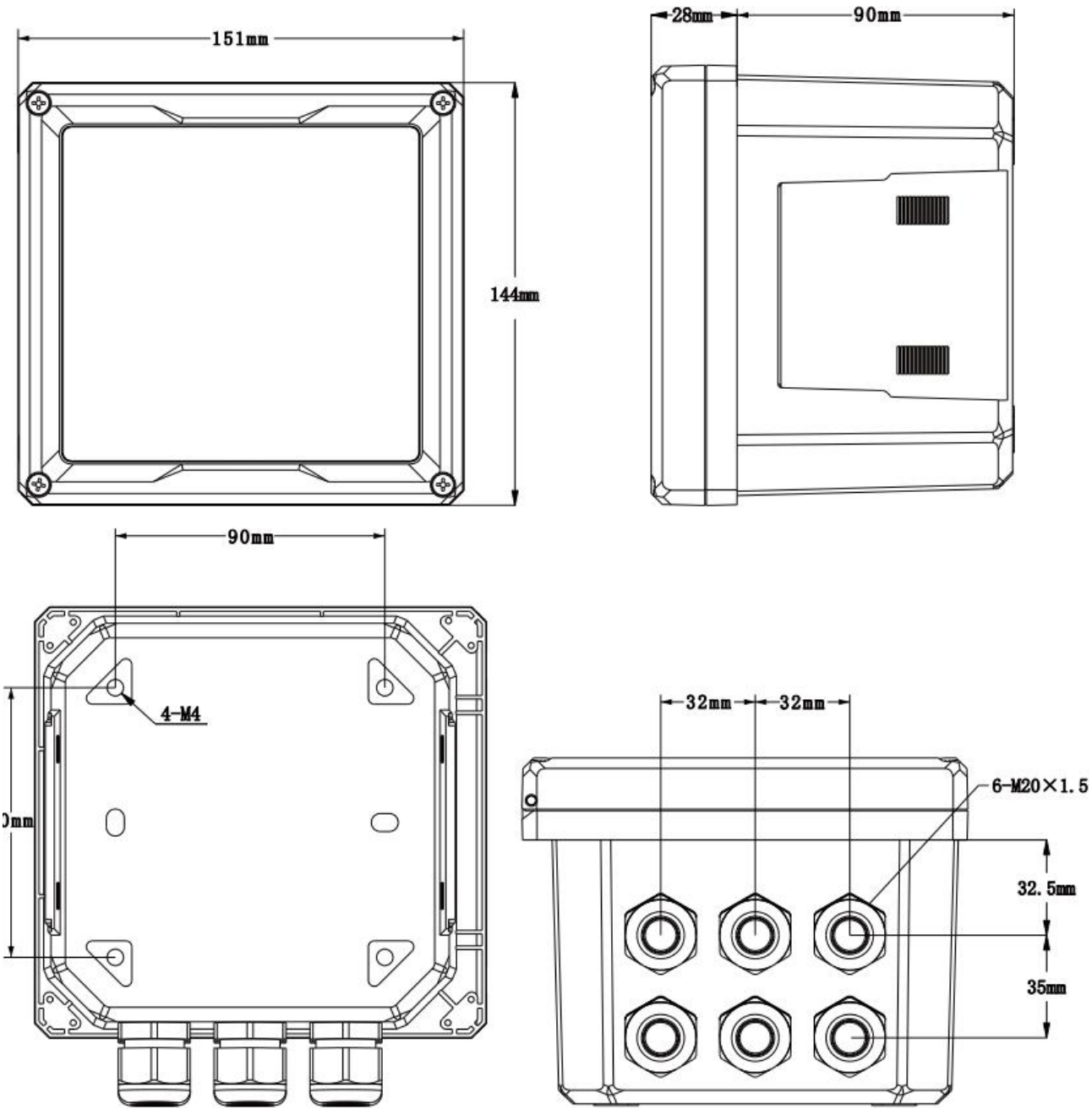




Digital sensor wiring schematic

Dimension

Dimensions：151mm*144mm*118mm.



Ordering code

SUP-MDC-PH-HE-D-5-5-6-E-P1															Description
SUP-MDC-PH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Measurement Range	HE														（-2-16）pH，（-2000-2000）mV
Output		D													2 Channels 4-20mA+RS485
		F													2 Channels 4-20mA+RS485+WirelessNB-IoT
Alarm Output			5												2 Channels SPST+1Channel time relay
Electrical Interface				5											M20×1.5 Cable Gland
Ingress Protection					6										IP66
Power Supply						E									220VAC
						C									24VDC
Accessories							P1								304SS Back Panel Mounting Bracket