Recorder　Flow　Pressure　Temp　Analyzer　Level

Datasheet

Dual Channel Universal

Controller

SUP-MDC-P2

Supmea®

Committed to process automation solutions

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Datasheet

Dual Channel Universal Controller
SUP-MDC-P2

The MDC-P1/P2 is an advanced intelligent online multi-parameter controller that supports up to 2 channels. The hybrid mode function of its first channel allows for the connection of either analog or digital sensors, while the second channel connects to digital sensors. This controller can measure various parameters such as pH, ORP, conductivity, dissolved oxygen, turbidity, sludge concentration, residual chlorine, ammonia nitrogen, nitrate nitrogen, COD, and more. The continuously monitored data can be connected to a DCS system via a transmission output or communicated with a computer using the Modbus-RTU protocol through an RS485 interface, enabling remote monitoring and recording. Additionally, it can control cleaning systems or pumps. The controller can be optionally equipped with an NB-IoT wireless transmission module, and by installing the "Instrument Pro" APP, users can access real-time site information on their mobile devices.

Applications

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

Features

- Dual-channel design supports 1-2 sensors, cutting costs and facilitating future sensor additions.
- IP66 protection suits complex environments.
- Optional NB-IoT & mobile APP for real-time data.
- Enhanced anti-interference with power & signal grounding.
- 4.3" full-color screen with quick mode switching.
- High-precision output circuit.
- Manual & automatic temperature compensation.
- Opto-isolated RS485 communication.
- Stores up to 500,000 data records.
- Adjustable high/low alarm, hysteresis

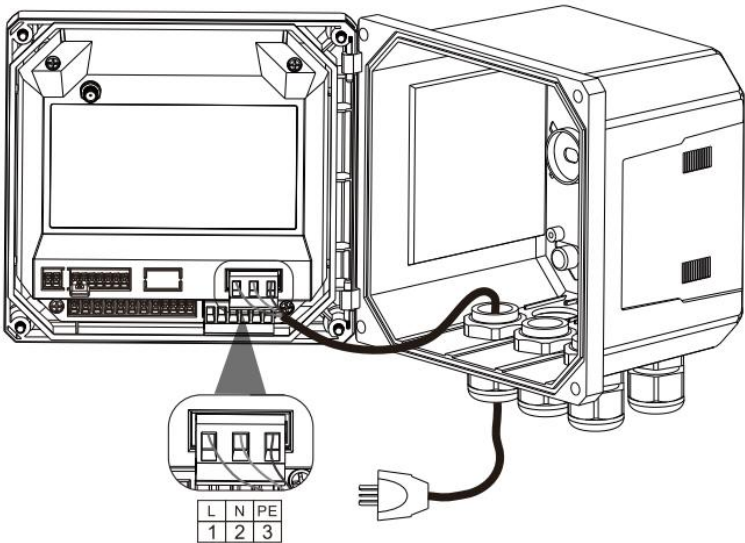**Dual Channel Universal Controller**

Principle

The controller collects process parameters such as temperature, pressure, flow rate, etc. from the site through sensors, transmitters and other devices, which are used as input signals to the controller. The acquired signals are processed and converted into digital signals for operation and processing by the controller. The controller analyzes and calculates the input signals according to the pre-set control algorithm to derive the control quantity. The controller outputs the calculated control quantities to the actuators, such as electric control valves, frequency converters, etc., to realize precise control of the control objects.

Parameters	
Measured variables	pH / ORP / Antimony
Measuring ranges	pH/Antimony：(-2.00 ~ 16.00) pH ORP：(-2000 ~ 2000) mV
Input impedance	≥1012Ω
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/Conductivity/Dissolved Oxygen/Turbidity/Sludge Concentration/Inductive Conductivity/Residual Chlorine/Ammonia nitrogen/Nitrate nitrogen/COD, etc.
Measuring ranges	pH: (0.00 ~ 14.00) pH ORP: (-2000 ~ 2000) mV Dissolved oxygen: (0～40) mg/L Saturation: (0～200)% Conductivity: (0～500) mS/cm Turbidity: (0～4000) NTU Sludge concentration: (0～120000) mg/L

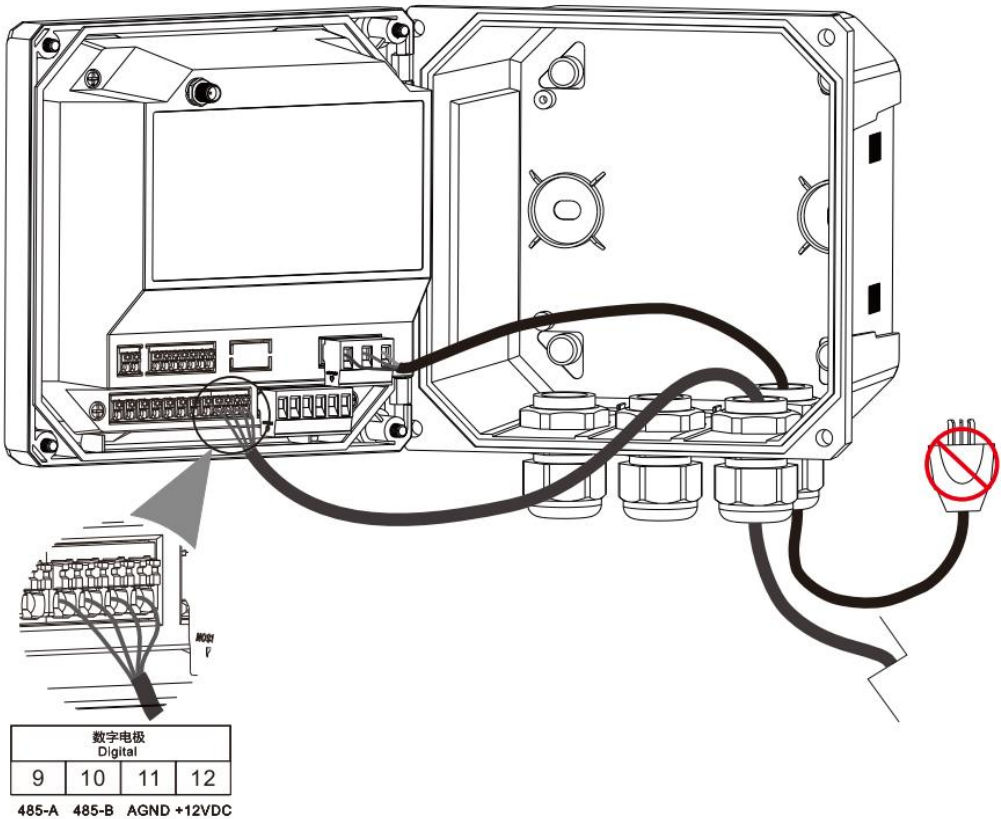|	Inductive conductivity: (0～2000) mS/cm Residual chlorine: (0~100) mg/L Ammonia nitrogen: (0~1000) mg/L Nitrate nitrogen: (0~1000) mg/L COD: (0~1500) mg/L Note: Actual measurement ranges should refer to the technical data of the connected sensors.
Current output	Isolated, 2-channel (0/4~20) mA configurable to corresponding measurement ranges, load capacity 750Ω, output accuracy ±0.1%FS, compliant with NAMUR NE 43standards.
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（0.2mm2~1.5mm2）cables； Plug-in terminals: suitable for AWG12~AWG28（1mm2~2.5mm2）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

Power wiring schematic

3-wire: Sensor with SG	2-wire: Sensor without SG
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

| NTC TEMP.electrode	2-wire TEMP.electrode （Pt1000、Pt100）	2-wire TEMP.electrode （Pt1000、Pt100）
模拟电极 Analog 1 2 3 4 5 6 7 8 9 Temp.A Temp.B	模拟电极 Analog 1 2 3 4 5 6 7 8 9 Temp.A Temp.B	模拟电极 Analog 1 2 3 4 5 6 7 8 9 Temp.A Temp.B Temp.C
	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

数字电极 Digital

9	10	11	12
485-A	485-B	AGND	+12VDC

Digital sensor wiring schematic

Dimension

Controller size: 151mm*144mm*118mm(W*H*T)

Weight: 0.8kg

Material: PC+ABS
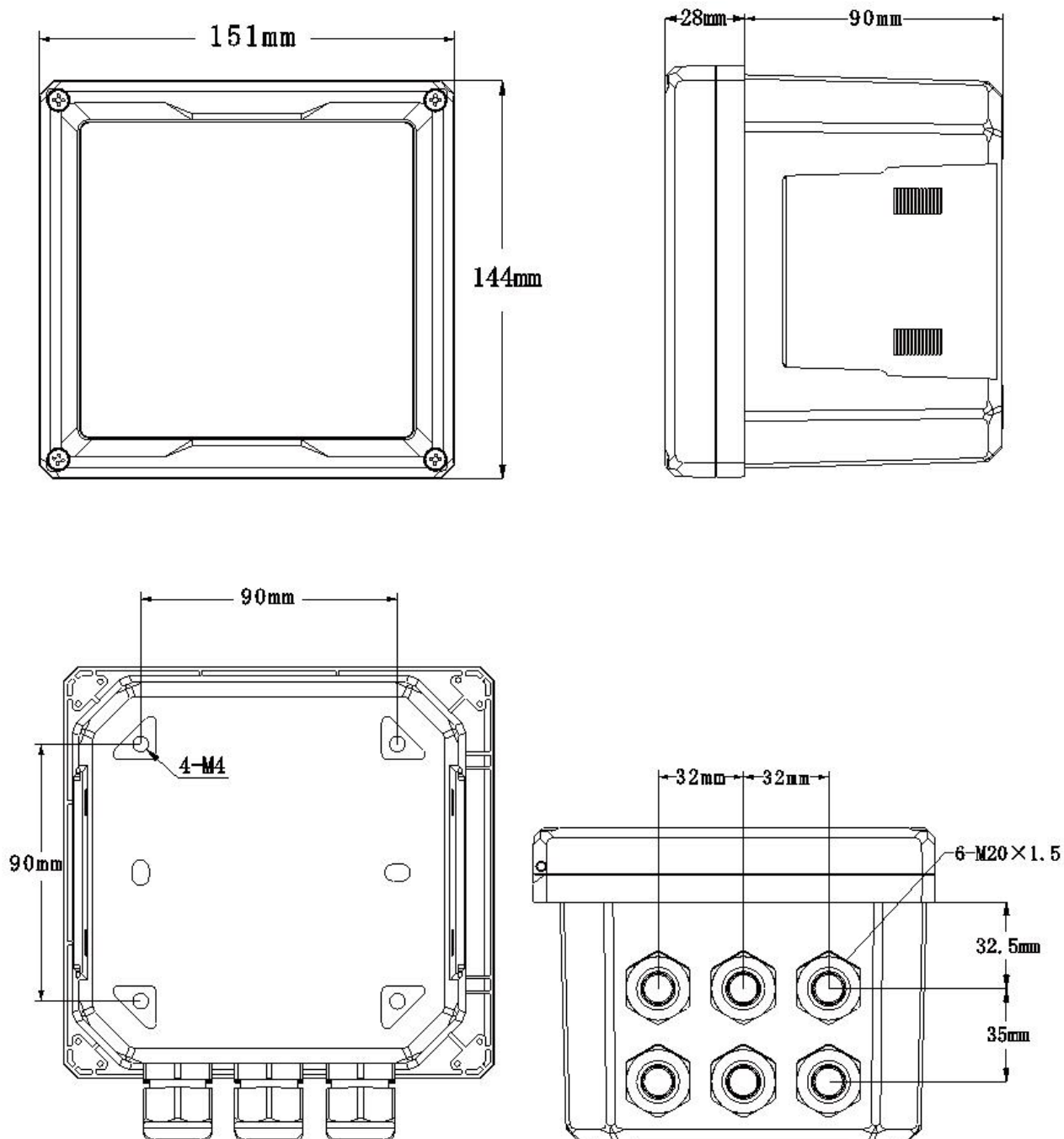
Product external dimensions

◼ Installation

Installation steps:

(1) Openings in the panel (opening size 138mm*138mm), make sure that the area around the panel opening is clean and smooth without burrs.

(2) Place the controller into the panel opening.Make sure there is a tight contact between the panel and the controller.

(3) Place the two butterfly button mounting brackets on both sides of the controller as shown in Figure 2.

(4) Push the two mounting brackets in toward the back side of the panel as you tightly secure the controller into the opening.
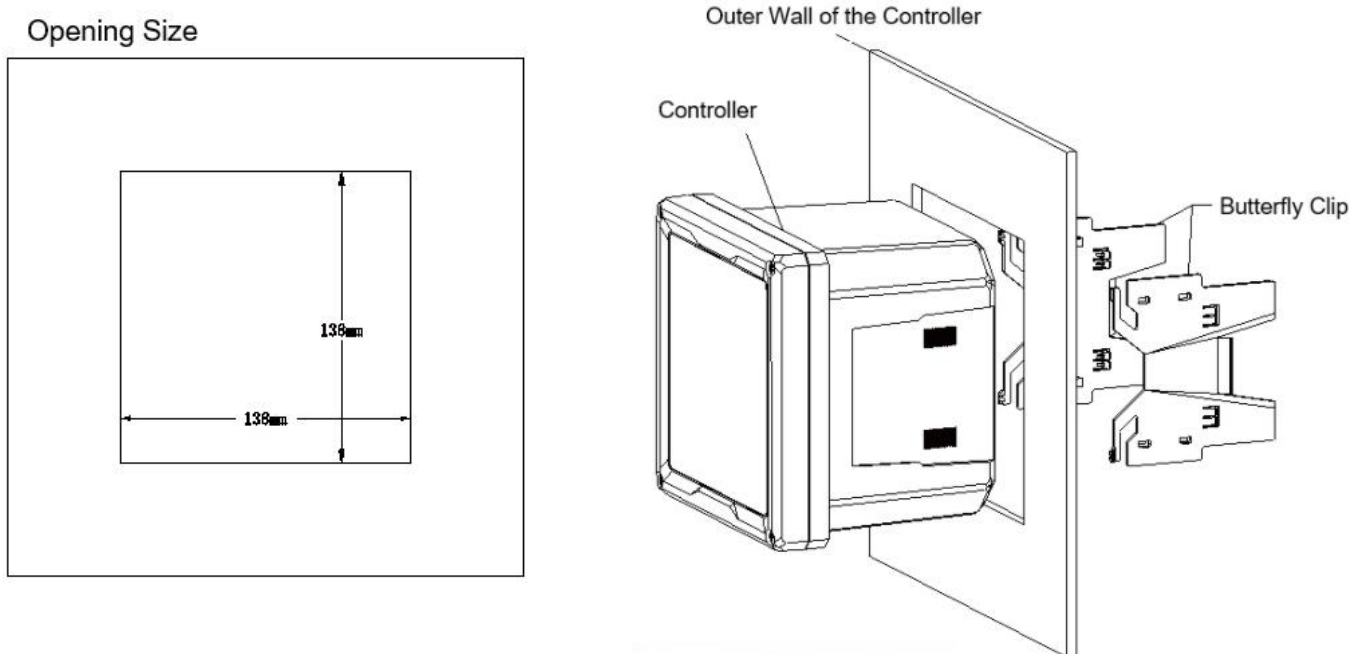

Disc opening size and mounting
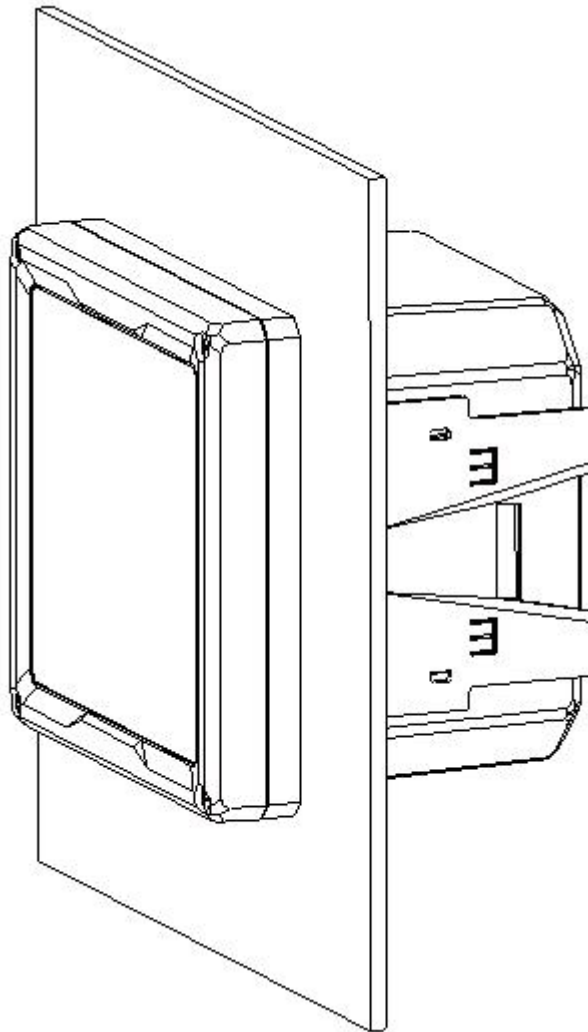
Schematic diagram of disk mounting

Wall mounting

Note: The maximum screw-in depth of the housing mounting holes is 6 mm.Do not exceed the maximum screw-in depth.
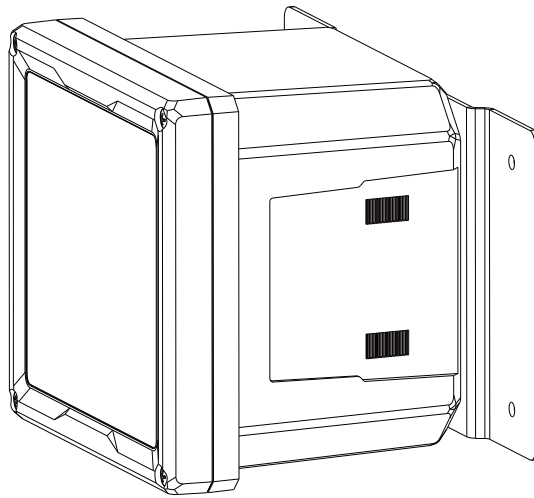
Installation steps:

(1)Attach the mounting backplate to the enclosure.Do not exceed the maximum screw-in depth.

(2) Mount the mounting backplate to the wall along with the housing.

(3) Secure to the wall using M4 self-tapping screws and M6 adhesive tips.

(4) Verify that the controller is securely fastened in a horizontal position with a distance between it and all surrounding objects for future servicing and maintenance.

(5) Orient the controller so that the cable clamp faces down.
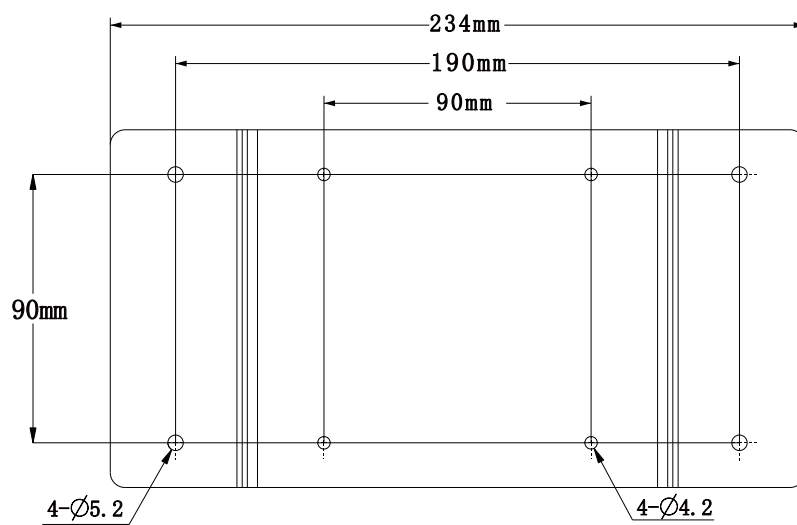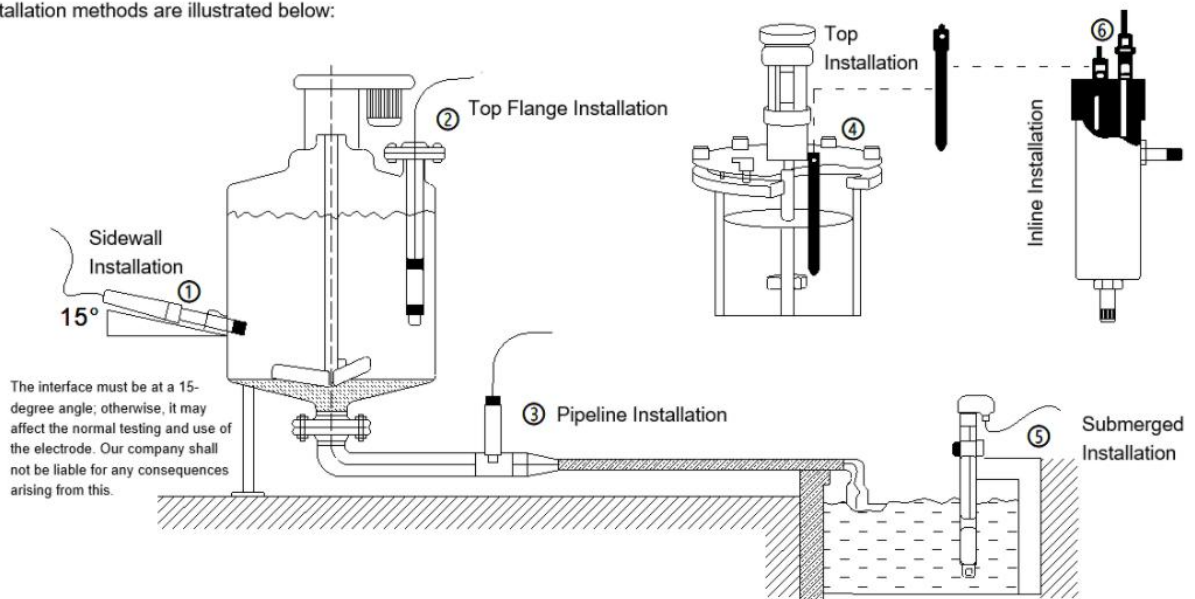
Wall Mount Backplate Dimensions
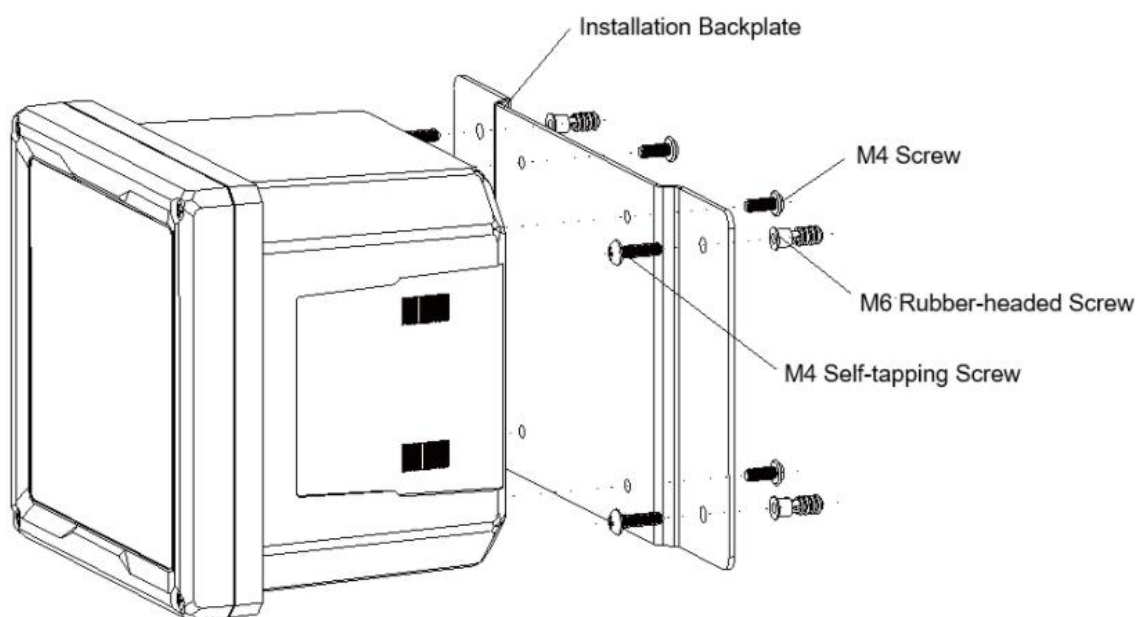
Wall mounting method

Wall Mounting Schematic

Sensor installation

Common Installation Diagrams for Sensors

Sensor installation notes:

The electrodes are fragile glass material and membrane head, installation should be extra careful, hold lightly.

Threads should not be over-tightened to avoid damage to the electrode and plastic connector connections.

The installation position is easy to dismantle, which is convenient for the instrument to do electrode calibration maintenance work.

Ordering code

SUP-MDC-2 -7-D-5-5-6-E-P1								Description
SUP-MDC-P2	-	-	-	-	-	-	-	
Input	7							Simulate pH/Simulate ORP/RS485+RS485
Output		D						2-channel 4-20mA+RS485
		F						2-channel 4-20mA+RS485+Wireless NB-IoT
Alarm Output			5					2-channel SPST+1-channel Time Relay
Electrical Interface				5				M20×1.5 cable gland
Level of Protection					6			IP66
Power Supply						E		220VAC
						C		24VDC
Accessories							P1	304SS Back Panel Mounting Bracket