

BM-PH-100

pH / ORP Controller

Datasheet



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Datasheet

Online pH/ORP Meter BM-PH-100

The BM-PH-100 is an online pH/ORP controller developed for continuous process monitoring. It supports both isolated RS485 (Modbus-RTU) communication and 4–20 mA analog output, enabling reliable remote data transmission to control systems for monitoring, logging, and analysis.

The BM-PH-100 is widely used in industrial and municipal applications such as power generation, chemical processing, metallurgy, environmental protection, food and beverage processing, and water treatment, where continuous measurement of pH, ORP, and temperature is required.

Applications

- Wastewater treatment
- Flue gas treatment
- Textile and dyeing wastewater
- Strong acid and alkali processes
- Metal surface treatment and finishing
- Fertigation systems
- Food and beverage processing
- Power plants

Features

- Intuitive user interface for easy operation
- Modular board design for flexible configuration and simplified maintenance
- 2.4-inch monochrome LCD display (128 x 64 resolution)
- Isolated 4-20 mA analog output for improved noise immunity
- Isolated RS485 communication (Modbus-RTU)
- Supports pH or ORP measurement with integrated temperature input
- Configurable manual or automatic temperature compensation
- Configurable upper/lower limit warning and delay
- Configurable buzzer and LCD backlight switch



Online pH/ORP Meter

Parameters

Parameters	Details
Screen size	2.4 inch monochrome LCD with a resolution of 128*64
Overall dimension	100mm×100mm×150mm (3.94 × 3.94 × 5.91 in)
Cutout dimension	92.5mm×92.5mm(3.94 × 3.94 in)
Weight	0.58kg(1.28 lb)
Ingress protection	IP5X
Measure variables	pH/ORP
Measure range	pH: (0.00 ~ 14.00) pH ORP:(-2000 ~ 2000) mV
Accuracy	pH: ±0.02pH ORP: (-2000 ~ -1000) mV, ±2mV (-1000 ~ 1000) mV, ±1mV (1000 ~ 2000) mV, ±2mV
Input resistance	≥10 ¹² Ω
Temperature compensation	NTC10K: 14–140 °F, Accuracy ±0.5 °F 140–266 °F, Accuracy ±3.6 °F Pt1000, Pt100 (customized): Accuracy ±0.5 °F Range: 14–266 °F, manual or automatic
Output	(4~20) mA output, maximum loop is 750Ω, ±0.2%FS
RS485 output	Isolated, Modbus-RTU RS485
Relay	2channels, Pickup/Breakaway AC250V/3A
Relative humidity	10%~85% (No condensation)
Working temperature	32–140 °F
Power supply	AC: 110V±10% DC: 24V±10%, input power≤6W
Storage conditions	Temperature: 5–149 °F Relative Humidity: 5–95% RH (non-condensing) Altitude: <6,560 ft

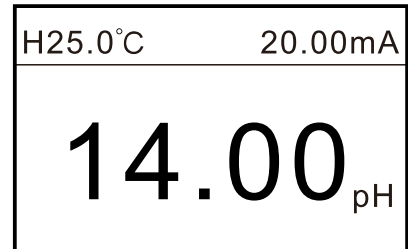
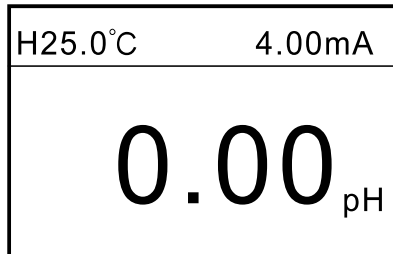
Display



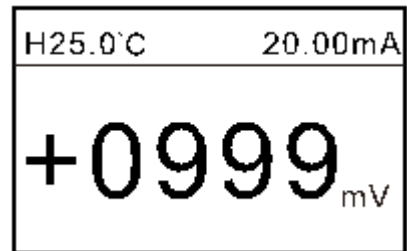
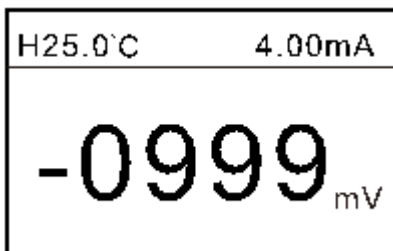
- 1 Temperature: Compensation temperature
- 2 Analyst output: Analyst output
- 3 Measured value: Real-time measurements value
- 4 High alarm: High alarm
- 5 Low alarm: Low alarm
- 6 ESC: Check related warning status on the “monitoring page”
Return to previous level page in the up& down level page linked 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

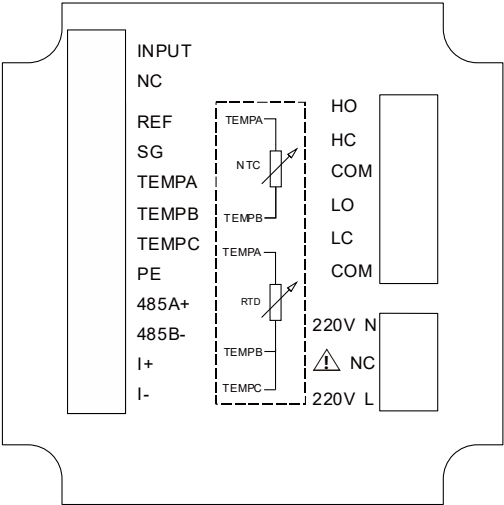
★ pH monitor:



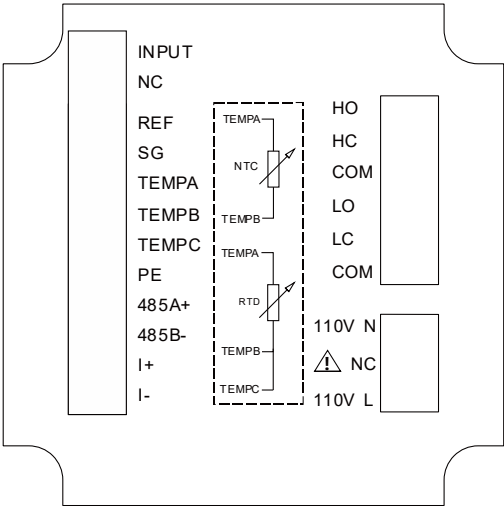
★ ORP monitore



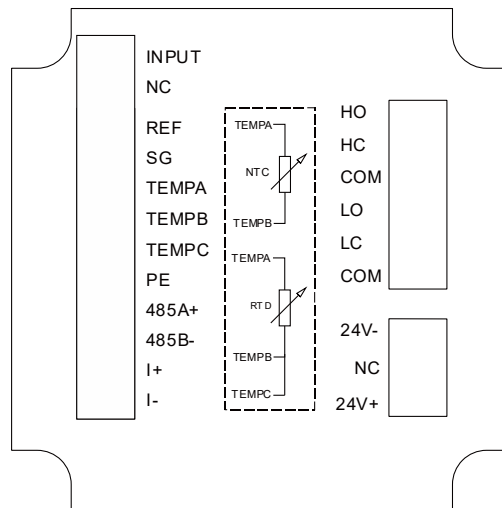
Wiring



220V wiring diagram



110V wiring diagram

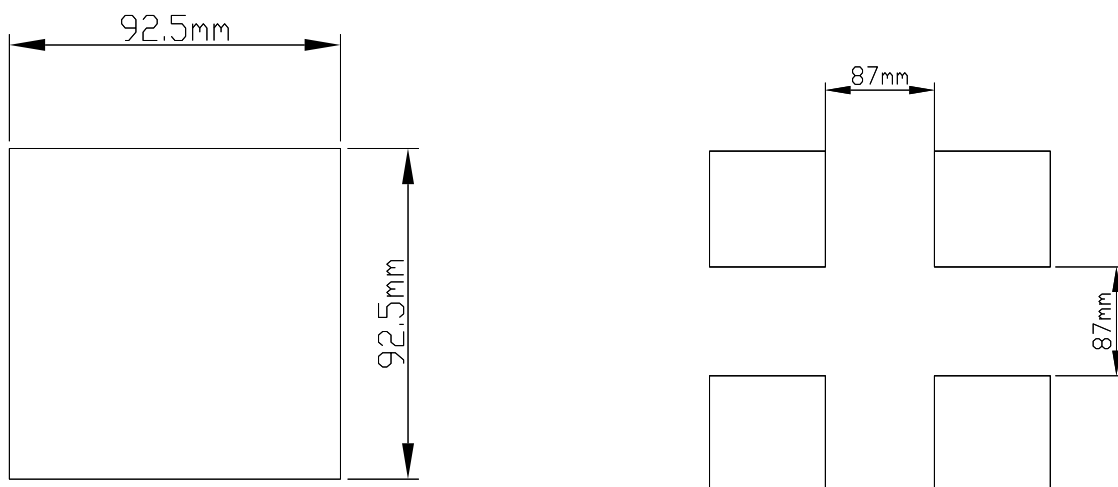


24V wiring diagram

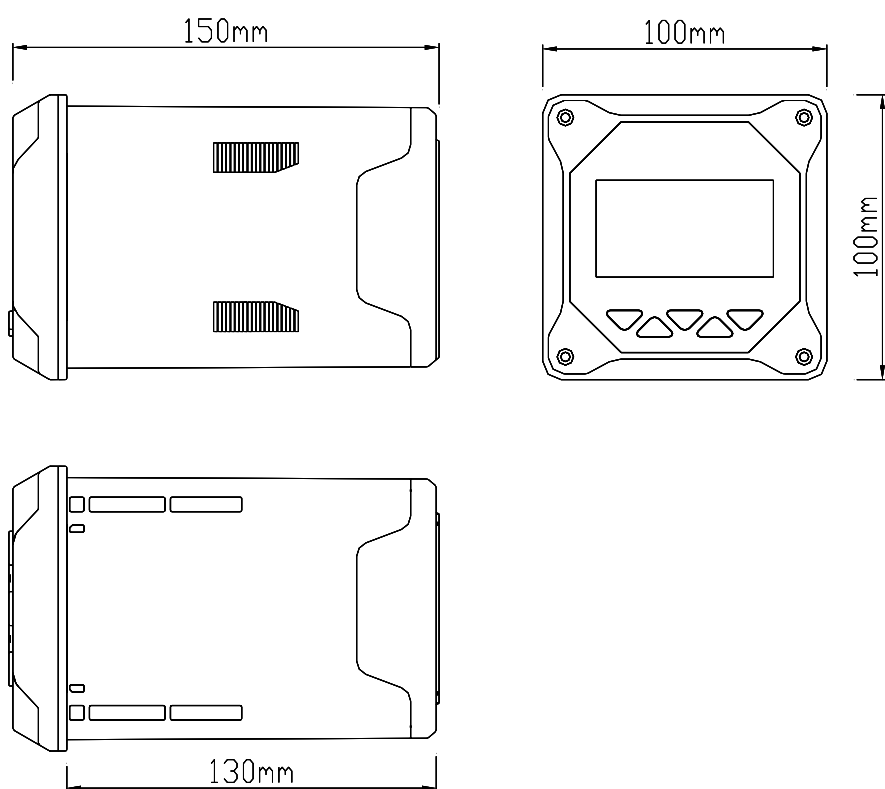
Identification of terminal

- INPUT: Measuring terminal of the electrode
- NC: Unidentified
- REF: Reference terminal of the electrode
- SG: Grounding terminal of the electrode
- TEMP A: Temperature compensation terminal A, NTC10K and Pt1000/Pt100 connect here
- TEMP B: Temperature compensation terminal B, NTC10K and Pt1000/Pt100 connect here
- TEMP C: Temperature compensation terminal C, Pt1000/Pt100 three-wire temperature grounding, Pt1000/Pt100 two-wire need to be connected to TEMP B, When connected to NTC10K, C terminal is not connected.
- PE: Grounding terminal of the Instrument
- 485 A+: RS485 communication interface A +
- 485 B -: RS485 communication interface B-
- I +: (4~20) mA output
- I -: (4~20) mA output
- 220V L: AC220V live wire
- 220V N: AC220V neutral wire
- HO: High alarm normally open relay
- HC: High alarm normally closed relay
- LO: Low alarm normally open relay
- LC: Low alarm normally closed relay
- COM: Common
- 110V L : AC110V live wire
- 110V N : AC110V neutral wire
- 24V+: DC24V+
- 24V-: DC24V-

Dimensions



Opening size and minimum distance between square holes of distribution box



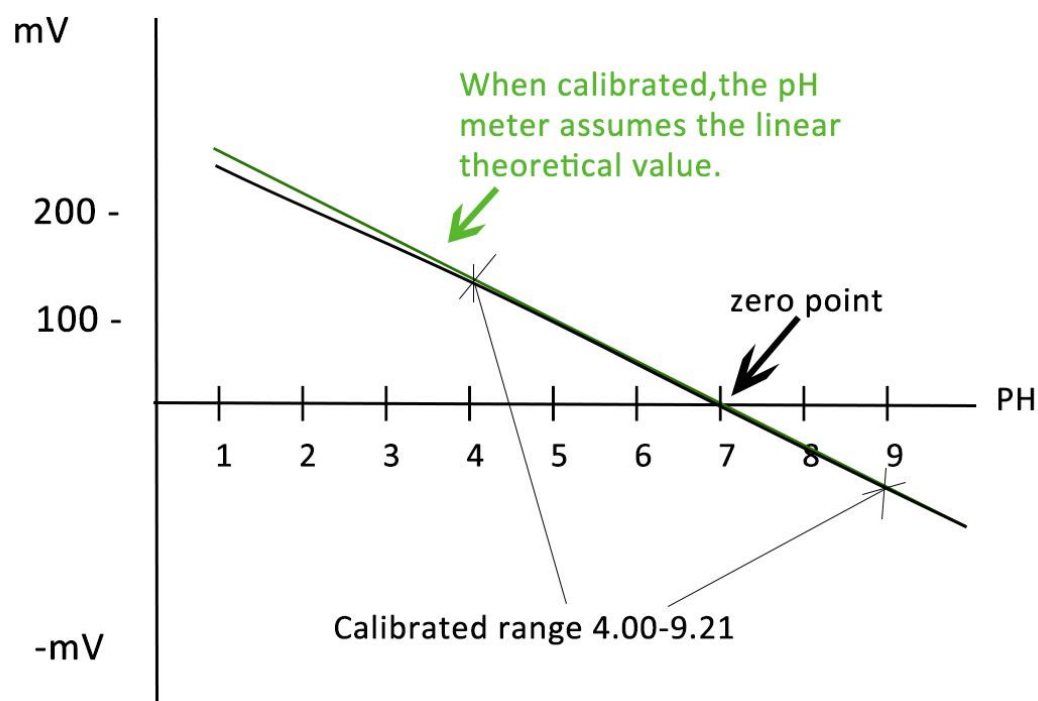
Instrument dimensions

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 at pH 4.00, 7.0 and 9.21



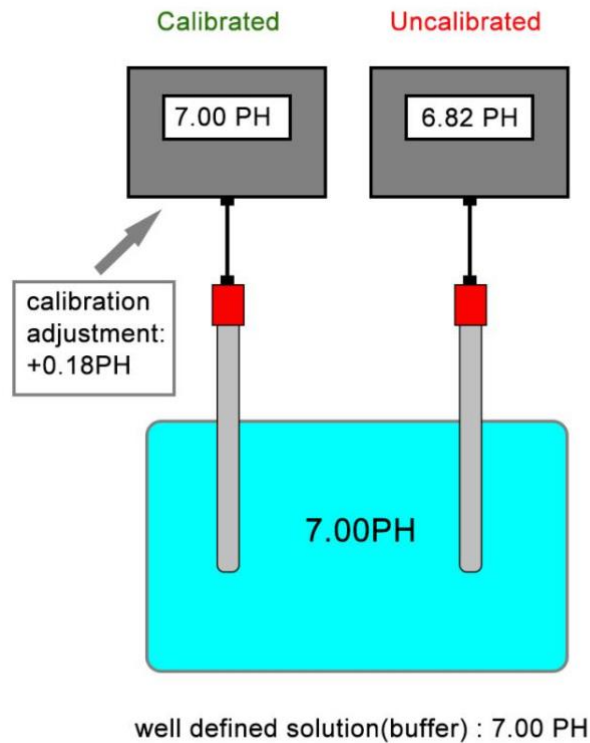
pH calibration

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.



Ordering code

BM-PH-100-HC-B-4-1-C														Description
BM-PH-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
Range	HC													(0~14) pH, (-2000~2000)MV
Output		B												4-20mA+RS485
Alarm Output			4											2 channels SPDT
Electrical Interface				1										M16×1.5 cable plug×2+M12×1.5 cable plug
Power supply				C										24VDC
				E										220VAC
				D										110VAC
Additional features (optional)														
Accessories							P1							304SS back panel mounting bracket