



Online pH / ORP Controller Datasheet

ECC-pH6.0

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Overview of Product

ECC-pH6.0 pH meter is a true multivariable analyzer used for measuring/controlling the pH with temperature and ORP (The function is switchable on the device itself).

Depending on the measured variable, combination electrodes (e. g. pH sensors) or split versions (glass electrodes with a separate reference electrode) can be readily connected.

Truly unique is the pH meter in the Human Machine Interface. The high resolution digital display and LCD screen make the measurements are clearly legible and the keyboard operation make it easier for the user to configure the device. The instructions on screen assure that the best configuration for the application is obtained.

Universal application in water and waste water engineering, service/process water and drinking water and well/surface water, leakage monitoring in refrigeration plant.

Features

- Relay output
- Easy operation
- 4-20mA analog output
- RS485 communication
- Directly switchable to PH or ORP
- Automatically temperature compensation
- Large LCD display with background lighting
- Using the setup program: user-friendly programming
- NEMA enclosure for field mounting and panel mounting
- PH or ORP sensors can be connected thanks to the sensor supply integrated in the output



Technical Specification

Performance

- Measure range: PH (0 to 14);
ORP (-1000 to +1000Mv)
- Resolution: PH: 0.01;
ORP: 1Mv
- Stability: PH: $\leq 0.02\text{PH}/24$;
ORP: $\leq 3\text{Mv}/24\text{H}$
- Accuracy: PH: $\pm 0.02\text{PH}$;
ORP: $\pm 1\text{Mv}$
- Input impedance: $\geq 10^{12}$
- Power supply: AC220V $\pm 10\%$, 50Hz / DC 24V
- Temperature compensation: NTC 10K / PT1000 -10-130°C

Output Signal

- Relay output: AC250V, 3A
- Transmission signals: 4-20 mA
- Communication: RS485, MODBUS-RTU
- Process alarm: High/Low process alarms, selected from pH, ORP+

Others

- Colour: Black
- Converter weight : Approx. 1 kg
- Display: LCD with back lights in English
- Humidity : 10 to 90% RH at 40°C (100 °F)
- Ambient temperature : -20 to +55°C (-5 - 130 °F)
- Storage temperature : -30 to +70°C (-20 - 160 °F)
- Panel front size (mm) : 96(W) x 96(H) x Approx.112 (D)
- Panel cut-out size (mm): 92(W) x 92(H) x Approx.112 (D)
- Calibration: Semi-automatic 3 points calibration using pre-configured buffer

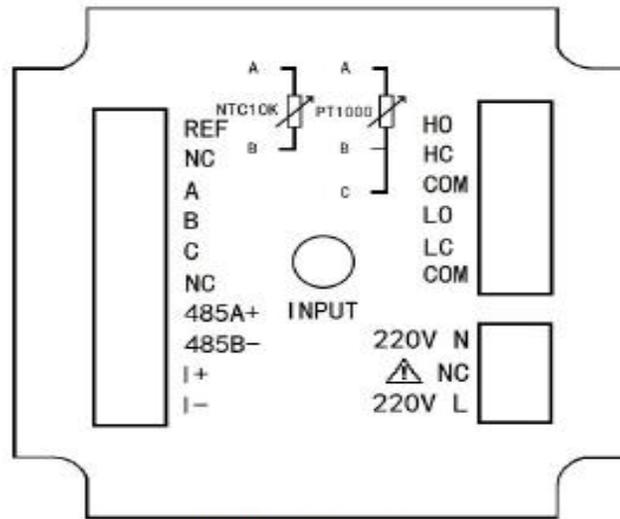
Product Description

The device is designed for on-site used. A rugged housing protects the electronics and the electrical connections from corrosive environmental conditions. As an alternative, the device can also be installed in a control panel.



1. Temperature: Compensation temperature
2. Analyst output: Analyse 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”

Wiring System

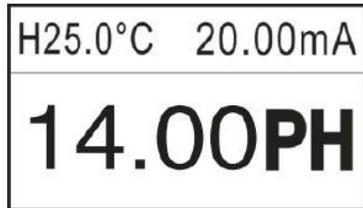


Wiring diagram

Identification of Terminal

- INPUT: Measuring terminal of the electrode
- REF: Reference terminal of the electrode
- A: Temperature compensation terminal A, NTC10K and PT1000 connect here
- B: Temperature compensation terminal B, NTC10K and PT1000 connect here
- C: Temperature compensation terminal C, PT1000 three-wire temperature grounding, PT1000 two-wire need to be short-connected to TEMPB, not NTC10K.
- NC: Unidentified
- RS485 (A +): RS485 communication interface A +
- RS485 (B -): RS485 communication interface B -
- 4-20mA (+): 4-20mA output end+
- 4-20mA (-): 4-20mA output end-
- AC220V (L): AC220V Fire Wire
- AC220V (N): AC220V zero line
- 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

Display



pH Monitor



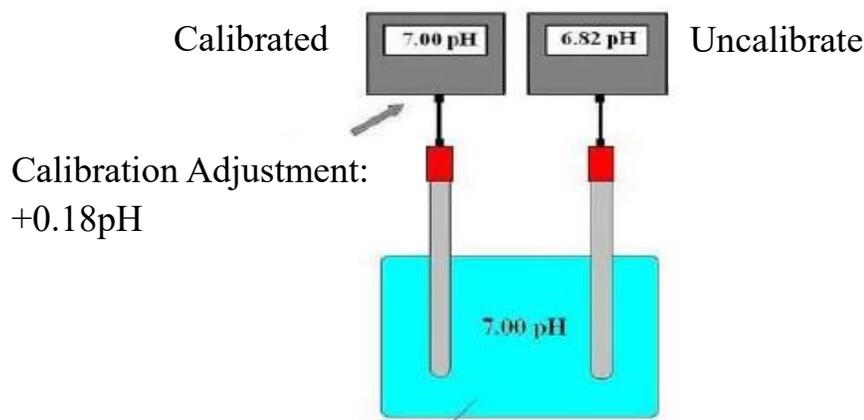
ORP Monitor

pH Calibration

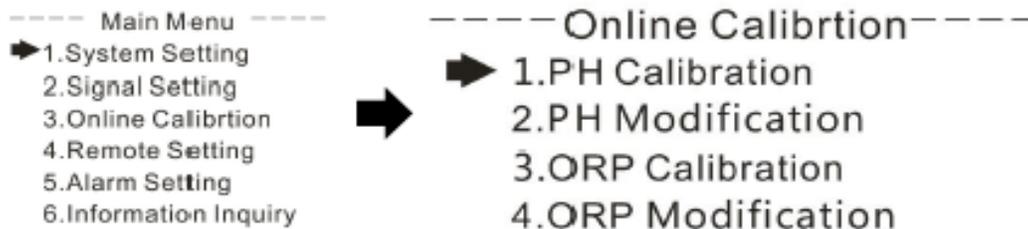
✚ pH calibration is the procedure of adjusting pH meter by measuring solutions of known pH values.

Why we need calibration?

The characteristic of a pH electrode will change with time due to electrode coating and aging. Even a pH electrode would be stable over time, pH electrodes cannot be produced with identical characteristics as always. In practice, the response of a real pH sensor does not exactly follow the Nernst equation. This difference between the theoretical and actual behaviour of a pH electrode must be compensated for. Hence, a calibration is required to match the pH meter to the current characteristics of the used pH sensor.



Method: Main Menu → Online Calibration → PH Calibration



PH Calibration

- Enter pH calibration screen, insert the first pH electrode into 4.00pH standard solution and stand for a moment until stable. Press **【ENT】**, then insert the pH electrode into the 6.86pH standard solution followed by 9.18pH standard solution.
- If 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 ORP calibration screen, insert the first ORP electrode into the 86mV standard solution and stand for a moment until stable. Press **【ENT】**, then repeat again for 256mV standard solution.
- If the display calibration is successful, ORP calibration process is over.

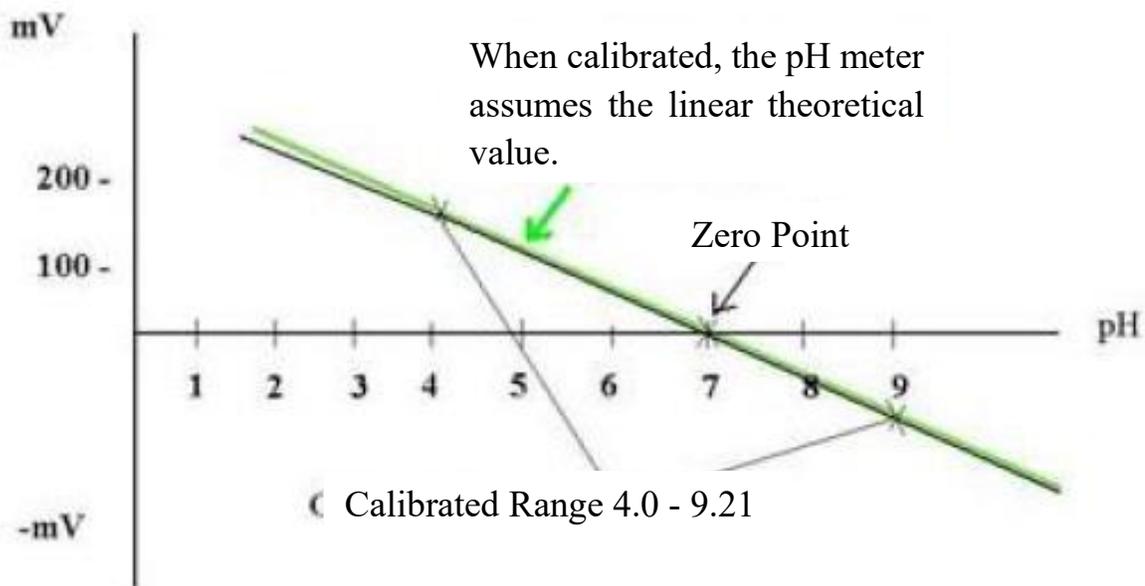
ORP Modification

- The measured ORP can be modified between 300mV.
- Temperature correction: The correction range is ± 20.0 °C.

Multi-point Calibration

- To achieve the best possible accuracy, the calibration should cover wide 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 3, 4 or 5 and even higher numbers of pH values. A multi-point calibration, in comparison to a 2-point calibration, can calibrate pH tester on both sides of the zero point (pH 7.00). This will expand the pH measurement range without the need of recalibrating.

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



Ordering Code

Basic Type

B:PH6.0

pH Probe

C: Plastic pH sensor with NTC 10K (0-60°C)

D: Glass pH sensor with NTC 10K (0-80°C)

E: High Temperature pH sensor with NTC 10K (0-130°C)

F: Made in Germany pH sensor (0-80°C)

G: Made in Germany pH sensor with PT1000 (0-80°C)

H: Plastic ORP sensor with NTC 10K (0-60°C)

I: Glass ORP sensor with NTC 10K (0-80°C)

Cable Length

J: 5 meters

K: 10 meters

L: 15 meters

Calibration Points

L: pH4, 7, 10

M: pH 4.00, 6.86, 9.18

Power Supply

N: 220VAC

O: 24VDC

Medium

P: Normal water

Q: Waste water

R: Nutrient solution

S: Galvanic plating

T: Cooling water

U: Drinking water

V: Others:

Note: 4-20mA, RS485 and relay output are standard functions

Make inquiries by placing letter in the pertinent boxes

Order code:

Order example: B C J L N P