

pH Meter

Cat. No. BT1202

COMPONENTS

BT1202 pH Meter	1PC
Combination PH electrode	1PC
Short circuit plug in the back of Meter	1PC
Electrode Stand	1PC
Temperature Sensor	1PC
9V Adaptor	1PC
Buffer Solution pH4.00, pH6.86, pH 9.18	1 PC/EACH
User Manual	1PC

SPECIFICATIONS

Mode	BT1202
Range	pH: 0-14.00pH mV:±1999mV Temp: 0-100°C
Resolution	pH: 0.01pH Temp: ±1°C
Accuracy	pH: 0.01p Temp: ±1°C
Temperature compensation	0-100°C automatic compensation
Three points calibration	4.00, 6.86 and 9.18

WORKING CONDITION

- Ambient temperature: 0~40°C; Relative humidity: <85%
- Power: 9V DC power
- No significant vibration
- No disturbance of magnetic field or distinct tremble around instrument.
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- Input resistance: $>1 \times 10^{12} \Omega$
- Zero drift: $<0.01 \text{ pH} \pm 1 \text{ word} / 2 \text{ hours}$
- Solution temperature compensation range: 5~60°C
- Dimension and weight: 230x200x60mm, 1.2kg

OPERATION

Preparation

1. Insert the adapter into the 220V AC power supply; after that, insert the DC output plug into "DC9V" socket.
2. Screw off the short circuit plug of the meter and screw on the pH electrode.
3. Switch on the instrument and allow to acclimatize for 5 minutes.

Calibration

1. Before measurement, the instrument should be calibrated. To be accurate, the calibration should be conducted by using the standard solution of pH-14.00, 6.86, and 9.18.
2. Connect power, and press on/off key to turn on the instrument.
3. Make sure the pH combination electrode is screwed on, the sensor should be cleaned by purified water and no remained water.
4. Measure the temperature of pH buffer solution by thermometer; then, press the key of "^" or "v" to adjust the temperature to be same as the buffer solution.
5. **Point calibration:** Immerse the pH electrode into pH6.86 solution, shake it for a while, then wait until the number shows on the screen is stable, keep pressing the "calibration" key until the screen show the "CAL", first "6.86" twinkles, few seconds later shows "END", then shows the calibrated pH value. It indicates that the calibration is completed and stored. Please note the final calibrated pH value shows on the screen may be different under different temperature. For example, it will show pH6.86 under 25°C and pH6.90 under 15°C.
6. **Slope calibration I:** Take out the pH electrode, clean it by purified water and make it dry, immerse the pH electrode into pH4.00 solution, shake it for a while then wait until the number shows on the screen is stable, keep pressing the "calibration" key until the screen show the "CAL", it shows 4.00 first, few seconds later shows the "END", then shows the final pH value, which indicates the calibration is completed and be stored. When finish calibration, the slope percentage will be adjusted automatically. Please note the final calibrated pH value shows on the screen may be different under different temperature. For example, it will show pH14.00 under 25°C and pH4.02 under 35°C.
7. **Slope calibration II:** Take out the pH electrode, clean it by purified water and make it dry, immerse the pH electrode to pH9.18 solution, shake it for a while then wait until the number shows on the screen is stable, keep pressing the "calibration" key until the screen show the "CAL", it shows 9.18 first, few seconds later shows the "END", then shows the final pH value, which indicates the calibration is complete and be stored. When finish calibration, the slope percentage will be adjusted automatically. Please note the final calibrated pH value shows on the screen may be different under different temperature. For example, it will show pH19.18 under 25°C and pH19.28 under 15°C.

Solution measurement

1. Measure the temperature of solution by thermometer, then press increase key "^" or decrease key "v" adjust the temperature value, clean the pH electrode and immerse it to the tested solution, shake it for a while then place until reading comes stable, that is the PH value of the tested solution.
NOTE: According to the isothermal measurement principle, for the temperature of tested solution and calibration solution, the closer, the more accuracy of the test result.
2. MV value measurement:
 - a. Press "PH/MV" key, shift the instrument to "MV" display,
 - b. Connect ORP electrode and immerse them into the tested solution, shake for a while then place it until the measure value is stable. That is the ORP value of the tested solution.

MAINTENANCE

Notes for Testing Sample

- The electrode plug and socket of instrument must keep clean and dry, short circuit plug should be put on when not using to prevent the intrusion of dust and moisture.
- The different sample should use the suitable pH electrode (for example: measure strong acid, strong alkali or pure water and so on).
- The lead-in wire of electrode must keep static when test the sample, don't touch it with hand, otherwise it will cause the measurement instability.
- The preparation standard solution must use the twice distilled water or Non-Ion water, its conductivity should be less than 2 $\mu\text{S}/\text{cm}$.
- The standard buffer solution should be stored in the refrigerator (low temperature around 5-10°C), it can preserve for 2-3 months. If there is muddy, mildew or sediment in the solution, please do not use any more.
- Use the standard buffer solution closest to the pH of the solution if possible when in calibration, and the standard solution temperature is the same as the sample.

Notes for electrode use

- Combination electrode is not supposed to immersed into distilled water for a long time, it should be inserted into the bottle which is filled with the electrode protect solution
- The configuration of electrode protect solution: take one packet of pH4.00(250ml), soluble in the 250ml ion water, then add 56g analytically pure KCL, stir until completely dissolved.
- Avoiding knocking the top of electrode after removing the protect cover of electrode.
- When using liquid chargeable electrode, please note that if liquid inside decreases to be less than half volume, please use burette to add liquid into hole at the top. When measuring, please turn the blue circle to cover the small hole.

- When electrode moves from one solution to another solution, it should be cleaned by distilled water and dried by filter paper. Do not wipe the glass ball to avoid sluggish response. The best method is washing electrode by the next test solution.
- Please reduce the immerse time when testing the strong acid and alkali or special solution (like: protein, paint and so on), after testing, wash it carefully
- The slope and response time of electrode will be decrease a little after long time using, please immerse the electrode ball for 24hours into 0.1 mol/L HCL solution (preparation: 9ml HCL diluted to 100ml by deionized water).

TROUBLESHOOTING

- Most problems are due to electrode functional problem or wrong measurement, not the instrument. Besides, buffer solution and other factors will lead to some problems, please check carefully, and find out what exactly the problems are.

Electrode

If the instrument is operating well, but the reading is unstable, instrument responds slowly, or cannot be calibrated to the right pH value, please check electrode first as below:

1. Whether electrode sensor inserts into testing liquid or not
2. There are no bubbles inside electrode
3. Electrode ball is not polluted
4. Electrode and instrument are well connected, and lead wire is not loose or broken.

Standard buffer solution

If the instrument and the electrode is operating well, the readout is not correct or cannot be calibrated, please check the standard buffer solution:

1. Use the exact standard pH buffer solution.
2. The buffer solution is under quality guarantee period and not be polluted

PREPARATION OF STANDARD SOLUTION

Pour the standard solution powder into the 250ml beaker, use the distilled water to wash it, and then dissolved and diluted to the scale, then shake up. Below is the pH value and temperature relation table:

TECHNICAL SUPPORT

BT Lab Systems offers technical support for all of its products. If you have any questions about the product's use or, operation, please contact BT Lab Systems at the following info.

E-Mail: info@BTLabSystems.com