



Digital pH Meter

NDPM-100

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1. Introduction

Digital pH Meter NDPM-100 provides a pH range of 0.00 to 14.00 with an accuracy of ± 0.01 pH for reliable results. It includes automatic and manual temperature compensation modes, ensuring accurate readings across varying temperatures. This meter is equipped with a lead-in wire that must remain constant to avoid measurement errors. Our pH meter incorporates a white backlight, displaying pH and potential values (mV) for detailed measurements.

2. Features

- ✓ Includes 3-point calibration
- ✓ Replaceable pH electrode
- ✓ Minimal vibration impact
- ✓ Integrated digital pH sensor
- ✓ Ensures stable operation

3. Specifications

Model No.	NDPM-100
pH Range	0.00 to 14.00 pH
pH Accuracy	± 0.01 pH
pH Resolution	0.01 pH
Calibration Points	Three points (4.00, 6.86, 9.18)
Calibration Solutions	Potassium Hydrogen Phthalate, Phosphate Mixture, Borax
pH Range	0.00 to 14.00 pH
Temperature Range	0° to 60° C
Temperature Accuracy	± 1° C
Temperature Resolution	1° C
Automatic Temperature Compensation	0° to 60° C
ORP Range	± 1999 mV
ORP Accuracy	± n × 0.1% ± 1 (n: Displayed no.) mV
ORP Resolution	1 mV
Ambient Temperature	0° to 40° C
Relative Humidity	< 85%
Input Resistance	≥ 1 × 10 ¹² Ω
Zero Drift	≤ 0.01 pH ± 1 per 2 hours
Power	2W
Dimension	180 × 80 × 30 mm
Weight	0.5 kg

4. Applications

Digital pH Meter measures pH and potential values (mV) for electrochemical analysis in industries, research, and environmental monitoring, supporting quality control, laboratories, and scientific studies.

5. Installation

Working Conditions

- **Ambient temperature:** 0 to 40°C
- **Relative humidity:** <85%
- **Power:** 4pcs DC1.5V AAA dry battery
- No significant vibration
- There is no disturbance of the magnetic field or distinct tremble around the instrument.
- **Input resistance:** $\geq 1 \times 10^{12} \Omega$
- **Zero drift:** $\leq 0.01 \text{pH} \pm 1 \text{ word/2 hours}$
- **Solution temperature compensation range:** 0~60°C
- **Dimension and weight:** 180x80x30mm, 0.5KG
- **Power:** 2W

6. Operations

6.1 Preparation

- 1) Put 4pcs DC1.5V AAA dry battery into the battery compartment and shift the sliding block to lock the cover.
- 2) Screw off the short circuit plug of the meter, Screw on the pH electrode.
- 3) Ensure to keep clean and dry the electrode before using, to avoid being polluted.
- 4) Switch on the instrument and preheat for 5 minutes.

6.2 Calibration

- 1) Before measurement, the instrument should be calibrated.
- 2) For accurate results, the calibration should be conducted by using the standard solution of pH4.00, 6.86, and 9.18.
- 3) Connect the power and press the "on/off" key to turn on the instrument.
- 4) Make sure the pH combination electrode is screwed on; the sensor should be cleaned with purified water and no remained water.
- 5) Measure the temperature of the pH buffer solution with a thermometer; then, press the key "Λ" or "V" to adjust the temperature to be the same as the buffer solution.
- 6) **Point calibration:** Immerse the pH electrode into a pH6.86 solution, shake it for a while, then wait until the number shown on the screen is stable, keep pressing the "calibration" key until the screen shows the "CAL", first "6.86" twinkles, a few seconds later shows the "END", then shows the calibrated pH value.
- 7) It indicates that the calibration is completed and stored, note the final calibrated pH value shown on the screen may be different under different temperatures.
- 8) For example, it will show pH 6.86 under 25°C and pH 6.90 under 15°C In detail find it on the configuration of standard solution.
- 9) **Slope calibration I:** Take out the pH electrode, clean it with purified water, and make it dry, immerse the pH electrode into a 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, a few seconds later shows the "END", then shows the final pH value, which indicates the calibration is completed and be stored.
- 10) When finish calibration, the slope percentage will be adjusted automatically.
- 11) Note the final calibrated pH value shown on the screen may be different under different temperatures.
- 12) For example, it will show pH4.00 under 25°C and pH4.02 under 35°C For details find it on the configuration of standard solution.
- 13) **Slope calibration II:** Take out the pH electrode, clean it with purified water, and make it

- 14) dry, immerse the pH electrode in 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 shows the "CAL", it shows 9.18 first, a few seconds later shows the "END", then shows the final pH value, which indicates the calibration is complete and be stored.
- 15) When finish calibration, the slope percentage will be adjusted automatically.
- 16) Note that the final calibrated pH value shown on the screen may be different under different temperatures. For example, it will show pH9.18 under 25°C and pH9.28 under 15°C For details find it on the configuration of standard solution.

6.3 Solution Measurement

- 1) Measure the temperature of the solution with the thermometer, then press the increase key " \wedge " or decrease key " \vee " to adjust the temperature value, clean the PH electrode and immerse it in the tested solution, shake it for a while then place it until the reading becomes stable, that is the PH value of the tested solution.
- 2) **Notice:** According to the isothermal measurement principle, for the temperature of the tested solution and calibration solution, the closer, the more accurate the test result.
- 3) **MV Value Measurement:**
- 4) Press the "PH/MV" key, shift the instrument to the "MV" display,
- 5) Connect the ORP electrode and immerse it into the tested solution, shake it for a while then place it until the measured value is stable, that is the ORP value of the tested solution.

6.4 Configuration Of Standard Measurement

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

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pH Solution value	solution name	0.05mol/kg	0.025mol/kg	0.01mol/kg
		potassium hydrogen phthalate	phosphate mixture	borax
Temp°C				
0°C		4.01	6.98	9.46
5°C		4.00	6.95	9.39
10°C		4.00	6.92	9.33
15°C		4.00	6.90	9.28
20°C		4.00	6.88	9.23
25°C		4.00	6.86	9.18
30°C		4.01	6.85	9.14
35°C		4.02	6.84	9.10
40°C		4.03	6.84	9.07
45°C		4.04	6.83	9.04
50°C		4.06	6.83	9.02
55°C		4.07	6.83	8.99
60°C		4.09	6.84	8.97
70°C		4.12	6.85	8.93
80°C		4.16	6.86	8.89
90°C		4.20	6.88	8.86
95°C		4.22	6.89	8.84

7. Maintenance

7.1 Notes For Test Sample

- 1) The electrode plug and socket of the instrument must be kept clean and dry, a short circuit plug should be put on when not in use to prevent the intrusion of dust and moisture.
- 2) The different samples should use the suitable pH electrode (for example: Measure strong acid strong alkali pure water and so on).
- 3) The lead-in wire of the electrode must remain static when testing the sample, don't touch it with your hand, otherwise, it will cause measurement instability.
- 4) The preparation standard solution must use the twice distilled water or non-ion water, its conductivity should be less than $2\mu\text{s}/\text{cm}$.
- 5) The standard buffer solution should be stored in the refrigerator (low temperature 5-10 degrees), it can be preserved for 2-3 months. It can't continue to be used if its appearance is muddy, mildew or sediment, and so on.
- 6) Don't use the standard buffer solution that has passed its shelf life, don't pour the used standard buffer solution into the standard solution bottle.
- 7) Use the standard buffer solution which approaches the pH value of the sample if possible when in calibration, and the standard solution temperature is better than the same with the sample.
- 8) It would be best to turn it off and calibrate again if needed to replace the electrode when using the instrument.

7.2 Notes For Electrode Use

- 1) A combination electrode is not supposed to be immersed in distilled water for a long time, it should be inserted into the bottle which is filled with the electrode protect solution
- 2) 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, and stir until completely dissolved.
- 3) Avoid letting the top of the electrode be knocked after removing the protective cover of the electrode, otherwise, the electrode will not work if the top glass ball of the electrode is broken.
- 4) When using a liquid chargeable electrode, note that if the liquid inside decreases to be less than half volume, use a burette to add the liquid from the hole at the top. When measuring, turn the blue circle to cover the small hole.
- 5) When the electrode moves from one solution to another solution, it should be cleaned with distilled water and dried with filter paper.
- 6) Do not wipe the glass ball to avoid a sluggish response. The best method is washing the electrode with a tested solution.

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- 7) Avoiding that the bubble cut off the reference solution inside the electrode, if it exists, eliminate it by shaking off the electrode.
- 8) Reduce the immersion time when testing the strong acid and alkali or special solution (like protein, paint, and so on), then wash it carefully.
- 9) The slope and response time of the electrode will decrease a little after a long time using, immerse the electrode ball for 24 hours into 0.1 mol/L HCL solution (preparation: 9ml HCL diluted to 100ml by non-ion water).

8. Troubleshooting

8.1 Common Problem Checking

- 1) Most problems are due to electrode functional problems or wrong measurements, not the instrument.
- 2) Besides, buffer solutions and other factors will lead to some problems, check carefully, and find out what exactly the problems are.

8.2 Electrode

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

- If the electrode ball is inserted into the testing liquid
- There are no bubbles inside the electrode
- Electrode ball is not polluted
- The electrode and instrument are well connected, and the lead wire will not be loose or broken.

8.3 Standard buffer solution

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

- Use the exact standard PH buffer solution.
- The buffer solution is under a quality guarantee period and is not polluted.

9. Accessories

Standard Accessories

- Plastic body pH electrode × 1
- Temperature sensor × 1
- pH buffer solution (4.00, 6.86, and 9.18) × 3

Optional Accessories

- Battery × 4 pcs
- ORP electrode

Digital PH Meter NDPM-100	1PC
Short circuit plug (already screwed on BNC connector)	1PC
User Manual	1PC



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