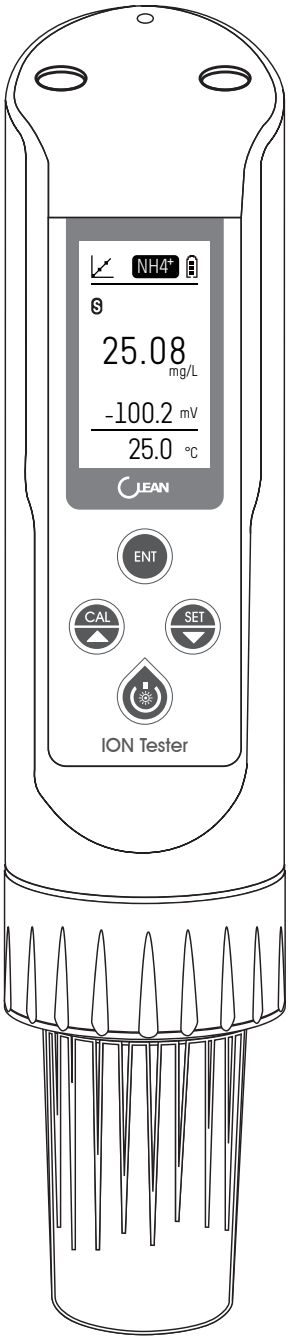
CLEAN INSTRUMENTS

Operating Instructions

Ion concentration tester



NH430 Ammonium ion tester
69102452001

※ Machine model: Back of the body

Outer packaging size:
(L*W*H) 350*350*70mm
Weight: 700g
CS6910 body
Optional distribution pole
1.5V AAA No.7 battery * 1
① 10ppm standard solution
② 100ppm standard solution
③ Sample adjustment solution (gas sensitive electrode configuration)
④ Electrolyte for membrane head (gas sensitive electrode configuration)
Membrane head * 2 (gas sensing electrode configuration)

	Model	Electrode	Film type
Fluoride ion tester	F30	CS6910F	Solid-state
Chloride ion tester	CL30	CS6910CL	Solid-state
Ammonium ion tester	NH430	CS6910NH4	pvc
Ammonia gas sensitivity tester	NH330	CS6912NH3	sensitive film
Nitrite gas sensitivity tester	NOx30	CS6912NO2	sensitive film
Carbon dioxide gas sensitivity tester	CO230	CS6912CO2	sensitive film
Nitrate ion tester	NO330	CS6910NO3	pvc
Nitrite ion tester	NO230	CS6910NO2	pvc
Potassium ion tester	K30	CS6910K	pvc
Sodium ion tester	Na30	CS6910Na	pvc
Calcium ion tester	CA230	CS6910CA2	pvc
Copper ion tester	CU230	CS6910CU2	Solid-state
Lead ion tester	PB230	CS6910PB2	Solid-state
Perchlorate tester	CLO430	CS6910CLO4	pvc

※For more information, please refer to the product brochure.

Contents

Preamble

Thank you for using this measuring instrument. Please read the user manual carefully before use to help you use this product correctly.
This measuring instrument not only has high cost-effectiveness, but also has the following advantages of easy operation. The operation manual will provide you with clear and easy to understand operation instructions. Excellent ergonomic design, precise and comfortable operation.
Multiple accessories are available for you to choose from, such as various electrodes, various standard solutions, etc.

⚠ Regarding batteries

To avoid major accidents caused by liquid leakage, heating, rupture, fire, and accidental drinking, please be sure to follow the following precautions.

Please keep the battery out of reach of infants and young children. In case of swallowing the battery, please consult a doctor immediately.
If the liquid in the battery enters the eyes or adheres to the skin or clothing, rinse immediately with plenty of water.
May cause blindness or skin damage, please consult a doctor.
Do not lick the liquid on the battery. If you do, rinse your mouth immediately and consult a doctor.
Do not put the battery in the fire, do not heat, decompose or modify the battery.
Do not use the positive and negative terminals of the battery upside down.
Do not carry the positive and negative connection wires of the battery, do not carry them with metal necklaces, hair clips, etc., and do not store them.
Do not use batteries other than those specified, and immediately remove any used batteries from this device.
Do not replace the battery when the device is damp or in areas with high humidity. Also, do not replace the battery with wet hands. When replacing the battery, be sure to turn off the power first.
When not using this device for a long time, please remove the battery. When disposing of it, please follow the regulations or rules of the local autonomous body.

⚠ Regarding calibration standard solution/sample adjustment solution

Be careful not to stick the calibration standard solution to the skin or clothing. When in contact with skin, please rinse immediately with running water. If it gets into the eyes, please rinse immediately with water and consult a doctor.

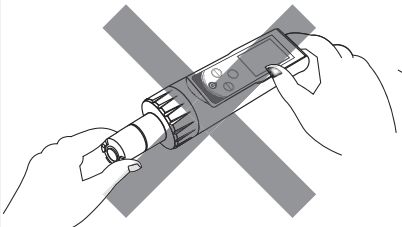
About waterproofing

Please note that this device adopts a dust-proof and waterproof structure that meets the IP67 standard, which can prevent splashing or temporary immersion. However, please do not use it in a state of prolonged immersion or moisture attachment.

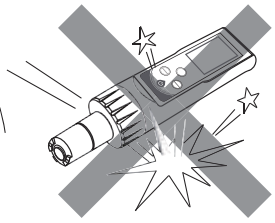
Regarding Safety in Use

-When using chemicals and solvents,
Please follow the operating instructions provided by the supplier and operate according to laboratory safety regulations!

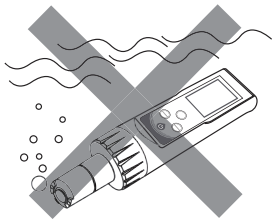
Do not use or store in the car, damp, or dusty areas under high temperature, low temperature, or direct sunlight.
Do not use in places with rapid temperature changes. The rapid change from low temperature to high temperature can lead to condensation.
When measurement is impossible due to external strong noise or other factors, and abnormal display occurs, cut off the power supply of this device. Please wait for a moment before reconnecting the power.



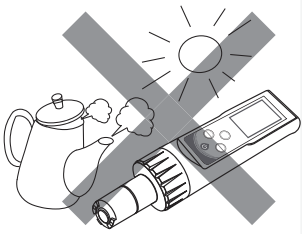
Do not apply excessive pressure



Do not apply impact



Do not immerse in water for a long time



Avoid high and low temperatures Direct sunlight, steam, etc

Regarding the measurement object

Cannot be used for measuring organic solvents, oils, adhesives, and other items that cannot be rinsed with water. In addition, it cannot be used for sewage as the electrode may deteriorate, thereby shortening its lifespan. When measuring food, please take a sample for measurement. Do not consume the measured sample.

Summary

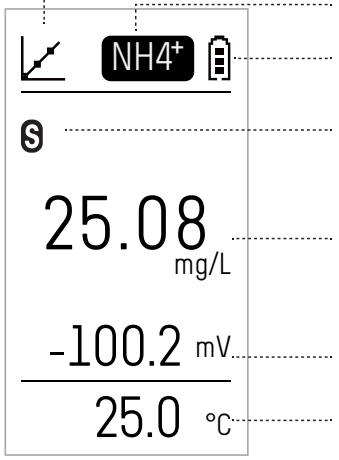
- 4 keys for easy operation, comfortable grip, and one hand for precise value measurement
- Backlit screen with multi line display for easy reading and automatic shutdown in 10 minutes without operation
- Full range of 1 * 1.5V AAA batteries, easy to replace batteries and electrodes
- Ship type floating design with IP67 waterproof rating
- Can perform water quality measurement for throwing (automatic locking function)
- Infinite extension of application scope
- Users can replace the electrodes themselves

Specifications

LCD display range	0-999999
Resolution	0.01,0.1,1
Accuracy	±0.01
Unit selection	mg/L,ppm,ppb,g/L,mmol/L,%
Temp. measurement range	0 - 60.0 °C
Temp. range for use	0 - 60.0 °C
Temp. resolution	0.1 °C
TEMPERATURE DISPLAY	Manual/Automatic
Calibration	1-point calibration,
	2-point calibration, maximum
	3-point calibration
Standard liquid	0,0.1,1,10,100,1000,10000,100000
Electrode	Replaceable electrode
Screen	20 * 34 mm multi row LCD backlit display screen
Protection level	IP67
Backlight	Backlight on continuously (short press the power
	button to turn off the backlight while measuring)
Automatic shutdown	10 minutes
Power supply	1 * 1.5V AAA battery
Size	(H×W×D) 185×40×48 mm
Weight	95 grams

※ Specifications and appearance are subject to change without prior notice.

Screen Display



Measuring in progress

Ionic type

Battery level display

Stable reading value

Main measurement value and unit

Electrode mV value display

Temperature display and unit

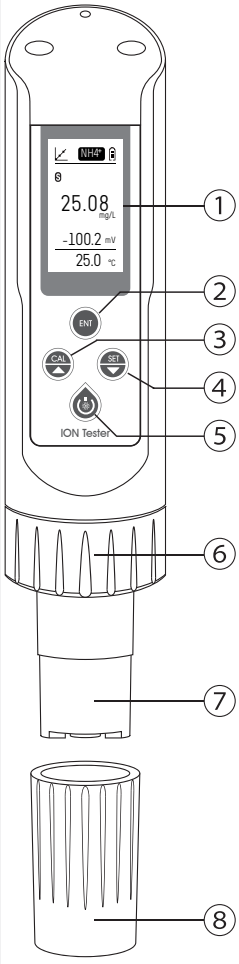
Low battery state

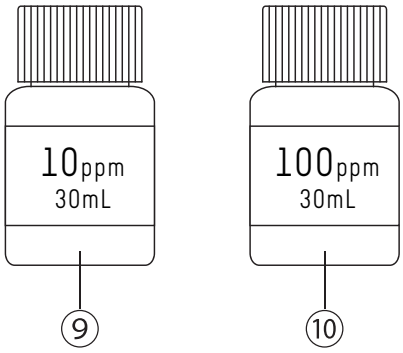
Button Description

	Short press to power on in shutdown state, long press to power off in startup state Short press this key during measurement to turn on the backlight Short press this key to set the status and use it as the exit key
	Used as an upward adjustment key in the set state Press and hold this key during the measurement state to browse calibration information
	Press this key as the setting key when measuring status Used as a downward adjustment key in the set state
	Used as a confirmation key in the set state Used as an unlock function in automatic lock mode

Key operation prompt:
Short press: Short press releases the button immediately after pressing it. (If not specified in the following text, it is a short press)
Long press: Press and hold the button for 3 seconds before releasing it.
Press and hold: Press and hold the button to hold it down, and accelerate after a certain period of time until the data is adjusted to the user's desired value before releasing the button.

Product Introduction



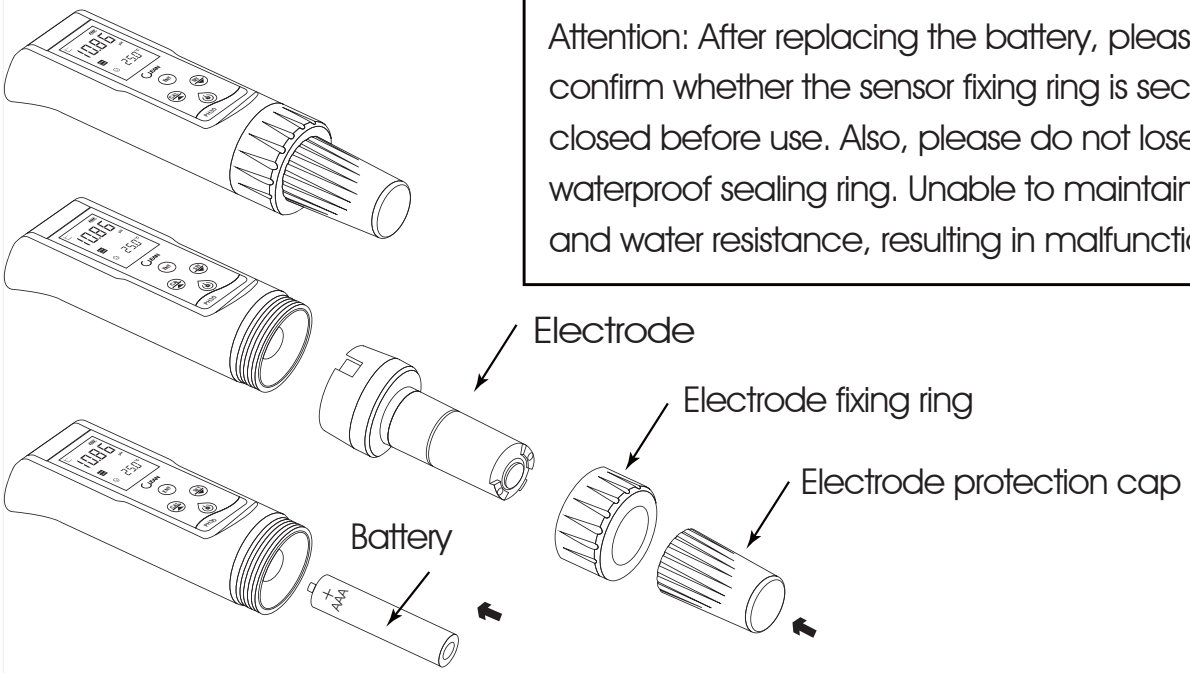


① LCD display
② Enter confirmation key
③ Calibration mode/▲ Upward adjustment of the whole piece
④ Set up mode/▼ Downward adjustment of the whole piece
⑤ Power on key, measurement mode is illuminated key
⑥ Electrode head fixing screw cap
⑦ Replaceable electrode tip
⑧ Electrode protection cap
⑨ 10ppm standard solution 30mL
⑩ 30mL of 100ppm standard solution

Installation of batteries and electrodes

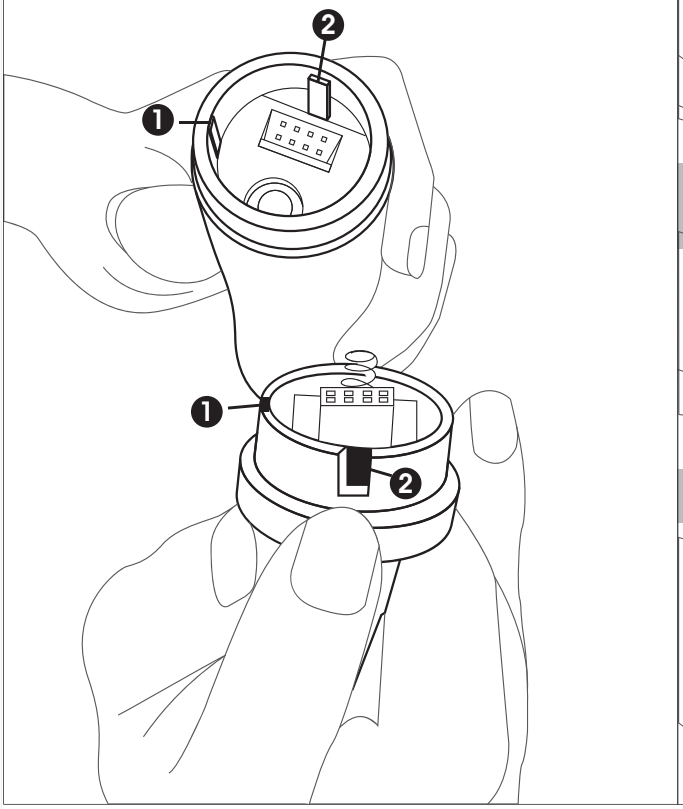
When the low battery status is displayed on the screen battery icon, please replace the battery in a timely manner. In addition, even if there is no content displayed on the display unit, the battery has not reached sufficient voltage to drive the device, so please replace the battery. Please make sure to replace the battery after turning off the power.

1) Remove the electrode protection cap.
2) Rotate the electrode fixing ring and remove it.
3) Remove the electrode and take out the old battery.
4) Align the polarity of the new battery (one No. 7 dry battery) with the battery storage area and place it in.
5) Place the contact spring of the electrode on the negative side of the battery and install the sensor.
6) Tighten the sensor fixing ring.
7) Install the sensor cover.

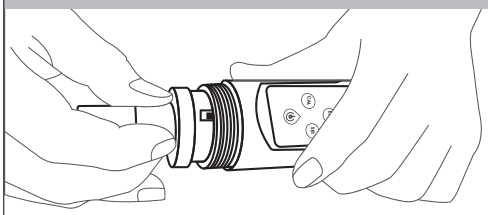


Attention: After replacing the battery, please fully confirm whether the sensor fixing ring is securely closed before use. Also, please do not lose the waterproof sealing ring. Unable to maintain dust and water resistance, resulting in malfunction.

Pay attention to the corresponding checkpoint position

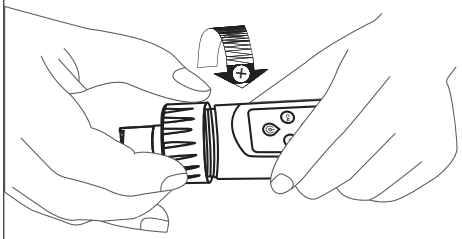


1.Align the corresponding position with the checkpoint



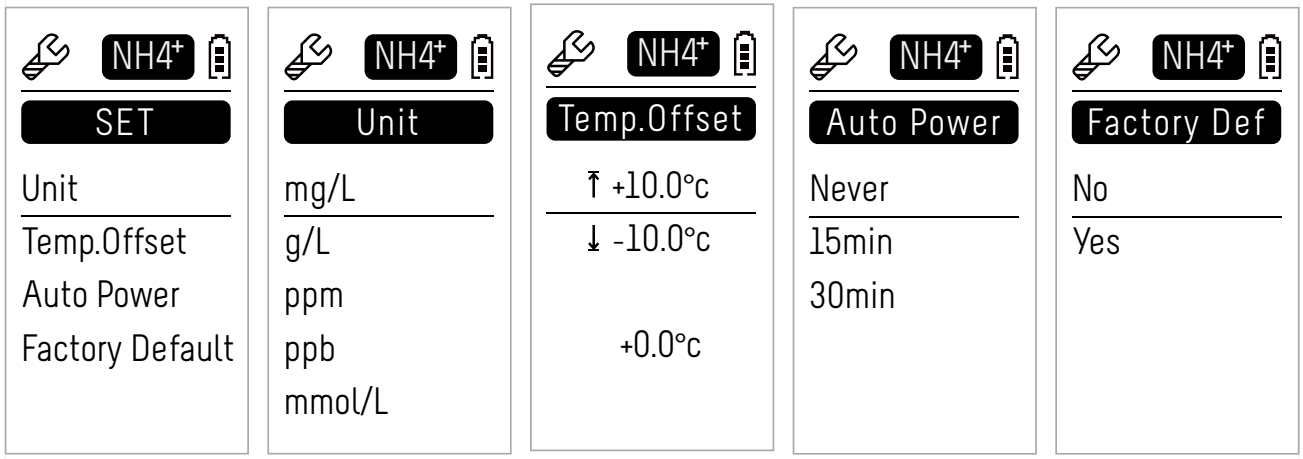
2.After aligning with the checkpoint, gently press the axis to push horizontally

3.Tightly rotating fixed cap



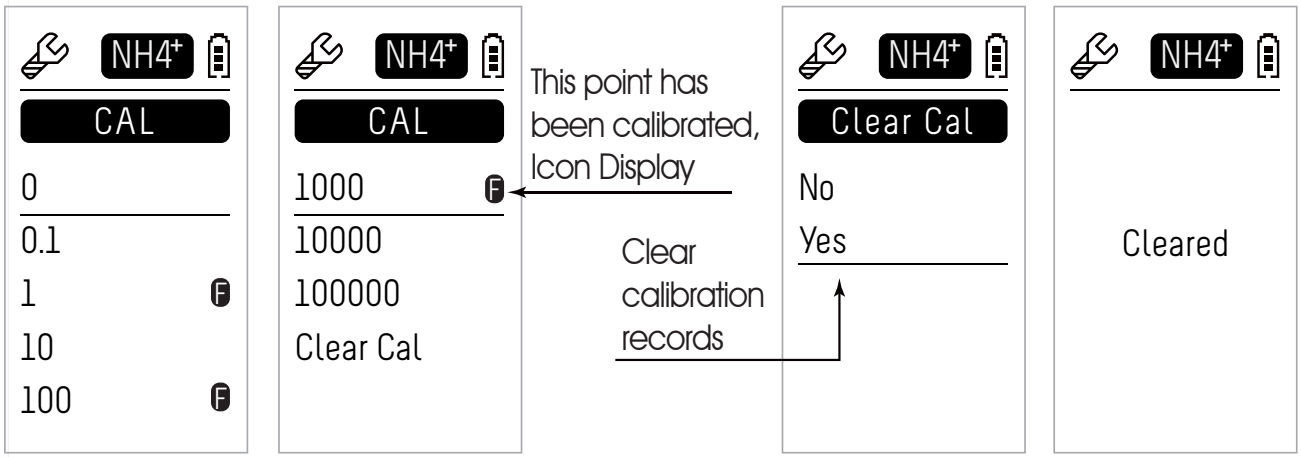
Instrument operation

Setting mode: Press the 【 SET 】 key on the measurement screen



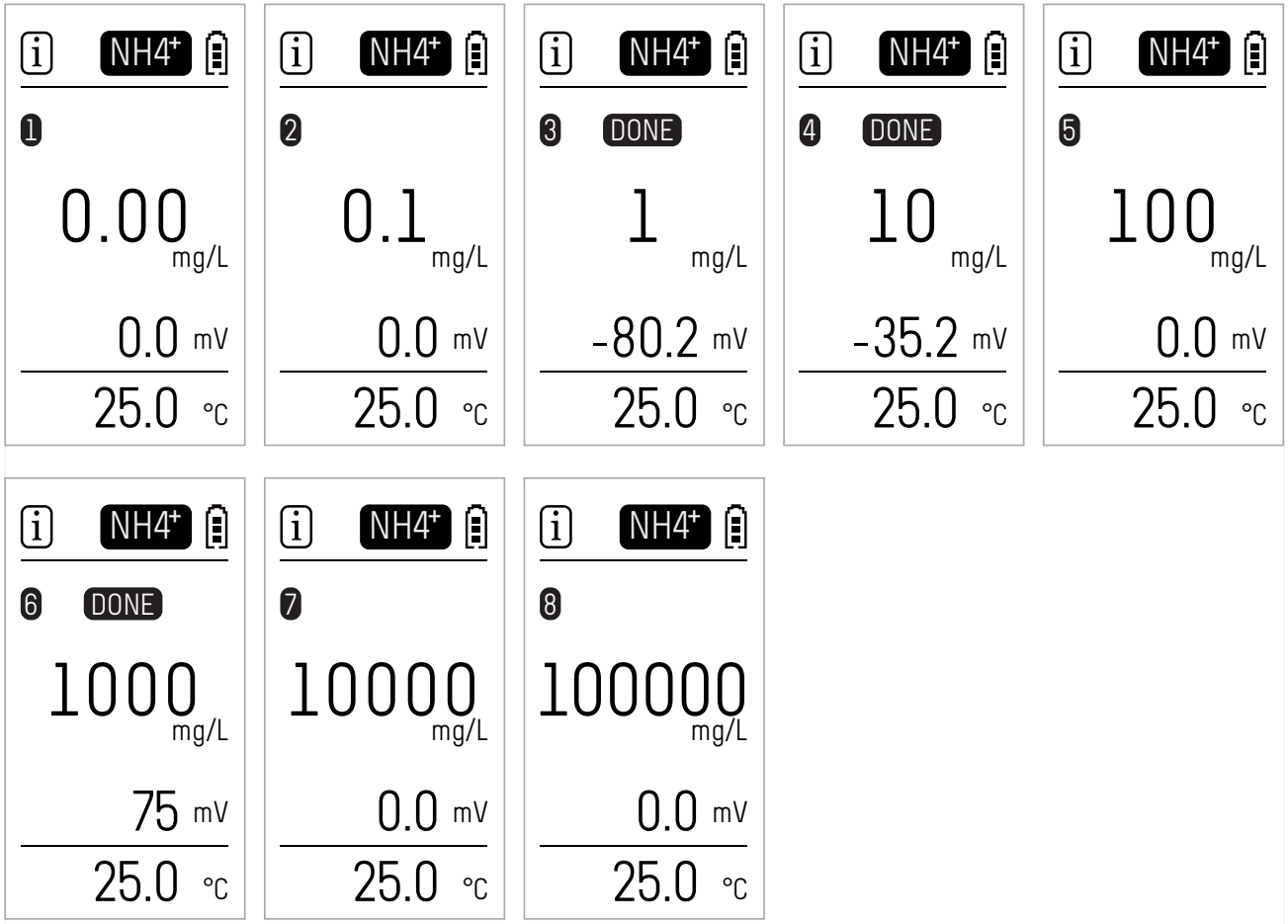
Calibration mode: Press the 【 CAL 】 key on the measurement screen

The machine can be calibrated at a maximum of 3 points, with a unidirectional input of mV value **(unidirectional input: mV value input from high to low, or from low to high, otherwise an error message will be displayed).** The calibration concentration is calibrated from low concentration to high concentration, and the calibrated point [F] is displayed. Re calibration requires clearing the calibration records first.



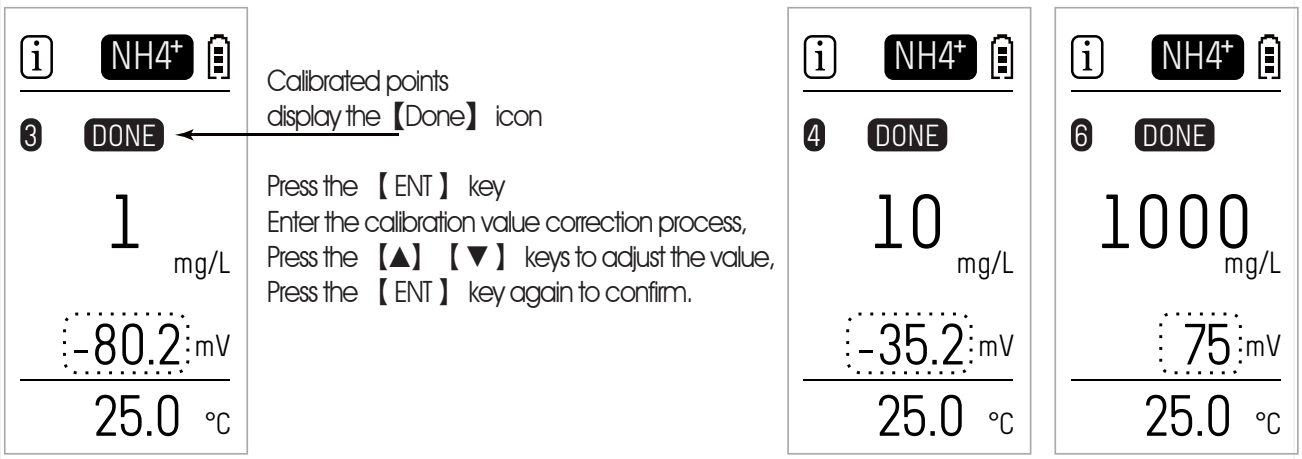
View calibration information:
Long press the 【 CAL 】 key on the measurement screen

The DONE icon for calibrated points is displayed, allowing for calibration and correction of calibrated values.

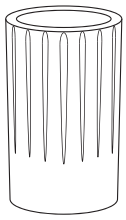


Correct the calibrated values

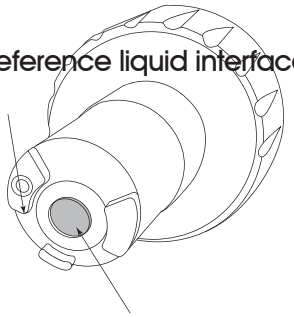
The machine can be calibrated at a maximum of 3 points. If it exceeds 3 points, an error message will be displayed.



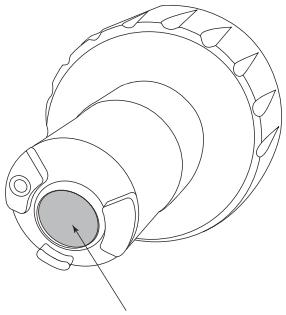
Preparation before measurement



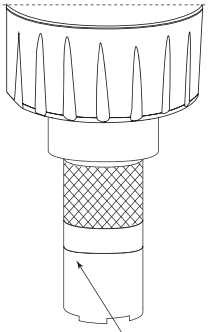
Attention: Remove the electrode protection cap. Do not touch sensitive areas with your fingers.



Electrode PVC film



Solid state electrode membrane



gas sensing electrode
Replaceable membrane cover

PVC membrane ion electrode

1. Remove bubbles inside the membrane

Before measurement, shake the electrode downwards (like shaking a thermometer) to remove internal bubbles and increase the fluidity of the reference liquid. If left dry for a long time, the sand core hole may not be unobstructed. Place the electrode in the measuring solution and lightly tap the cup wall a few times to drive away any possible bubbles on the membrane, allowing the test solution to fully contact the membrane.

2. Electrode activation

New or unused electrodes should be soaked and activated before measurement.
Take an appropriate amount of 1000ppm mother standard solution and immerse the electrode in it for 1-2 hours for activation treatment.

3. Clean the electrodes

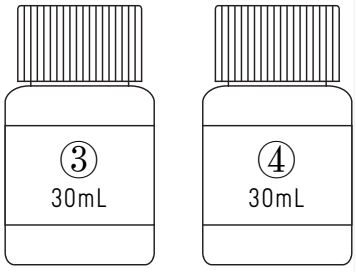
Before testing after activation, please make sure to thoroughly clean the electrode by immersing the front end of the electrode in deionized water for 5 minutes. To achieve a more thorough cleaning, please replace the deionized water with clean water multiple times, stir and clean to prevent measurement errors.

High concentration → low concentration measurement, repeat this step.

Gas sensitive membrane ion electrode

Precautions before testing

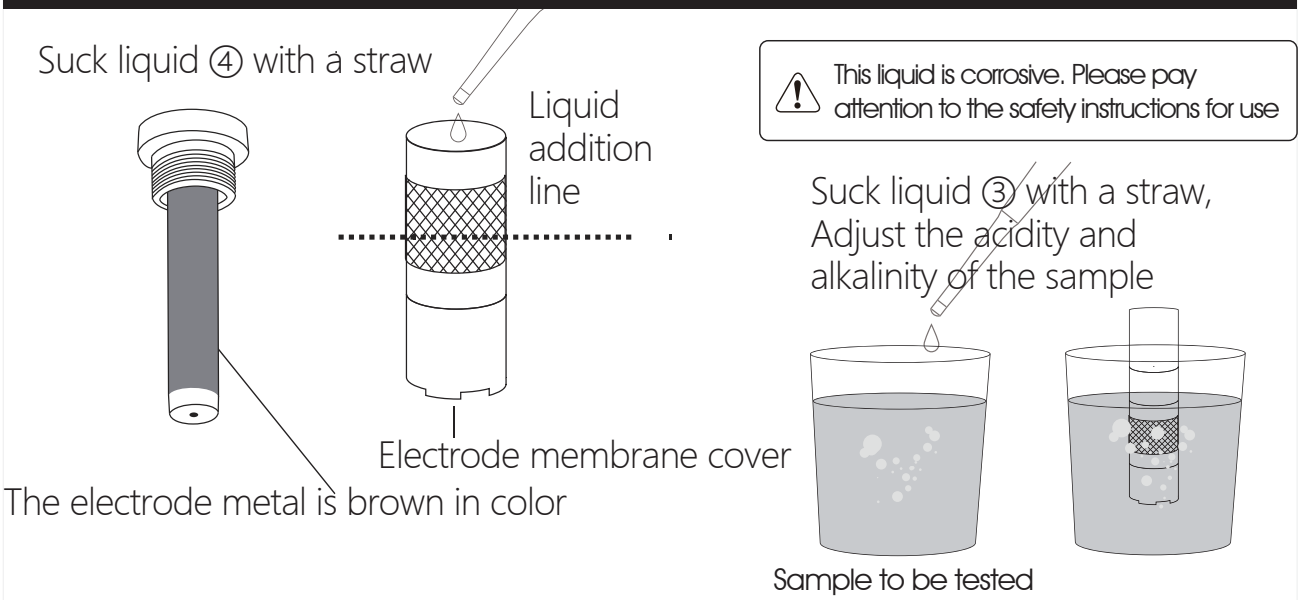
a. Unscrew the electrode film cover and confirm that the metal part of the electrode is brown.
If it is silver white. Then a new electrode should be replaced.
b. Confirm that there are no stains or damages on the surface of the electrode membrane.
c. The membrane cover is filled with electrolyte.
d. Screw on the membrane cover and after one minute, you can start measuring.



③Sample adjustment solution

④ Electrode electrolyte

The gas sensitive ion measurement method requires pre adjustment of the pH of the standard solution and sample to the specified range(P12)



Adjust the pH value of the solution

Set the pH range according to the electrode parameter table, use a pH electrode to monitor the stirring solution in real time, and slowly drip the No.3 adjusting solution to the target range.

Adding 5 drops of solution ③ to 50ml of sample solution can meet routine testing requirements (high buffer/high concentration samples need to be diluted or added incrementally).

Only when the pH is within the detection range, ions can be fully converted into a gaseous state for gas sensing measurement.

Control of Gaseous Ion Release

Open environment may cause measurement drift (escape of gaseous ions)

Low concentration: electrode response>dispersion rate, no need for sealing.

• High concentration: It is recommended to test in a closed container.

temperature control

The temperature difference between the standard solution and the sample solution is $\leq \pm 2$ ℃.

Temperature fluctuations significantly affect measurement accuracy.

Electrode cleaning specifications

Pre cleaning conditions

When the equilibrium concentration inside the electrode is greater than the sample solution, pre cleaning is required:

Wipe off residual liquid with absorbent paper

Rinse with pure water → wipe dry the surface

Insert the pure water beaker at a 45 ° angle and stir magnetically until the mV value is less than the sample liquid value

Deep cleaning

Low concentration samples: must be thoroughly cleaned (with liquid replacement/specialized cleaning solution)

High concentration samples: can avoid deep cleaning

After cleaning, the electrode should be soaked in pure water for later use or used immediately

Ionic concentration standard solution configuration

1000ppm standard mother liquor: Accurately weigh the quantitative related reagents (refer to the table below), dissolve them in distilled water, quantify to 1000ml, and store them in plastic bottles. This solution is 1000ppm.
Standard positioning test solution:
100ppm: Take 10ml of 1000ppm solution, dilute to 100ml with distilled water, stir evenly, and obtain a 100ppm solution.
10ppm: Take 10ml of 100ppm solution, dilute to 100ml with distilled water, stir evenly, and obtain a 10ppm solution.
1ppm: Take 10ml of 10ppm solution, dilute to 100ml with distilled water, stir evenly, and obtain 1ppm solution.
0.1ppm: Take 10ml of 1ppm solution, dilute to 100ml with distilled water, stir evenly, and obtain a 0.1ppm solution.
Attention: To ensure accurate reading, pay attention to the accuracy of sampling capacity and stir evenly.

Standard mother liquor formula Analytical grade and above

	Film type	Range ppm	pH	Slope mV	1000ppm
Fluoride ion	Solid-state	0.02 – 20000	5-8	56 ± 2	NaCl:2.21 g/L
Chloride ion	Solid-state	1 – 35,500	2-12	56 ± 3	KCl:2.10 g/L
ammonium ion	pvc	0.1 – 18000	4-10	56 ± 3	NH4Cl:2.97 g/L
Ammonia gas sensitivity	sensitive film	0.01 – 17000	＞11	56 ± 3	NH4Cl:2.97 g/L
Nitrite gas sensitivity	sensitive film	0.2 – 220	1.1-1.7	56 ± 3	NaNO2:1.5 g/L
Carbon dioxide gas sensitivity	sensitive film	10-100000	4.8-5.2	56 ± 3	Na2CO3:3767777 g/L
nitrate ion	pvc	0.5 – 62,000	2.5-11	56 ± 3	KNO3:1.631 g/L
Nitrite ion	pvc	10 – 2200	2-12	56 ± 3	NaNO2:1.5 g/L
potassium ion	pvc	0.7 – 98,000	2-12	56 ± 3	KCl:1.91 g/L
sodium ion	pvc	0.02-100000	5-12	56 ± 3	NaCl:2.541 g/L
calcium ion	pvc	0.2 - 40,000	3 - 10	26 ± 2	CaCl2:2.775 g/L
Copper ion	Solid-state	0.064-6,400	2-12	26 ± 2	Cu(NO3)2:3.801g/L
lead ion	Solid-state	0.2-21000	0-14	26 ± 2	Lead acetate:1.8308 g/L
perchlorate	pvc	0.7-饱和	2.5-11	56 ± 3	NaClO4:1.413 g/L

Equipment and solution preparation

1. Prepare a magnetic stirrer and stirrer
When measuring the sample and standard solution, the electrode should be stirred with a magnetic stirrer, and the stirring speed of the sample and standard solution should be kept the same. During electrode measurement, the sample and standard solution should be kept at the same temperature.
2. Calibration ion standard solution
Prepare two standard solutions with a concentration difference of 10 times.
(The concentrations that can be used for calibration are: 0,0.1,1,10100100010000100000.)
Make the expected concentration of the sample solution fall within the concentration range of two sample standard solutions. Using appropriate concentration units, the temperature of the standard solution should be the same as the temperature of the sample.
The 10ppm and 100ppm standard solutions included with the goods are disposable standard solutions. The standard solutions are prone to contamination when measured repeatedly and cannot be reused for a long time. Subsequent calibration requires the preparation of standard solutions to ensure their accuracy.

Storage after measurement

Storage of standard solution

The standard solution is recommended to be stored in cleaned polyethylene plastic bottles, and the volumetric flasks, pipettes, and glass containers used should be cleaned in a timely manner.

PVC film/solid film electrode storage

After use, it is recommended to thoroughly clean the electrode with deionized water and let it dry to extend its lifespan.**After the use of PVC film electrodes, they must not be cleaned with solvents, cleaning agents, or the like. They can be cleaned with deionized water.**

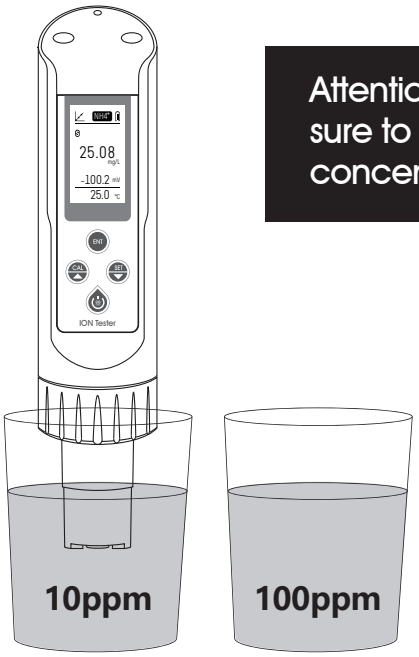
Storage/maintenance of gas sensitive electrodes

[Daily Maintenance] After testing on the same day, if it needs to be used again within a week, clean it and soak it in purified water.
Long term disuse: It needs to be completely disassembled, washed and dried before storage.
Membrane head/electrolyte replacement conditions:
Electrolyte drying up or regular replacement (normal usage cycle of 3 months, good maintenance can be extended to 6 months),
When the membrane head ages or calibration is abnormal, the replacement process is as follows:
① Old liquid treatment: Thoroughly rinse residual electrolyte with deionized water
② New liquid injection: Add new electrolyte dropwise until 6% full, ensuring no bubbles
③ Stable standing: After replacement, it needs to be left to stand for 5-10 minutes to stabilize
【 Precautions 】 After each replacement, it is necessary to recalibrate to confirm that the reading is normal. Water quality conditions directly affect the service life of the membrane head. The electrolyte should be sealed and stored to prevent volatilization and crystallization.

Calibration of electrode standard solution and slope

Enter calibration mode: Press the 【 CAL 】 key on the measurement screen

This machine can be calibrated at a maximum of 3 points mV Unidirectional input of values (unidirectional input: mV Value input from high to low, or from low to high, not unidirectional input will result in error prompt), calibration concentration is calibrated from low concentration to high concentration, and the calibrated point [F] is displayed. Re calibration requires clearing the calibration records first.



Attention: Before calibration after activation, please make sure to thoroughly clean the electrode and calibrate from low concentration to high concentration.

1. Prepare two sets of 10 fold concentration standard solutions, each containing 100 ml At 150 mL Inside the beaker.
For ease of illustration, the solution to be measured is between 10 and 100 ppm The left and right samples need to be calibrated for 10 ppm And 100 ppm。
2. Use a cleaning tissue to absorb the water from the thoroughly cleaned electrode, and place the electrode into the prepared 10 ppm Inside the standard solution. Stir evenly, and the reading value is stable.

Standard solution 10 ppm calibration

【ENT】 key Enter the calibration process

CAL flicker

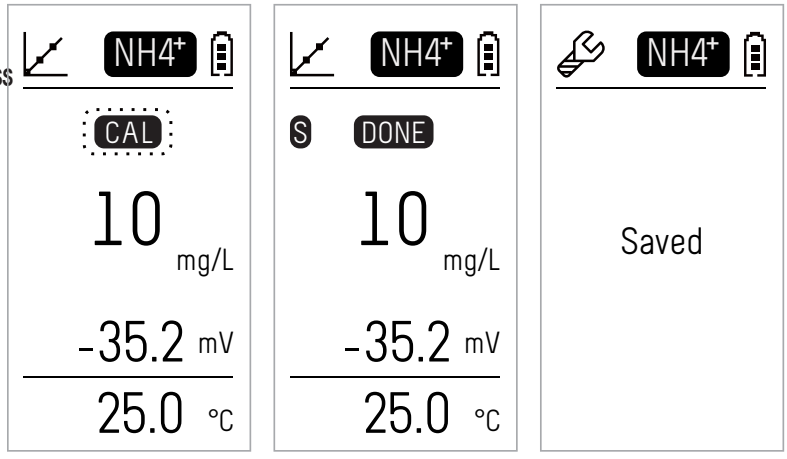
Stable value to be read

Automatically lock calibration values

Calibration completed

It can also be done manually

【ENT】 confirm Calibration value

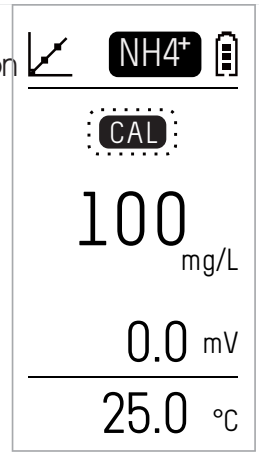


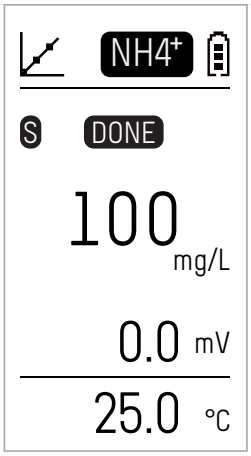
➡ 10ppm Calibration completed

10ppm After calibration is completed, take out the electrode and place it in the prepared 100 ppm Stir the solution evenly. When a stable reading is displayed, the value to be read is displayed as stable.

Calibration with 100ppm standard solution
【 ENT 】 key
Enter the calibration process

CAL flashing
Stable value to be read
Automatically lock calibration values
Calibration completed
It can also be done manually
【 ENT 】 Confirm Calibration value





➡ **100ppm calibration completed**

The same operating procedure can be used to calibrate other points, with 3 points calibrated for multiple points.

10 times the concentration difference is the slope of the electrode: the difference between 10ppm and 100ppm at 25 ℃, the difference in stable mV readings is the slope of the electrode, and this value is qualified according to the slope in the relevant specification table. **The reference slope is the standard for newly shipped electrodes, and it will decrease over time, frequency of use, and measurement environment until failure occurs. A decrease in slope will reduce measurement accuracy, please refer to the usage.**

Calibration Slope Explanation

System setting slope: At the factory, the average slope and 10ppm range value of the corresponding electrode are recorded for this electrode. After restoring the factory settings or clearing the calibration records, the machine still has a reading display, which can be used as a reference to ensure the accuracy of the reading. It needs to be calibrated with standard solution before use. **(This information is not universal for different electrodes, please refer to the original electrode for shipment)**
Slope without calibration status: No calibration information, the slope and corresponding range set by the startup system.
Slope of 1-point calibration state: The slope set by the offset adjustment startup system for 1-point calibration state.
Slope of 2-point calibration and 3-point calibration states: The slope between calibration points is the calibration slope, and the slope outside the calibration points is the system set slope.
The machine has been calibrated and shipped at 3 points before leaving the factory. You can long press the [CAL] key to view the calibration information.

Fault handling

If the electrode slope is not within the range described above,
Perform the following actions:
1. Polish the electrode sensing element (electrode head) with a polishing tape: Press the polishing tape tightly with your fingers and polish the electrode sensing element in a circular motion for 30 seconds. **(For solid-state membrane electrodes, PVC film/gas sensitive film is not allowed)**
2. Repeat the operation of "preparation before electrode measurement" once. Repeat the operation of "electrode operation calibration" again.
If the electrode still does not meet the requirements after performing the above operations, please contact the manufacturer's technical service department.

Product Warranty Certificate

This instrument has been inspected and qualified according to our company's standards, and is guaranteed in accordance with the following guarantee regulations.

During the warranty period, if any malfunctions occur under normal use, we will provide free repairs.
2. This guarantee is only valid domestically.
When the following conditions are met, it will be excluded from the scope of free repair.
Malfunctions caused by improper operation and use
Malfunctions caused by handling or storage beyond the design specifications and conditions
Malfunctions caused by modifications or repairs carried out by our company or others commissioned by our company
Other faults that are not the responsibility of our company

When repairing the product, the original packaging of the instrument should be used. Otherwise, it should be wrapped in bubble bags and then packaged in corrugated paper boxes. It is best to attach a brief explanation of the fault for our customer service department to repair the product.
If you have any questions, please contact our authorized dealer or our customer service center immediately. Thank you.

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