



CLEAN PH200/ PH500 pH/ mV/ ORP/ Ion Versatile Water Analysis Meter

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Operation Manual

CLEAN PH200/PH500
pH/ mV/ ORP/ Ion/ Temp
Versatile Water Analysis Meter

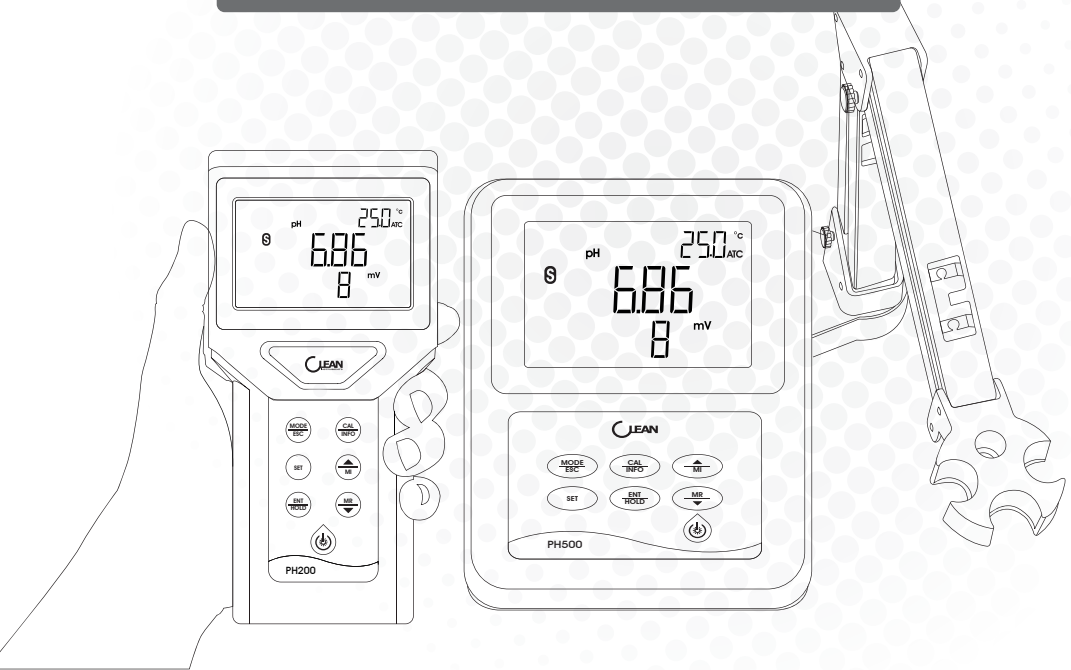


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1 Preface

Thank you for selecting CLEAN meter.

Although the meter use advanced technology and meet the requirements of current safety rules, improper use can still threaten the safety of users, and / or cause harmful influences to factory and other equipments. Therefore, before using the meter, relevant person must read and understand contents of this operation manual.

Besides the reasonable prices, Clean meters also have the following advantages:

- Simple operation. This operation manual provides you clear and easy operation guidance.
- Humanized design, Comfortable holding.
- Multiple accessories available, such as sensors, buffer solution etc.

Safety



- **Never expose the meter in the explosive environment! Part of the shell case is not airtight and the invasion of spark or the corrosion caused by the invasive gas may cause explosion.**



- **Please follow the operation manual and the laboratory safety regulations when use the chemicals and solutions.**

Safety precautions



- **Never split the shell case.**
- **Only the OEM maintenance staff is allowed to maintain the meter.**
- **Following environment effect should be avoided:**

Violent vibration

Expose to sunlight for a long time

Atmospheric humidity more than 95%

Corrosive gas

Ambient temperature below than -10°C or more than 60°C

Strong electric or magnetic field

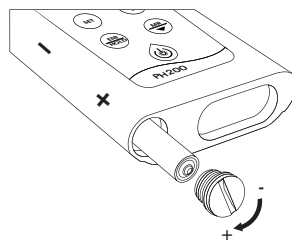
2 Basic Operation

2.1 Battery — (200 Series)

Use a coin to remove the battery cover by following the “-” direction.

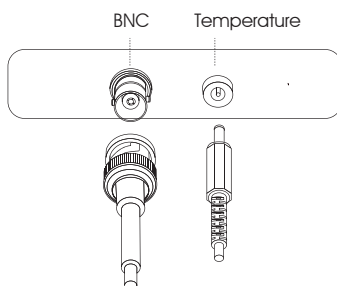
Insert 2*1.5V 7AAA batteries in the battery compartment with the correct Positive and Negative poles.

Tight the battery cover by following the “+” direction.



2.2 Electrode Installation

You can refer to the Electrode operation manual for use and maintenance. The direction of the red dot marker on the Electrode and the salient point on the unit should be the same when install the electrode to the unit. Remove the electrode by pulling out the clamp on the electrode.



2.3 Shell

This series of meter is portable . If the meter accidentally touches water or other fluids, please wipe it clean immediately. The meter function is not affected usually, But if affected and cannot use, please contact our company or CLEAN local customer service center. They will be very glad to help you.

2.4 Power on/off and Backlight

Power on

Short press power on/off key to start the meter. The whole screen displayed within 1 second.

Power off

Long press the power on/off key to power off the meter.

Auto power off in 10 minutes if without any operation.

LCD backlight

Short press power on/off key to control if turn on the backlight or not.

3 Key Panel








3.1 Key instruction

Short press: Short press means release the key once after pressing. (If there is no mark out below, default it as Short press)

Long press: Long press means press the key for 3 seconds and release.

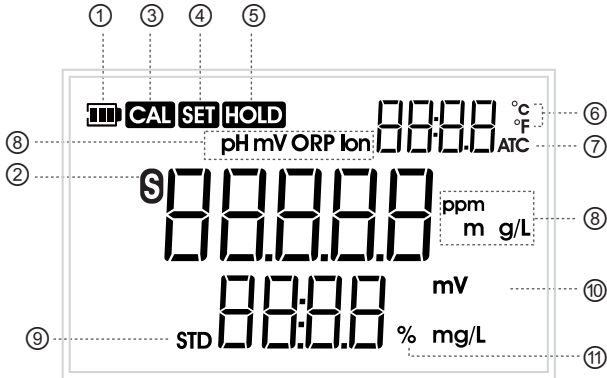
Hold: Hold means not release the key, used in adjusting data and accelerate after a certain time. Not release the key until the value is set as needed.






3.2 Key function:

Key	Description
	Power on ON/OFF backlight Long press to Power off
	Mode switch Exit from current mode operation
	Data setting
	Enter into calibration mode Long press to enter into parameter browsing
	Freeze or unlock the displayed value Press to unlock in measurement mode
	Store the displayed value into memory Increment values or scroll through the next options available Press to browse the saved data in measurement mode
	Recall stored values from the memory Decrement values or scroll through the next options available Press to browse the saved data in measurement mode

4. Appearance

Display



- 1  Battery power
- 2  S- Stable. If twinkling, means unstable.
- 3  CAL – Calibration
- 4  SET- Setup display
- 5  HOLD- Auto lock
- 6 °C °F - Temperature
- 7 ATC - Automatic Temperature Compensation
- 8 PH、mV、ORP、Ion、ppm、mg/L- Measurement mode、 Unit of Measurement
- 9 STD - Standard solutions
- 10 mV - Zero drift、 mV indicator or Ion sensor slope
- 11 % - Uncalibrated meter is 0% and "%*twinkling. When sensor slope is $\leq 65\%$, "%*twinkling

Display Character Table

SEN	Sensor	ON	On
EP	Manual Temperature setting	OFF	Off
EPDS	Temperature offset setting	NO	No
ATC	Automatic Temp. Compensation	YES	Yes
BUZZE	Prompt tone setting	OVr	Temperature value Over
SLOP	Electrode slope	Udr	Temperature value Under
HOLD	Auto lock	FULL	Full Data Storage
AUOFF	Auto off	OVER	Measuring Value Over
NONE	no stored data	UNDER	Measuring Value Under
CLEAR	Clear data	BATT	Battery
OFFS	Offset	Err	Error
P-DB	Menu item	UNIT	Ion concentration unit selection
BUFF	Buffer Solution	POINT	Ion calibration Points
b1~b4	Buffer kinds	VALEN	Ionic valence
RESET	Reset to factory defaults	10 ⁴	10 of the fourth power: 10000
SAVE	Save Data	10 ⁵	10 of the fifth power: 100000

CLEAN PH200 / PH500 pH/ mV/ ORP/ Ion/ Temp

Versatile Water Analysis Meter

CLEAN PH200/PH500 series products with precise and practical design concept: simple operation, powerful functions, complete measuring parameters, wide measurement range. Four sets with 11 points buffer combination, one key to calibrate and auto buffer recognition. Clear and easy understandable operation interface, excellent anti-interference, precise measuring, convenient to operate, combined with the high luminance LED backlight, CLEAN PH200/PH500 is your professional choice, a reliable partner in Lab, factory, and routine measuring in school.

- One key to switch among pH, mV, ORP, Ion measuring modes.
- pH value, mV value, Temperature value with screen display simultaneously, humanized design.
- °C °F optional
- Four sets with 11 points buffer combination, covering global standards including US, EU, CN, JP.
- Two points ORP calibration
- Ion concentration measuring range: 0.000-99999mg/L
- Large LCD, with high luminance LED backlight.
- One key to auto calibration: Zero offset、Electrode offset、ensure the accuracy
- One key to browse the setting parameters, including Electrode zero offset, sensor slope and all set parameters.
- Prompt tone after measurement readings stable(Optional)
- HOLD Auto Lock function
- Temperature offset adjust
- 200 sets of measuring data storage
- Auto power off if no operations in 10 minutes. (Optional)
- 2*1.5V 7AAA batteries. Long battery life span

5.1 Technical Specifications

		PH200	PH500
pH	Range	-2.00 ~ 20.00 pH	
	Resolution	0.01 pH	
	Accuracy	±0.01 pH	
ORP	Range	-2000~2000 mV	
	Resolution	0.1mV (-999 ~ 999mV), 1 mV (<-999 mV or >999 mV)	
	Accuracy	± 1 mV	
Ion	Range	0.000-99999mg/L, ppm	
	Resolution	0.001,0.01,0.1,1 mg/L, ppm	
	Accuracy	1%+1LSD(1 valence) , 2%+1LSD(2 valence), 3%+1LSD(3 valence)	
Temperature	Range	-40.0-125.0°C (-40.0-257.0°F)	
	Resolution	0.1°C, 0.1°F	
	Accuracy	+0.2°C, 0.1°F	
Battery	Power supply	2*1.5V 7AAA batteries	Transformer 100 ~ 220V
pH Buffer	B1	1.68, 4.01, 7.00, 10.01 (US)	
Kinds	B2	2.00, 4.01, 7.00, 9.21, 11.00 (EU)	
	B3	1.68, 4.00, 6.86, 9.18, 12.46 (CN)	
	B4	1.68,4.01, 6.86, 9.18 (JP)	
Others	Environment	-5 °C ~ 60 °C; Relative humidity < 90%	
	Memory	200 sets	
	Dimensions	94*190*35mm (W*L*H)	140*210*35mm (W*L*H)
	Weight	250g	650g

5.2 Model and Function

	pH	ORP	Ion
P-01	Buffer kinds	-----	Switch measuring unit
P-02	Manual temperature	-----	Calibration point
P-03	Temperature offset	-----	Ionic valence setting
P-04	Auto Lock		
P-05	Prompt tone		
P-06	Auto power off		
P-07	Clear the saved data	-----	-----
P-08	Revert to factory default		

5.3 Browse the parameter

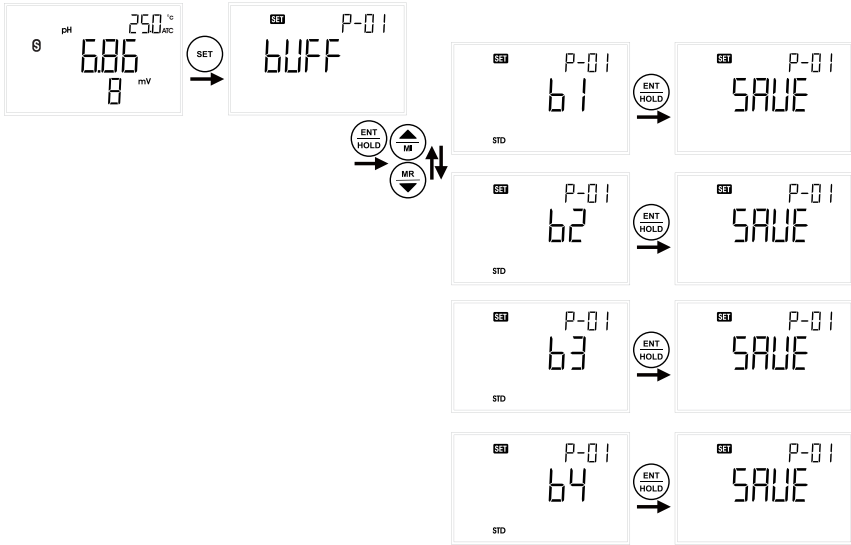
Long press  for 3 seconds in measurement mode. Then press   to browse the parameters

1. Zero offset ( mV)
2. Slope ( %)
3. Buffer kinds
4. Temperature compensation
5. Prompt tone(ON/OFF)
6. **Hold** Auto Lock
7. **ON/OFF** Auto power off
8. Battery power

5.4 Set UP

5.4.1 pH set up

P-01 pH Standard Solution



After power-up, the unit will enter the measurement mode. Factory default is pH measuring mode. You can switch between the pH measurement mode and the ORP measurement mode by pressing the **MODE/ESC** Key. Press **SET** to enter set up step. Press **CAL/INFC** to enter electrode calibration mode.

In P-01, press **ENT/HOLD** to enter. Press **M** (up arrow) **MR** (down arrow) to select among B1,B2,B3,B4 buffer kinds. Press **ENT/HOLD** to confirm.

Please refer to above description steps to set up P-01.

You can go to next parameter setting by pressing **M** (up arrow) **MR** (down arrow), or pressing **MODE/ESC** key to quit and go back to measurement mode.

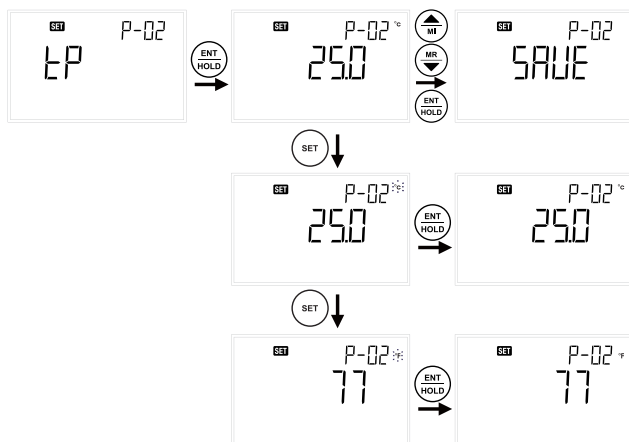
B1: 1.68, 4.01, 7.00, 10.01 (US)

B2: 2.00, 4.01, 7.00, 9.21, 11.00 (EU)

B3: 1.68, 4.00, 6.86, 9.18, 12.46 (CN)

B4: 1.68,4.01, 6.86, 9.18 (JP)

P-02 Manual Temperature setting



After entering P-02, you can set the manual temperature by pressing . Long press for speedy setting. Confirm your setting by pressing .

You can switch between °C and °F by pressing . Press to confirm. This setting will only take effect after the meter restarted.

Manual Temperature setting range: -40.0-125.0°C (-40.0-257.0°F)

Please refer to above description steps to set up P-02.

You can go to next parameter setting by pressing , or pressing key to quit and go back to measurement mode.

Note:

1. Please make sure the Temperature Electrode is UNPLUGGED when manual Temperature compensation. Otherwise, the unit will display "Err" and go back to the set up menu for fresh operation.
2. It is not working to unplug the Temperature Electrode while setting. You have to set again after removing the electrode and quit the current mode.

P-03 Temperature Offset setting



After entering P-03, you can set the temperature to the appropriate value by pressing   according to the actual temperature. Long press   for speedy setting. Confirm your setting by pressing .

Temperature Offset range: $\pm 10^{\circ}\text{C}$.

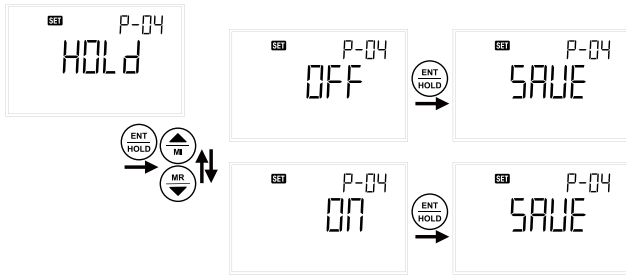
Please refer to above description steps to set up P-03.

You can go to next parameter setting by pressing  , or pressing  key to quit and go back to measurement mode.

Note:

1. Please make sure the Temperature Electrode is PLUGGED when Temperature Offset setting. Otherwise, the unit will display "Err" and go back to the set up menu for fresh operation. The "ATC" will be displayed beneath the main screen the screen normally.
2. It is not working to plug the Temperature Electrode while setting. You have to set again after plugging in the electrode and quit the current mode.

P-04 Auto Lock Function setting

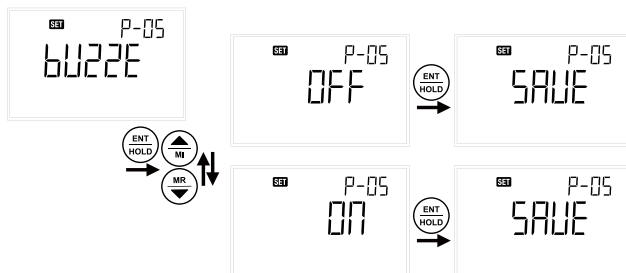


After entering P-04, you can select ON or OFF the Auto Lock Function by pressing **MR** (up/down). If the Auto Lock Function is ON, the meter can lock the measured value after the reading had stabilized and display **HOLD**. Press **ENT HOLD** to unlock.

Please refer to above description steps to set up P-04.

You can go to next parameter setting by pressing **MR** (up/down), or pressing **MODE ESC** key to quit and go back to measurement mode.

P-05 Prompt tone setting (optional)

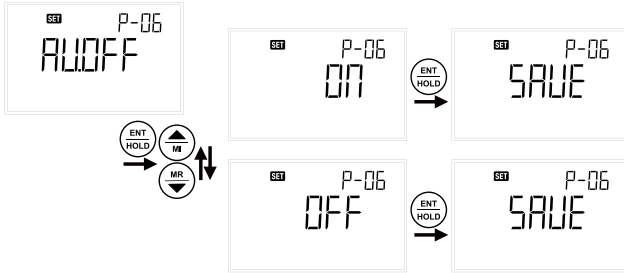




After entering P-05, you can select ON or OFF the prompt tone by pressing **MR** (up/down). If the prompt tone is ON, you will hear the "Beep" tone after the reading had stabilized when in calibration.

Please refer to above description steps to set up P-05.

You can go to next parameter setting by pressing **MR** (up/down), or pressing **MODE ESC** key to quit and go back to measurement mode.

P-06 Auto Power Off Setting

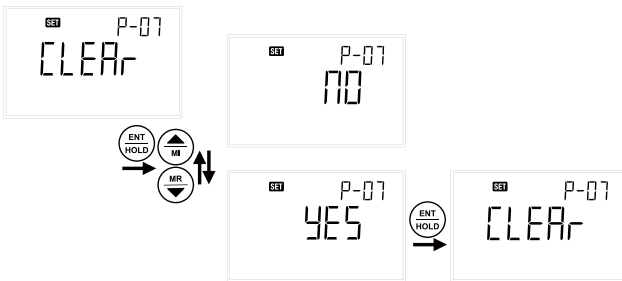




After entering P-06, you can select ON or OFF the Auto Power Off by pressing  . If the Auto Power Off is ON, the meter will power off if no operation in 10mins.

Please refer to above description steps to set up P-06.

You can go to next parameter setting by pressing  , or pressing  key to quit and go back to measurement mode.

P-07 Clearing Memory Function

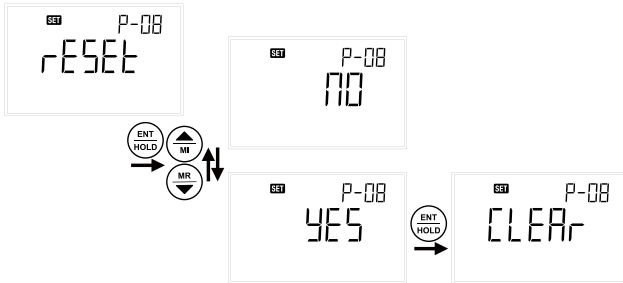


After entering P-07, you can select NO or YES to not clear or clear the data by pressing  . If select YES, the meter will clear all the saved data.

Please refer to above description steps to set up P-06.

You can go to next parameter setting by pressing  , or pressing  key to quit and go back to measurement mode.

P-08 Reverting to Factory Default Setting



After entering P-08, you can select NO or YES to not reverting or reverting to factory settings by pressing . If select YES, the meter will revert all the settings to factory defaults and all the settings will lost forever. The unit will restart at the same time.

Please refer to above description steps to set up P-08.

You can go to next parameter setting by pressing , or pressing key to quit and go back to measurement mode.

Note:

1. During setting, you can press key to quit setting whenever necessary.
2. During setting, you can adjust anything twinkling by pressing . If it is the data twinkling, you can speedy adjust the data by pressing .

5.4.2 ORP set up

Below is only the whole meter setting.
Please refer to pH setting for detailed set up steps.



P-04 Auto Lock Function setting



P-05 Prompt tone setting (optional)



P-06 Auto Power Off Setting




P-07 Reverting to Factory Default Setting

5.4.3 Ion set up

P-01 Measuring unit setting



After entering P-01, you can switch between measuring unit mg/L and ppm by pressing  .

Confirm your setting by pressing .

Please refer to above description steps to set up P-01.

You can go to next parameter setting by pressing  , or pressing  key to quit and go back to measurement mode.

P-02 Calibration point setting



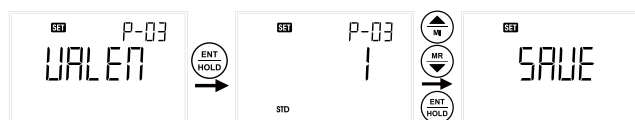
After power-up, the unit will enter the measurement mode. Factory default is pH measuring mode. You can switch among the pH measurement mode, ORP measurement mode and the lon measuring mode by pressing the **MODE/ESC** key. In lon measuring mode, press **SET** to enter set up step. Press **CAL/NFC** to enter calibration step.

After entering P-02, you can select 2 points, 3 points, 4 points, 5 points, 6 points, 7 points for calibration by pressing **MI** **MR**. Confirm your setting by pressing **ENT/HOLD**.

You can go to next parameter setting by pressing **MI** **MR**, or pressing **MODE/ESC** key to quit and go back to measurement mode.

Please refer to above description steps to set up P-02.

P-03 Ionic valence setting



After entering P-03, you can select 1 valence, 2 valence, 3 valence by pressing **MI** **MR**. Confirm your setting by pressing **ENT/HOLD**.

Please refer to above description steps to set up P-03.

You can go to next parameter setting by pressing **MI** **MR**, or pressing **MODE/ESC** key to quit and go back to measurement mode.

★ Below is only the whole meter setting. Please refer to pH setting for detailed set up steps.



P-04 Auto Lock Function setting



P-05 Prompt tone setting (optional)



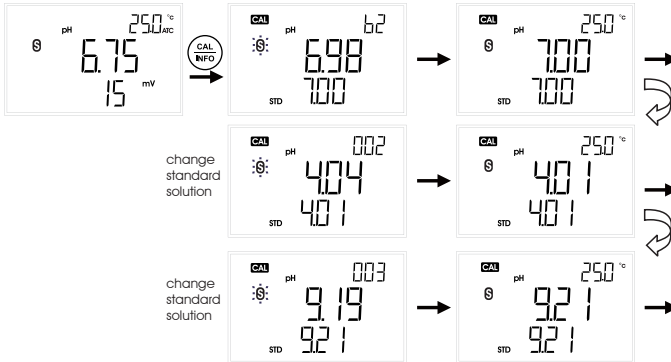
P-06 Auto Power Off Setting







P-07 Reverting to Factory Default Setting

5.5 Calibration Mode

pH calibration



1. Dip the sensor into the already set buffer solution when in pH calibration mode. For details, please refer to the standard solution setting.
2. Press  key to enter pH calibration step. "CAL" will be displayed. Dip the sensor into buffer solution (7.00 or 6.86 pH). When the value is stable and display "S" together with the twinkling stops, indicates the first zero point calibration is completed. Screen blanks for 2 seconds for saving the data. Then the meter will automatically go to second point calibration. Dip the sensor into the second buffer solution. When the value is stable and display "S" together with the twinkling stops, indicates the second point calibration is completed. You can go next to third point calibration or fourth point calibration. You can also press  key go back to measurement mode. (To check the calibration results: long press  for 3 seconds)

Note: During the calibration process, you can also press  key to terminate calibration process and back to measurement mode. Calibrated points are already saved.

If "Err" shows when in calibration, could be the following reasons:

1. Wrong buffer solution. First point defaults as Zero point calibration. Please follow the Auto Buffer recognition order.
2. Poor performance of electrode.
3. Stabilized time is more than 30 seconds.
4. After calibration, in measurement mode, if "% " is continuous twinkling, means the sensor slope is below 65%. Please timely maintain the electrode or change electrode. Then re-calibrate.

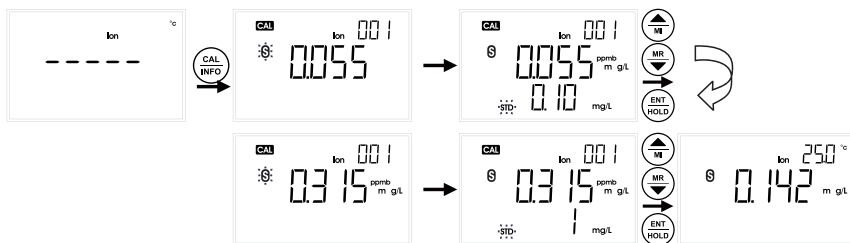
ORP calibration



Press **CAL INFO** key to enter ORP calibration step. "CAL" will be displayed.

Dip the sensor into any standard solution which the user already known the mV value in it. When the value is stable and display "S", press **MI** **MR** keys to adjust the four-digit STD number at the bottom row. So the value can be the same as the already known mV value. Press **ENT HOLD** to confirm. First point calibration is completed. You can go to second point calibration or press **MODE ESC** key to quit and go back to measurement mode.




Ion calibration





Press **CAL INFO** key in Ion measuring mode to enter the calibration step. "CAL" will be displayed.

Dip the sensor into any standard solution which the user already known the concentration value in it. When the value is stable and display "S", press **MI** **MR** keys to adjust the corresponding concentration value at the bottom row (0.10, 1, 10, 100, 1000, 10⁴, 10⁵mg/L). Press **ENT HOLD** to confirm. First point calibration is completed. Go to second point calibration. Change the standard solution. When the value is stable and display "S", press **MI** **MR** keys to adjust the corresponding concentration value at the bottom row (0.10, 1, 10, 100, 1000, 10⁴, 10⁵mg/L). Press **ENT HOLD** to confirm. Second point calibration is completed (Factory default is 2 points calibration). Meter will go back measurement mode after calibration. (To check the calibration results: long press **CAL INFO** for 3 seconds) Measuring range: 0.000 mg/L, ppm ~ 99999 mg/L, ppm
 Note: Five-element number displayed on screen. The lower in value, the higher in resolution. Maximum resolution is 3-digit after the decimal point. Calibration order from low concentration value to high concentration. Otherwise screen will display ERR.

5.6 Measurement Mode


1. You can first set the meter per your request. Otherwise, the setting will be factory defaults.
2. Use tap water or distilled water to clean the pH and the temperature electrode, removing the adhesive impurities on the surface of electrode.
3. After power on, press  to select the operation mode (pH, mV or Ion).
4. Immerse the pH and the temperature electrode in the solution and stir gently. The measuring mark  will twinkle. You can read the value once the data is stabilized and shows the stable mark . When sensor slope is below 65%, slope will twinkle, please timely maintain the electrode or change electrode.



1. When the screen shows "ATC" means the temperature sensor is working and shows the actual temperature upper right corner. You can refer to the P-02 "Temperature Offset setting" if a revision on the temperature is required.
2. If "ATC" is not shown on the screen means the temperature electrode is disconnected and is manual temperature compensation. Factory default is 25°C. You can refer to "Manual temperature setting" to adjust the temperature.
3. The measuring value is stabilized when the screen showed . The **HOLD** is showed if the Auto Lock Function is on. Press  to unlock.

Measuring mode switch [pH/mV, ORP, Ion, Temp]

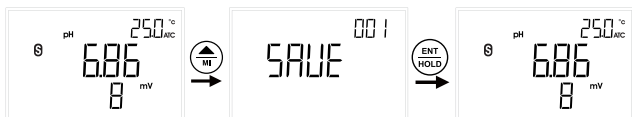





After power-up, the unit will enter the measurement mode. Factory default is pH measuring mode. You can switch between the pH measurement mode, ORP measurement mode and the Ion measurement mode by pressing the  Key.

Factory default no reading value for Ion measurement mode. Need to first calibrate and then reading value displayed.

5.7 Storage of measuring data

Storage of measuring data








1. If you need to save the measuring data once it is stabilized, press , the Lot no. will be shown on the upper right of the screen. Press  to save the data. You can also press  to not save. The meter will automatically go back to measurement mode after the data saved. The unit at most can save 200 sets data. The screen will show "OVER" if more than 200 sets reminds you the memory card is full.

2. Enter into setting mode P-07 if you need to delete the saved data forever. You can refer to Clearing memory function

Browse on data storage

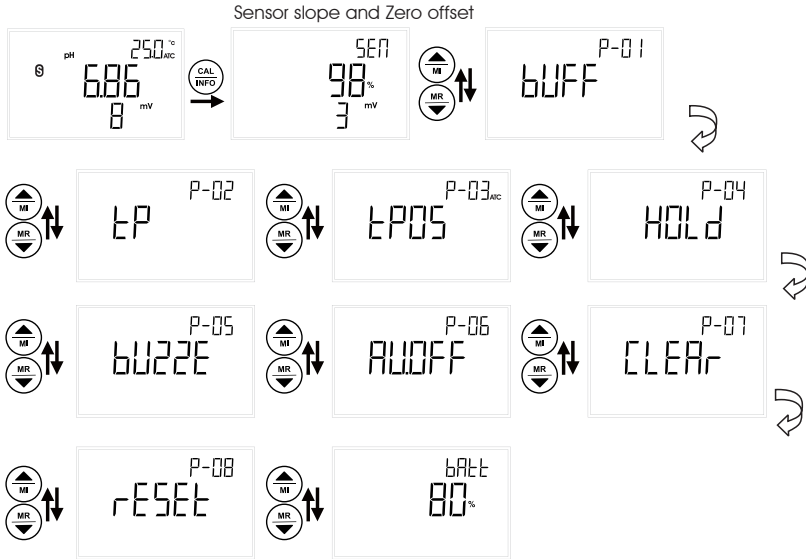


1. Press   to enter into the browse on the data storage, the Lot no. will be shown and data twinkling. Press   to check all the saved data. Press  to go back to measuring mode. If showed "NONE" means no data is saved yet.

2. If you quit and re-entering during checking the data, the meter will freeze in the last set of data.

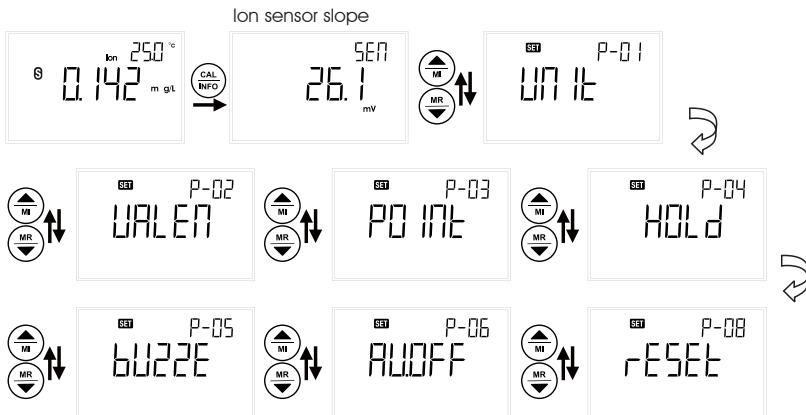
5.8 Browse on Setting Parameters

pH setting parameters browse



1. Long press to enter into Setting parameter when in measurement mode. Press to check through all the Calibration parameters and Setting parameter.
2. Press to quit and go back to measurement mode.

Ion setting parameters browse



5.9 APPENDIX

pH Factory defaults

Item	Corresponding interface	Factory Defaults
Standard Solution	P-01	B1: 1.68, 4.01,7.00,10.01 (US)
Temperature	P-02	Manual Temperature Compensation 25 °C
Auto Lock	P-04	OFF
Prompt tone setting	P-05	OFF (No configuration)
Auto power off	P-06	ON
Backlight		OFF

GENERAL INFORMATION

Warranty

CLEAN Instruments warrants this product to be free from significant deviations in material and workmanship for a period of one year from the date of purchase. If repair is necessary and has not been the result of abuse or misuse within the warranty period, please return to CLEAN Instruments and amendment will be made without any charge. CLEAN Instruments Customer Service Center will determine if product problem is due to deviations or customer abuse. Out of warranty products will be repaired on a charge basis.

Return Of Malfunction Instruments

Authorization must be obtained from CLEAN Instruments Customer Service Center to issue a RIR number before returning items for any reason. When applying for authorization, please include date requiring the reason of return. Instruments must be carefully packed to prevent damage in shipment and insured against possible damage or loss. CLEAN Instruments will not be responsible for any damage resulting from careless or insufficient packing.

Warning: Damage as a result of inadequate packaging is the User / distributor's responsibility. Please follow the guidelines below before transporting.

Guidelines Or Returning Unit For Repair

Use the original packaging material if possible, when transporting back the unit for repair. Otherwise wrap it with bubble pack and use a corrugated box for better protection. Include a brief description of any faults suspected for the convenience of Customer Service Center, if possible. If there are any questions, feel free to contact our Customer Service Center or distributors.