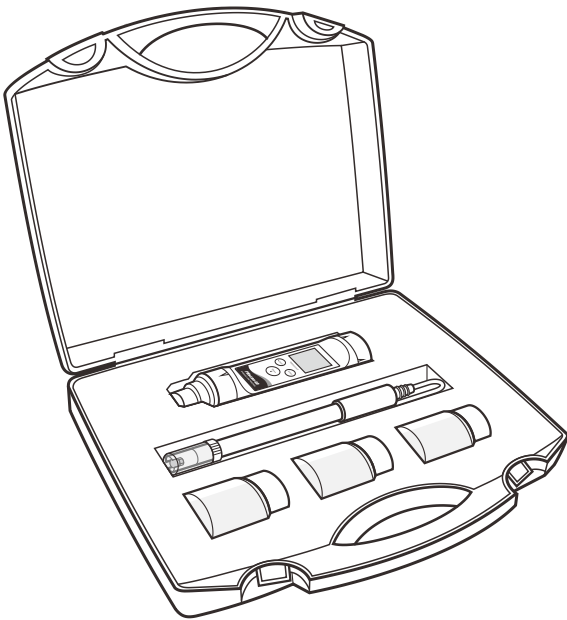


PHscan40 Pocket pH Tester
USER MANUAL

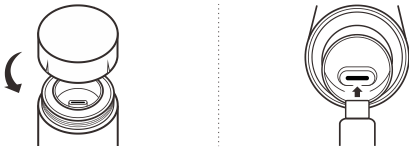


Overview

Thank you for selecting the PHscan40 pocket pH tester. This user manual provides a step-by-step guide to help you operate the tester, please carefully read the following instructions before use.

Battery Charging

1. Take out the tester and remove the battery compartment lid.
2. Insert the USB cable into the connector.



3. When the battery is fully charged, the tester will show **FULL** and the indicator light on the power adapter will automatically change color.

⚠ IMPORTANT NOTICE

To ensure safe use, only a DC 5V, 500 mA power adapter should be used for charging. Using an adapter with higher output may result in battery damage and safety risks.

The tester requires approximately two hours to fully charge. If charging is not completed after an extended period of time, stop immediately and inspect the tester to ensure safe operation.

Keypad

Key	Function
	<ul style="list-style-type: none"> • Switch the tester on or off • Lock or unlock measurement • Exit the calibration, settings and return to the pH measurement
	<ul style="list-style-type: none"> • Start calibration • Press and hold the key to enter the setup menu • Select an option
	<ul style="list-style-type: none"> • Confirm the calibration, settings or displayed option

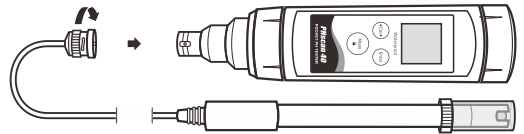
Display

Icon	Description
	When the battery voltage falls below the minimum power requirement, the icon will flash continuously and the display will show L .

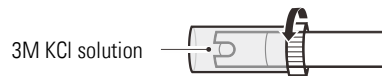
MEAS	Indicates that the tester is in the measurement mode
CAL	Indicates that the tester is in the calibration mode
SETUP	Indicates that the tester is in the setup mode
ATC	Indicates that the temperature compensation is enabled

Prior to Use

1. Take out the pH electrode from the carrying case. Insert the BNC connector into the connector socket on tester, rotate and push the connector clockwise until it locks.



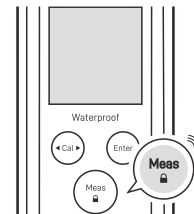
2. Remove the protective cap from the bottom of the electrode. If tiny air bubbles are present inside the pH-sensitive glass membrane, gently shake the electrode downward to remove air bubbles.



3. If the glass membrane has dried out, soak the electrode in 3M KCl or pH 4.01 buffer solution for about 30 minutes.

Switching the Tester On and Off

- Press and hold the **Meas** key for about 5 seconds to switch on the tester.
- Press and hold the **Meas** key to switch off the tester.



If you do not press any key within 8 minutes, the tester will switch off automatically to conserve energy.

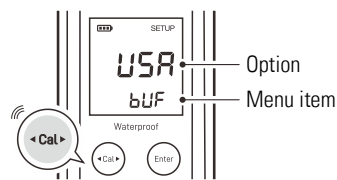
Setup Menu

The PHscan40 tester contains 7 menu items in the setup menu, the following table describes the functions of each option.

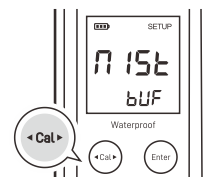
Menu Item	Option and Description
<i>bUF</i>	pH Buffer Group Set the pH buffer group for calibration and auto-recognition.
	<i>USA</i> USA (default)
	<i>NIST</i> NIST
<i>CARL</i>	Calibration Points Set the number of calibration points.
	<i>1</i> 1 point
	<i>2</i> 2 points (default)
<i>UNIT</i>	Measurement Unit Set the default temperature unit.
	<i>°C</i> Degrees Celsius (default)
	<i>°F</i> Degrees Fahrenheit
<i>SELT</i>	Temperature Compensation Refer to page 3.
	<i>°C</i> Range: 0 to 100°C
	<i>°F</i> Range: 0 to 210°F
<i>HOLD</i>	Auto-Hold If enabled, the tester will automatically sense and lock the measurement endpoint.
	<i>YES</i> Enable
	<i>NO</i> Disable (default)
<i>OFF</i>	Auto-Power Off If enabled, the tester will automatically switch off if no key is pressed within 8 minutes.
	<i>YES</i> Enable (default)
	<i>NO</i> Disable
<i>RESET</i>	Factory Reset If enabled, all of the calibration values and current settings will be deleted or reset to the factory defaults, the tester must be recalibrated.
	<i>YES</i> Enable
	<i>NO</i> Disable (default)

Setting the Default Option

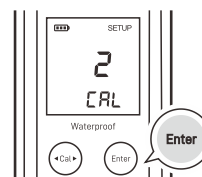
- In the measurement mode, press and hold the **Cal** key to enter the setup menu.



- If necessary, press the **Cal** key again to select an option.



- Press the **Enter** key, the tester saves the current option and moves to the next menu item.



- Repeat steps above until the tester returns to the measurement mode.



- During the setting process, if you do not need to modify the temperature, press the **Enter** key to skip the *°C/SELT* or *°F/SELT* option.
- To exit the setup menu, press the **Meas** key.

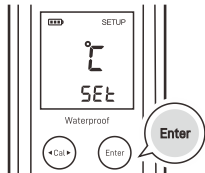
Temperature Compensation

In order to obtain accurate measurement results, we recommend that enabling the manual temperature compensation before calibration and measurement. The tester will automatically calculate the pH slope with inputted temperature and shows the temperature compensated readings.

1. Press and hold the **Cal** key to enter the setup menu.



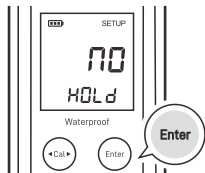
2. Press the **Enter** key until the display shows °C/SEt or °F/SEt.



3. Press the **Cal** key, the tester enters the temperature setting mode.
4. Press the **Cal** key again to set the temperature value.



5. Press the **Enter** key to save and press the **Meas** key to return to the measurement mode.



- During the setting process, press the **◀ Cal ▶** key once, the setting value will increase or decrease by 0.5. Press and hold the key, the setting value will increase or decrease by 1.
- To exit the temperature setting without saving changes, press the **Meas** key.

pH Calibration

The PHscan40 tester allows 1 to 3 points calibration, we recommend that you perform at least 2 points calibration for accurate pH measurement, the tester will automatically recognize and calibrate to following standard buffer values.

USA standards	pH 4.01, 7.00, 10.01
NIST standards	pH 4.01, 6.86, 9.18

Single point calibration should only be carried out with the pH 7.00 or 6.86, otherwise calibration will not be accepted.

For better accuracy, we recommend calibrating the tester regularly. DO NOT reuse the buffer solutions after calibration, contaminants in solution will affect the calibration and eventually the accuracy of the measurement.

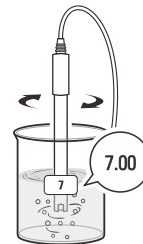
Single Point Calibration

Ensure that you have selected 1 point calibration in the setup menu.

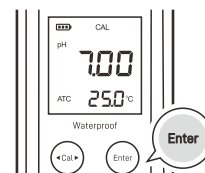
- 1.1 Press the **Cal** key, the tester shows pH 7.00/CAL 1.



- 1.2 Rinse the electrode with distilled water and place into the pH 7.00 buffer solution, stir the electrode gently to create a homogeneous solution.



- 1.3 Press the **Enter** key, the tester begins the calibration. When the reading has stabilized, the display will show **End**. Calibration is completed.



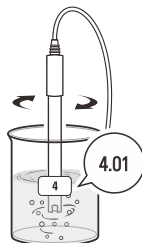
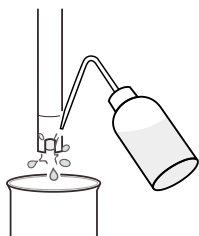
2 Points Calibration

Ensure that you have selected 2 points calibration in the setup menu.

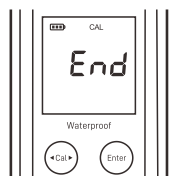
- Repeat steps 1.1 through 1.3 above. When the first calibration point is completed, the display will show ---- / CAL 2, the tester prompts you to continue with second point calibration.



- Rinse the electrode with distilled water and place into the pH 4.01 or 10.01 buffer solution, stir the electrode gently.



- Press the **Enter** key, the tester automatically recognizes the buffer solution and begins calibration. When the reading has stabilized, the display automatically shows the electrode slope (e.g., 99%) and *End*. Second point calibration is completed.



3 Points Calibration

- Repeat steps 1.1 through 1.3 above. When the first calibration point is completed, the display will show pH 4.01/CAL 2, the tester prompts you to continue with second point calibration.
- Rinse the electrode with distilled water and place into the pH 4.01 buffer solution, stir the electrode gently. Press the **Enter** key to begin the calibration. When the reading has stabilized, the display will automatically show the electrode slope and pH 10.01 /CAL 3.

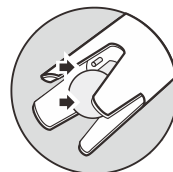
- Rinse the electrode with distilled water and place into the pH 10.01 buffer solution, stir the electrode gently. Press the **Enter** key to begin the calibration. When the reading has stabilized, the display will automatically show the electrode slope and *End*. Calibration is completed.



- During the calibration, if the display shows *Error* indicating that the measured mV value for the current calibration point deviates by more than 60 mV (approximately ± 1 pH) from the theoretical value of the pH buffer. The calibration will not be accepted. Please check the electrode and make sure the buffer solutions are fresh and uncontaminated.
- To exit the calibration without saving calibrated values, press the **Meas** key.

Measurement

- Rinse the electrode with distilled water. Place the electrode into the sample solution and stir gently. Note, the pH-sensitive glass membrane and liquid junction must be completely immersed into the solution.



- If the *HOLD* option is enabled in the setup menu, the tester will automatically lock the measurement endpoint and show *HOLD* icon. Press the **Meas** key to resume measuring. If the option is disabled, the tester will continuously measure and update the readings.



- Wait for the measurement to stabilize and record the reading.
- When all of the samples have been measured, rinse the electrode according to the instructions in the *Electrode Maintenance*.



During the measurement process, if the display shows ---- indicating the measurement exceeds the range.

Electrode Maintenance

Cleaning the Electrode

Since pH electrode is susceptible to contamination, thoroughly clean as necessary after each use.

- **General Cleaning**
Rinse the pH electrode with distilled water and soak in 3M KCl solution.
- **Salt Deposits**
Dissolve the deposit by immersing the electrode in warm tap water. Rinse the electrode with distilled water and soak in 3M KCl solution.
- **Oil or Grease**
Place the electrode in the detergent or ethanol solution for 15 minutes. Rinse the electrode with distilled water and soak in 3M KCl solution.
- **Protein**
 - (1) Add 1% pepsin to 0.1M HCl solution.
 - (2) Place the electrode in above solution for 15 minutes.
 - (3) Rinse the electrode with distilled water and soak in 3M KCl solution.
- **Clogged Liquid Junction**
 - (1) Heat a diluted KCl solution to 60°C (140°F).
 - (2) Place the electrode into the heated solution for 10 minutes.
 - (3) Allow the electrode to cool in unheated KCl solution.

Reactivating the Electrode

If the pH-sensitive membrane has dried out, the electrode response will become sluggish. Immerse the electrode in a pH 4.01 buffer solution for about 30 minutes to rehydrate. If this fails, the electrode requires activation.

1. Soak the electrode in 0.1M HCl for 10 minutes.
2. Remove and rinse with distilled water, then place into 0.1M NaOH for 10 minutes.
3. Remove and rinse again, and soak in 3M KCl solution for at least 6 hours.

If these steps fail to restore the response, replace the electrode.

Storing the Electrode

For best results, always soak the electrode in 3M KCl solution. If above solution is not available, use a pH 4.01 buffer solution.



DO NOT store the electrode in distilled or deionized water that will deplete the hydration layer of the pH-sensitive membrane and render the electrode useless.

If you do not use the electrode for a period longer than 1 month, store the electrode in storage solution.

Appendix

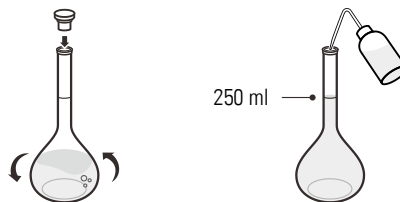
Preparation of pH Buffer Solutions

The PHscan40 tester is packaged with the pH 4.01/7.00/10.01 buffer sachets required for calibration.

1. Half fill a 250 ml volumetric flask with distilled water and add the pH 7.00 buffer reagent.



2. Swirl the volumetric flask gently to dissolve the reagent and fill to the mark with distilled water.



3. Cap and upend the volumetric flask several times to mix solution.



- Preparation of pH 4.01 and 10.01 buffer solutions are the same as above.
- Prepared buffer solution should be stored in hermetically sealed glass container and avoid direct sunlight.

Preparation of Electrode Storage Solution

Dissolve 24.6 grams of analytical grade KCl reagent in 100 ml distilled water.

Optional Accessories

Electrode Cleaning Solutions

Order Code	Description
PHCS-A	For removing acidic deposits, 480 ml
PHCS-B	For removing bacterial contaminants, 480 ml
PHCS-G	For removing oil and grease, 480 ml
PHCS-O	For removing organic contaminants, 480 ml
PHCS-P	For removing protein residues, 480 ml

Electrode Storage Solution

Order Code	Description
PHCS-ES	For maintaining pH electrodes, 480 ml

pH Buffer Solutions

Order Code	Description
PHCS-USA	pH 4.01, 7.00, 10.01 buffer solutions, 480 ml
PHCS-NIST	pH 4.01, 6.86, 9.18 buffer solutions, 480 ml

pH Electrodes

Order Code	Description
E201-BNC	For measuring non-viscous, non-corrosive solutions
E202-BNC	For measuring semi-solid, gel and viscous samples
E205-BNC	For piercing and measuring soft solids
E206-BNC	For measuring solutions in test tubes
E207-BNC	For measuring non-aqueous solutions and organic solvents
E208-BNC	For measuring strong acid and strong alkaline solutions.
E209-BNC	For measuring solutions containing hydrofluoric acid (concentration < 0.1 mol/L)
E210-BNC	For measuring high temperature solutions (< 130°C)
E211-BNC	For measuring pure water
P11	For measuring mildly corrosive solutions
P16	For measuring Tris-buffered solutions

Display	LCD, 21 × 21 mm (0.82 × 0.82 in.)
Power Supply	3.7V rechargeable battery
Auto-Off	8 minutes after last key pressed
Dimensions	175 (L) × 40 (Ø) mm (6.89 × 1.57 in.)
Weight	120g (4.2 oz.)

Tester Specifications

Model	PHscan40
Range	-1.00 to 15.00 pH
Resolution	0.01 pH
Accuracy	±0.01 pH
Calibration Point	1 to 3 points
pH Buffer Option	USA or NIST
Automatic Buffer Recognition	pH 4.01, 7.00, 10.01 or 4.01, 6.86, 9.18
Temperature Compensation	0 to 100°C (32 to 210°F), manual
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	0 to 60°C (32 to 140°F)
Relative Humidity	< 80% (non-condensing)
IP Rating	IP65

Disposal

This product is required to comply with the European Union's Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC and may not be disposed of in domestic waste. Please dispose of product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.



Warranty

The warranty period for tester is one year from the date of shipment. Above warranty does not cover the electrode and pH buffer solutions.

Out of warranty products will be repaired on a charged basis.

The warranty on your tester shall not apply to defects resulting from:

- Improper or inadequate maintenance by customer
- Unauthorized modification or misuse
- Operation outside of the environment specifications of the products

For more information, please contact the supplier.



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