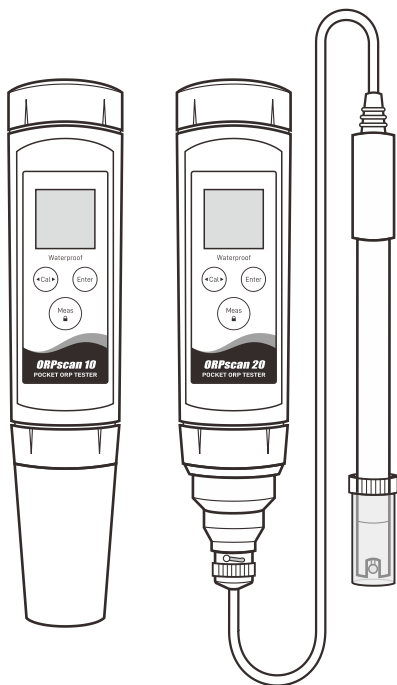


ORPscan10/20 Pocket ORP Tester

USER MANUAL



Overview

Thank you for selecting the ORPscan series pocket ORP 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 ORP 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

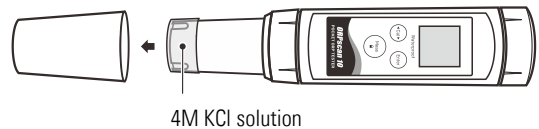
Icon	Description
	When the battery voltage falls below the minimum power requirement, the icon will flash continuously and the display will show $\text{L} \square$.

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

Prior to Use

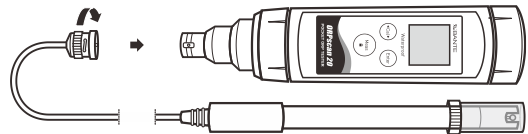
ORPscan10

Remove the protective cap (and translucent cover) from the bottom of the tester. If some salt crystals deposited on the electrode, rinse with tap water to clean these deposits. If the platinum sensor has dried out, soak the electrode in 4M KCl solution for about 30 minutes.



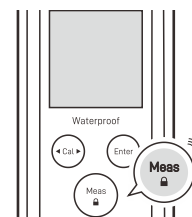
ORPscan20

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



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.

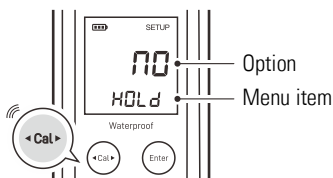
Setup Menu

The ORPscan10/20 tester contains 3 menu items in the setup menu, the following table describes the functions of each option.

Menu Item	Option and Description
<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.
	<i>YES</i> Enable
	<i>NO</i> Disable (default)

Setting the Default Option

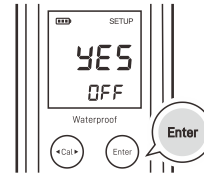
- In the measurement mode, press and hold the **Cal** key to enter the setup menu.



- 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.



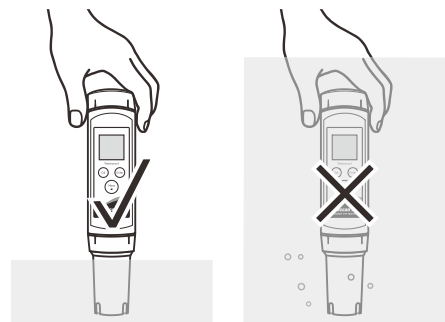
- Repeat steps above until the tester returns to the measurement mode.



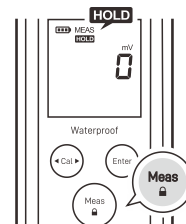
To exit the setup menu, press the **Meas** key.

Measurement

Rinse the electrode with distilled water, place the electrode into the sample solution and stir gently. Note, DO NOT completely immerse the tester in water. Wait for the measurement to stabilize and record the reading.



- The platinum sensor may give unstable readings in solutions that contain chromous, vanadous and titanous ions or other ions that are stronger reducing agents than hydrogen or platinum.
- If the display shows ---- indicating the measurement exceeds the range, remove the tester from the sample immediately.
- 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.



Relative mV Calibration

The ORPscan10/20 tester allows 1 point calibration, but calibration is not necessary unless exact readout agreement with a work standard and at a specific ORP value is needed.

1. Rinse the electrode with distilled water and place into the standard solution. Stir the tester (or electrode) gently and wait until the measurement is stable.



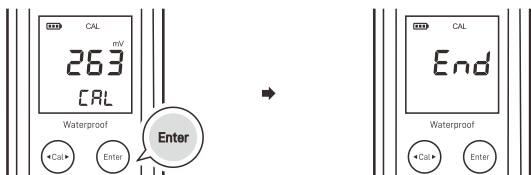
2. Press the **Cal** key, the display shows 000/CAL.



3. Press the **Cal** key again to modify the calibration value, press the **Enter** key to confirm and move to the next digit. When the setting is completed, make sure that the displayed value matches your calibration standard.



4. Press the **Enter** key, the tester begins the calibration. When the reading has stabilized, the display will show *End*.



- After the calibration, the measurement unit "mV" will automatically convert to "R.mV" (relative millivolt). If you want to resume the mV measurement, reset the tester (refer to the **Setup Menu** section).
- To exit the calibration without saving calibrated value, press the **Meas** key.

Electrode Maintenance

- Rinse the electrode thoroughly with distilled water after use.
- In the corrosive chemicals, viscous solutions and solutions with heavy metals or proteins, take readings quickly and rinse electrode immediately.
- If you do not use the tester for a period longer than 1 month, store the electrode in 4M KCl solution or electrode storage solution.

Appendix

Preparation of ORP Standard Solutions

Quinhydrone solution A:

Dissolve 3 grams of quinhydrone reagent in 500 ml of the pH 4.01 buffer solution, stir the solution for about 10 minutes. Undissolved quinhydrone reagent must be present. If necessary, add the reagent.

Temperature	Quinhydrone in pH 7.00 (± 10 mV)
20°C (68°F)	94 mV
25°C (77°F)	87 mV
30°C (86°F)	80 mV

Quinhydrone solution B:

Dissolve 3 grams of quinhydrone reagent in 500 ml of the pH 7.00 buffer solution, stir the solution for about 10 minutes. Undissolved quinhydrone reagent must be present. If necessary, add the reagent.

Temperature	Quinhydrone in pH 4.01 (± 10 mV)
20°C (68°F)	268 mV
25°C (77°F)	263 mV
30°C (86°F)	260 mV



Due to the quinhydrone solution is susceptible to air oxidation in storage, make sure to prepare the fresh solution before use.






Preparation of Electrode Storage Solution

Dissolve 29.82 grams of analytical grade KCl reagent in 100 ml distilled water.

Optional Accessories

Order Code	Description
ORP-CS	ORP standard solution, 228 mV (@25°C) For checking or calibrating ORP electrode, 100 ml
PHCS-ES	Electrode storage solution, 480 ml

ORP Electrodes

	Order Code and Description
	E-ORPscan-S <ul style="list-style-type: none"> • Special-purpose ORP electrode • For measuring general water samples
	E-ORPscan-BNC <ul style="list-style-type: none"> • BNC connector • For connecting a general-purpose ORP electrode
	E501 <ul style="list-style-type: none"> • General-purpose ORP electrode, platinum pin, epoxy body, 12 mm (0.47 in.) diameter • For measuring strong redox potential
	E502 <ul style="list-style-type: none"> • General-purpose ORP electrode, platinum ring, epoxy body, 12 mm (0.47 in.) diameter • For measuring weak redox potential
	E504 <ul style="list-style-type: none"> • General-purpose ORP electrode, platinum ring, glass body, 12 mm (0.47 in.) diameter • For measuring high temperature samples (< 80°C/176°F)

Model	ORPscan20
mV Range	-999 to 999 mV
Resolution	1 mV
Accuracy	±2 mV
Measurement Mode	mV/relative mV
Calibration Point	1 point
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
Connector	BNC
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	ORPscan10
Range	-999 to 999 mV
Resolution	1 mV
Accuracy	±2 mV
Measurement Mode	mV/relative mV
Calibration Point	1 point
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
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	185 (L) × 40 (Ø) mm (7.28 × 1.57 in.)
Weight	120g (4.2 oz.)

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 standard solution.

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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