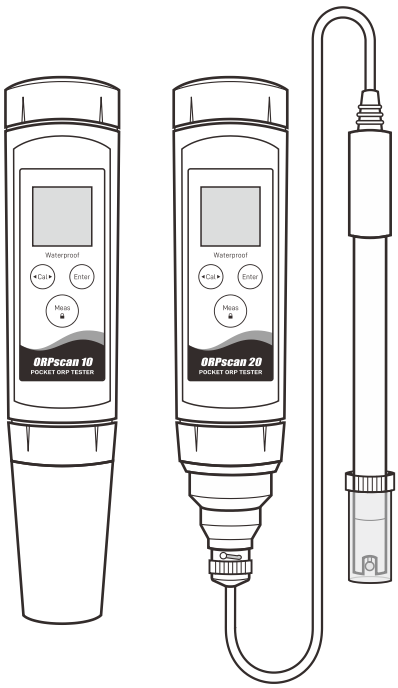
BANTE instruments

ORPscan10/20 Pocket ORP Tester

USER MANUAL



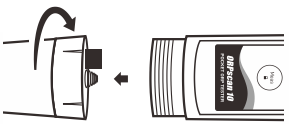
Bante Instruments Inc.

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.

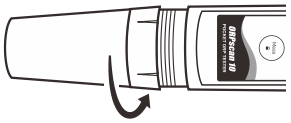
Installing the Batteries

1. Twist the electrode collar counter clockwise, pull the electrode (or BNC connector) away from the tester.



2. Insert two AAA alkaline batteries into the battery compartment, note polarity.

3. Push the electrode (or BNC connector) into the tester and twist the electrode collar clockwise until tight.



Keypad

Key	Function
Meas	• Switch the tester on or off • Lock or unlock measurement • Exit the calibration, settings and return to the ORP measurement
◂ Cal ▸	• Start calibration • Press and hold the key to enter the setup menu • Select an option
Enter	• Confirm the calibration, settings or displayed option

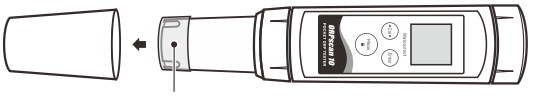
Display

Icon	Description
	When the battery voltage falls below the minimum power requirements, the icon automatically disappears
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

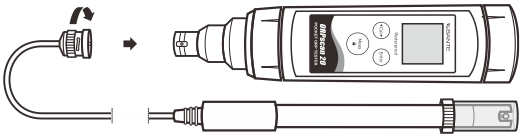
Remove the protective cap (and translucent cover) from the bottom of the tester. If some salt crystals deposited on the electrode, rinse with tap water to clean these deposits. If the platinum sensor has dried out, soak the electrode in 4M KCl solution for about 30 minutes.



4M KCl solution

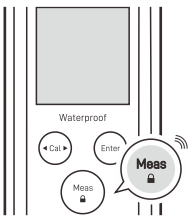
ORPscan20

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.

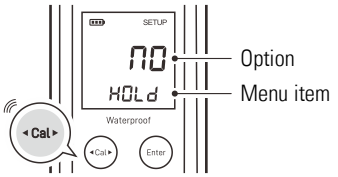
Setup Menu

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	
HOLd	**Auto-Hold** If enabled, the tester will automatically sense and lock the measurement endpoint.	
	YES	Enable
	nO	Disable (default)
OFF	**Auto-Power Off** If enabled, the tester will automatically switch off if no key is pressed within 8 minutes.	
	YES	Enable (default)
	nO	Disable
rSt	**Factory Reset** If enabled, all of the calibration values and current settings will be deleted or reset to the factory defaults.	
	YES	Enable
	nO	Disable (default)

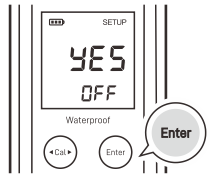
Setting the Default Option

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



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

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

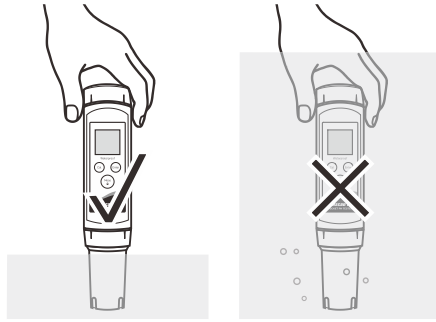


4. Repeat steps above until the tester returns to the measurement mode.

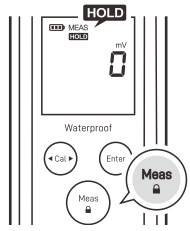
To exit the setup menu, press the **Meas** key.

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.



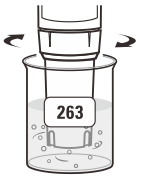
- The platinum sensor may give unstable readings in solutions that contain chromous, vanadous and titanous ions or other ions that are stronger reducing agents than hydrogen or platinum.
- If the display shows ---- indicating the measurement exceeds the range, remove the tester from the sample immediately.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



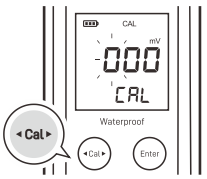
Relative mV Calibration

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.

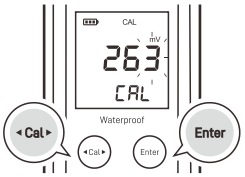
1. Rinse the electrode with distilled water and place into the standard solution. Stir the tester (or electrode) gently and wait until the measurement is stable.



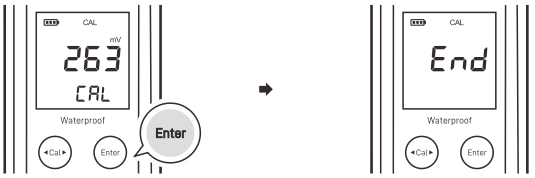
2. Press the **Cal** key, the display shows 000/CAL.



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. Add pH 4.01 standard buffer and adjust solution to pH 4.

Optional Accessories

Solutions

Order Code	Description
PHCS-ES	Electrode storage solution, 480 ml

ORP Electrodes

	Order Code and Description
	E-ORPscan-S • General purpose ORP electrode, platinum sheet • For measuring the general water samples
	E-ORPscan-BNC • BNC connector for ORPscan series testers
	501 • General purpose ORP electrode, platinum pin, epoxy body, 12 mm (0.47 in.) diameter • For measuring the general water samples
	504 • General purpose ORP electrode, platinum ring, glass body, 12 mm (0.47 in.) diameter • For measuring the high temperature samples (< 100°C/212°F)

Tester Specifications

Model	ORPscan10
mV Range	±999 mV
Relative mV Range	±999 mV
Resolution	1 mV
Accuracy	±2 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	IP54
Connector	---
Display	LCD, 21 × 21 mm (0.82 × 0.82 in.)
Power Requirements	2 × 1.5V AAA alkaline batteries
Auto-Off	8 minutes after last key pressed
Dimensions	185 (L) × 40 (Ø) mm (7.28 × 1.57 in.)
Weight	100 g (3.5 oz.)

Model	ORPscan20
mV Range	±999 mV
Relative mV Range	±999 mV
Resolution	1 mV
Accuracy	±2 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	IP54
Connector	BNC
Display	LCD, 21 × 21 mm (0.82 × 0.82 in.)
Power Requirements	2 × 1.5V AAA alkaline batteries
Auto-Off	8 minutes after last key pressed
Dimensions	175 (L) × 40 (Ø) mm (6.89 × 1.57 in.)
Weight	100 g (3.5 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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