PCE Instruments PCE-WO2 10 Oxygen Meter User Manual

Contents

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Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

Technical specifications

Measuring range oxygen content	0.0…. 20.0 mg/l
Resolution oxygen content	0.1 mg/l
Measuring accuracy oxygen content	±0.5 mg/l
Measuring range oxygen saturation	0.0 … 200.0 %
Resolution oxygen saturation	0.1 %
Measuring accuracy of oxygen saturation	±2.0 %
Temperature compensation	0 … +40 °C / 32 … 104 °F, automatic
Air pressure correction	60.0 … 112.5 kPa, 450 …850 mmHg
Salinity correction	0 … 35 g/l
Sensor type	polarography
Environmental conditions	0 … +60 °C / 32 … 140 °F, max. 80 % r.H.
Power supply	2 x 1.5 AAA batteries
Dimension (length x radius)	175 x 40 mm / 6.8 x 1.5″
Weight	100 g / 3.5 oz

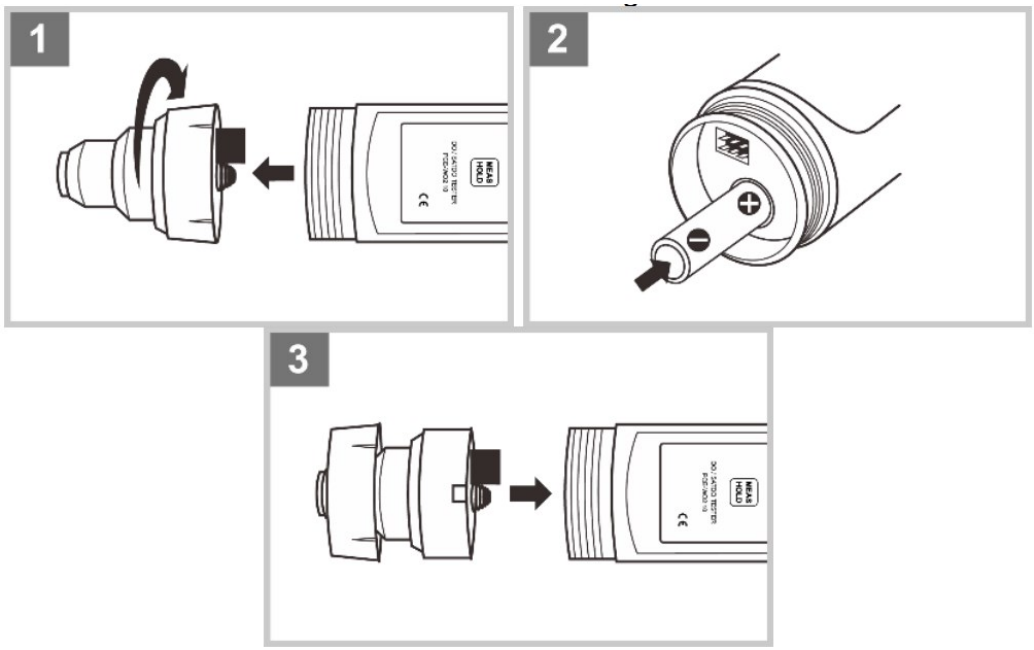
Delivery Scope

- 1 x Dissolved Oxygen Meter PCE-WO2 10
- 1 x Oxygen probe with measuring cable
- 2 x Membrane
- 1 x Electrolyte solution (30ml)
- 2 x 1.5 V AAA batteries
- 1 x User manual
- 1 x Carrying case

Installing the Batteries

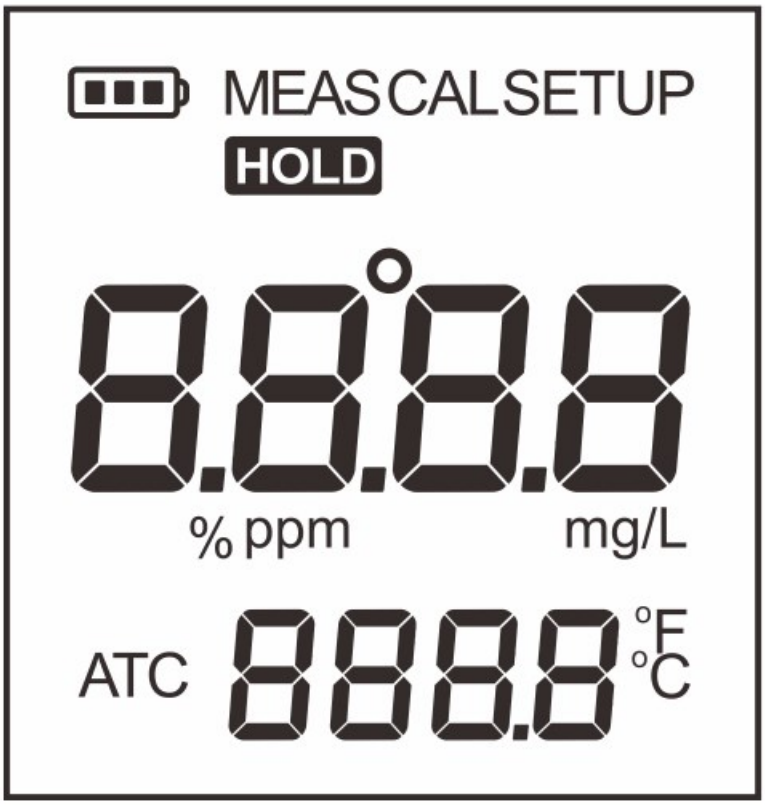
- Twist the electrode collar counter clockwise, pull the 6-pin connector away from the tester.
- Insert two AAA batteries into the battery compartment, note polarity.
- Align the slot on connector, gently push the connector into the tester.

- Twist the electrode collar clockwise until it is tight.



Display

PCE-WO2 10 pocket dissolved oxygen tester is equipped with an easy-to-read LCD display that used to show the measured values and mode icons. The following table describes the function of each icon.

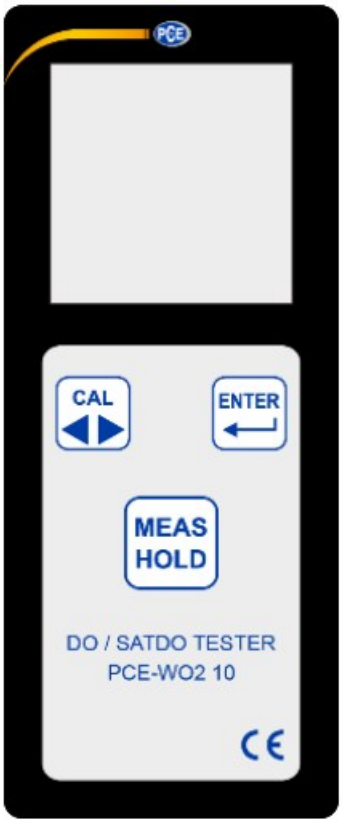


INDEX:

ICON	DESCRIPTION
MEAS	Indicates the tester is in the measurement mode.
CAL	Indicates the tester is in the calibration mode.
SETUP	Indicates the tester is in the setting mode.
HOLD	Indicates the measuring value has been locked.
ATC	Indicates the temperature compensation is enabled.
	When the battery is depleted, the icon will disappear.

Keypad

The tester has a succinct membrane keypad, names and symbols describe each function key controls.

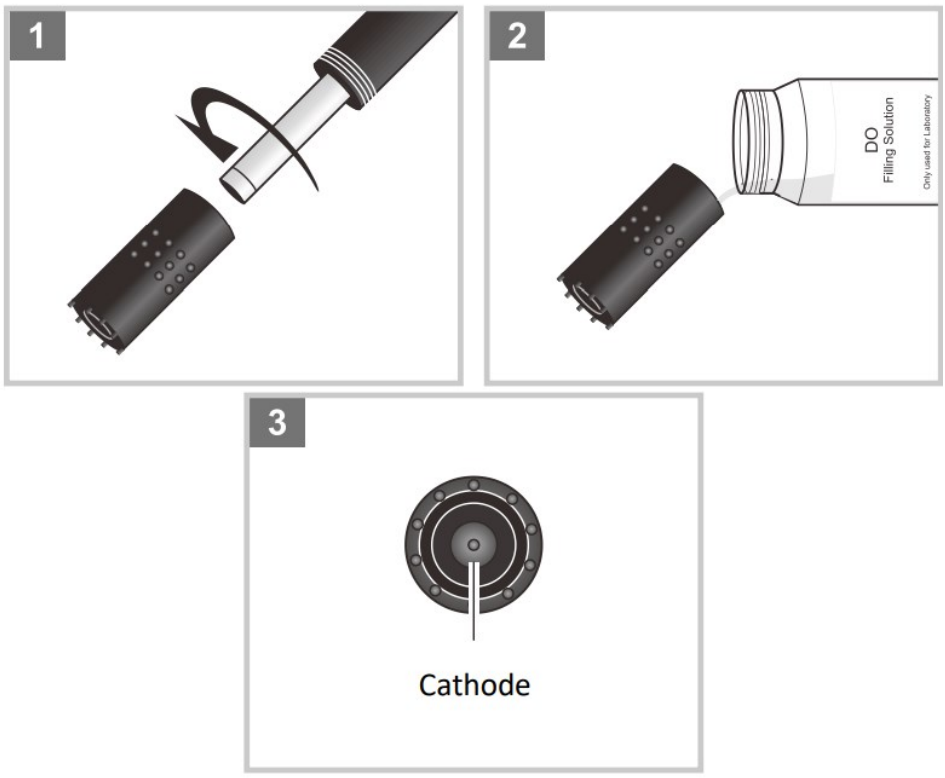


INDEX

KEY	FUNCTION
MEAS/HOLD	• Switches the tester ON/OFF. • Locks the measured value, press the key again to resume measuring. • Exits the calibration or setting and returns to the measurement mode.
CAL	• Press the key to start the calibration. • Press and hold the key to enter the setup menu. • In the setting mode, press the key to select the default option.
ENTER	• Confirms the calibration or selected option.

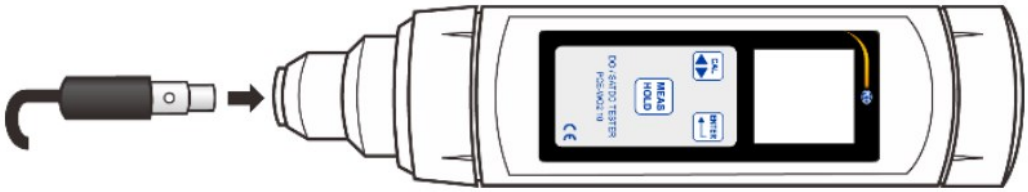
Filling the Electrolyte Solution

- Take out the dissolved oxygen probe and electrolyte solution from the packaging. Unscrew the membrane cap.
- Fill the membrane cap halfway with electrolyte solution.
- Screw the membrane cap onto the probe, excess electrolyte solution will drain out.
- Be sure the cathode of probe makes contact with membrane cap, the electrolyte solution in membrane cap should be without an air bubble.



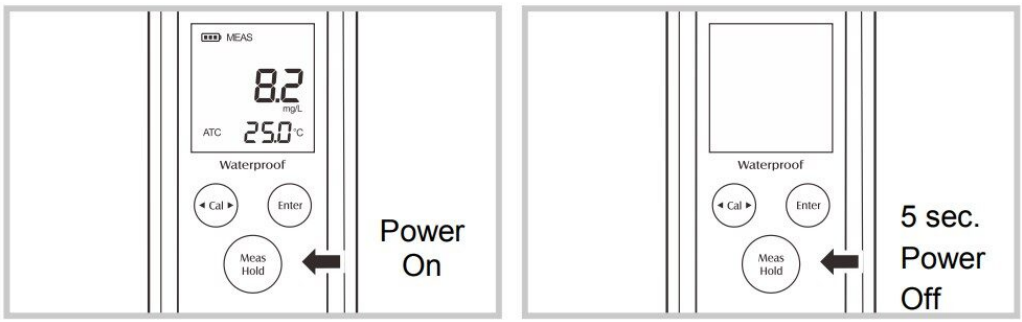
Connecting the Dissolved Oxygen Probe

Insert the 6-pin connector of probe into the connector socket on the tester. After the connection is completed, DO NOT pull on the cable. Always make sure that the connector is clean and dry.



Switching the Tester On and Off

- Press the Meas key to switch on the tester, the display shows measured values.
- Press and hold the Meas key for 5 seconds, the tester will switch off.
- To enable the Auto-Power Off function, please refer to chapter SETUP MENU.



Prior to Use

Switch on the tester 10 to 15 minutes and wait for the probe to polarize.\

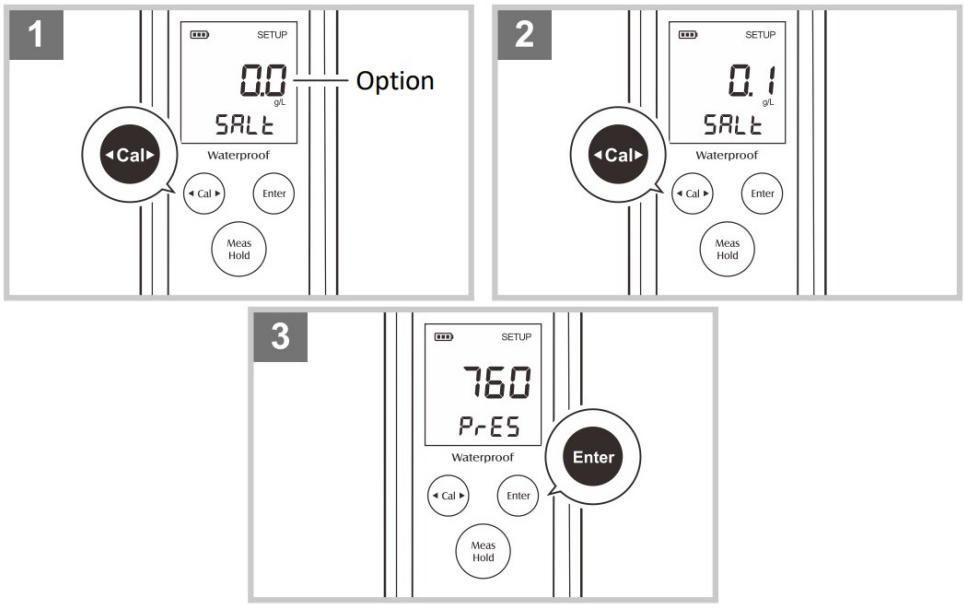
Setup Menu

PCE-WO2 10 pocket dissolved oxygen tester contains an integrated setup menu that is used to customize the displayed option to meet measurement requirements.

MENU	DESCRIPTION	OPTIONS		DEFAULT
SALt	Set the salinity coefficient of sample.	0.0	Range: 0~35ppt	0.0ppt
PrES	Set the barometric pressure coefficient.	760	Range: 450~850mmHg	760mmHg
CAL	Set the number of calibration points.	1	1 point	1 point
		2	2 points	
UNIt	Set the default measurement unit.	mg/L	Concentration Unit	mg/L, °C
		ppm		
		%	% saturation	
		°C	Degrees Celsius	
		°F	Degrees Fahrenheit	
°C	Calibrate the temperature.	CAL	—	—
HOLd	When the option is enabled, the tester will automatically sense a stable reading and lock the measurements.	YES	Enable	Disable
		NO	Disable	
OFF	When the option is enabled, the tester will automatically switch off if no key is pressed within 8 minutes.	YES	Enable	Disable
		NO	Disable	
rSt	Reset the tester to factory default settings.	YES	Enable	Disable
		NO	Disable	

Setting the default option

- Press and hold the Cal key for 3 seconds to enter the setup menu, the tester shows a menu item and default option.
- If necessary, press the Cal key again to select the desired option.
- Press the Enter key to confirm, the tester moves to the next menu item.
- Repeat the steps above until the tester returns to the measurement mode. Setting is completed.



- During the setting process, press the Meas key, the tester will exit the setup menu and return to the measurement mode.
- If you do not want to calibrate the temperature, press the Enter key to skip the °C/CAL or °F/CAL option.
- The Reset function will restore the tester back to factory default settings. If enabled, all of the calibration data and selected parameters will be lost or reset, the tester must be recalibrated.

Setting the salinity coefficient

In order to get an accurate reading, the salinity of the sample should be specified which is done with the help of a coefficient.

Salt dissolved in water will influences oxygen content of water. If your sample contains high levels of salinity, ensure that setting an applicable salinity coefficient prior to measurement.

- In the measurement mode, press and hold the Cal key for 3 seconds to enter the setup menu, the display shows (salinity coefficient) option.
- Press the Cal key again to set the value.
- Press the Enter key to confirm, the display shows the next menu item.
- Press the Meas key to exit the setting and return to the measurement mode.

Setting the ambient pressure

To ensure an accurate reading, the ambient pressure must be set in the unit mmHg.
The following table will help to convert your ambient pressure into the required unit mmHg on the basis of your current height.

ALTITUDE (m)	kPa	mmHg	ALTITUDE (m)	kPa	mmHg
0	101.3	760	1600	82.9	622
100	100.1	750	1700	81.9	614
200	98.8	741	1800	80.9	607
300	97.6	732	1900	79.9	599
400	96.4	723	2000	78.9	592
500	95.2	714	2100	77.9	584
600	94.0	705	2200	76.9	577
700	92.8	696	2300	76.0	570
800	91.7	688	2400	75.0	563
900	90.5	679	2500	74.1	556
1000	89.4	671	2600	73.2	549
1100	88.3	662	2700	72.3	542
1200	87.2	654	2800	71.4	536
1300	86.1	646	2900	70.5	529
1400	85.0	638	3000	69.6	522
1500	84.0	630	3100	68.7	515

- In the measurement mode, press and hold the Cal key for 3 seconds to enter the setup menu, the display shows .
- Press the Enter key, the display shows (Barometric Pressure Coefficient) option.
- Press the Cal key to set the value.
- Press the Enter key to confirm, the display shows the next menu item.
- Press the Meas key to exit the setting and return to the measurement mode

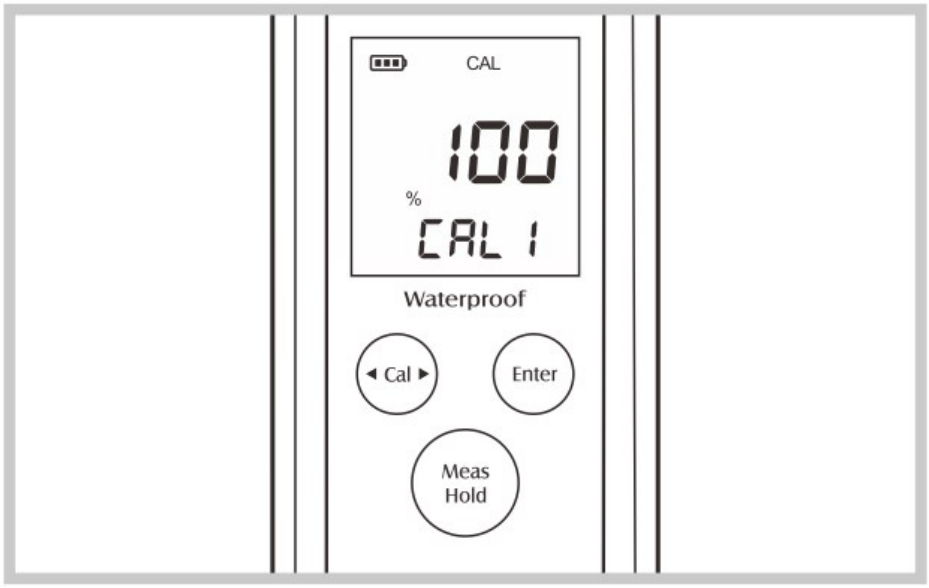
DO Calibration in % Saturation Mode

PCE-WO2 10 pocket dissolved oxygen tester can be calibrated quickly in air. In the percentage saturation mode, the tester is able to perform either 1 or 2 points calibration. For single point calibration, we recommend that you perform 100% saturation calibration in the air-saturated water. If the 2 points calibration is selected, the zero oxygen solution needs to be

Single point calibration – 100% saturation

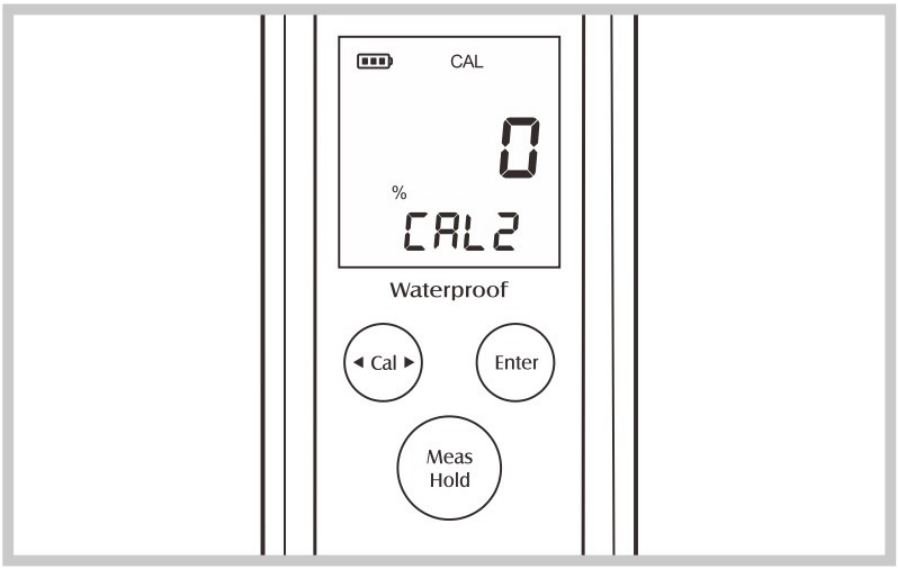
- Make sure that you have selected 1 point calibration in the setup menu.
- Press the Cal key, the tester shows “100% / CAL1”.
- Hold the dissolved oxygen probe in the air at 100% relative humidity or place the probe into the air-saturated water for 15 minutes.
- Press the Enter key. Wait for the reading to stabilize, the tester automatically shows END. Single point

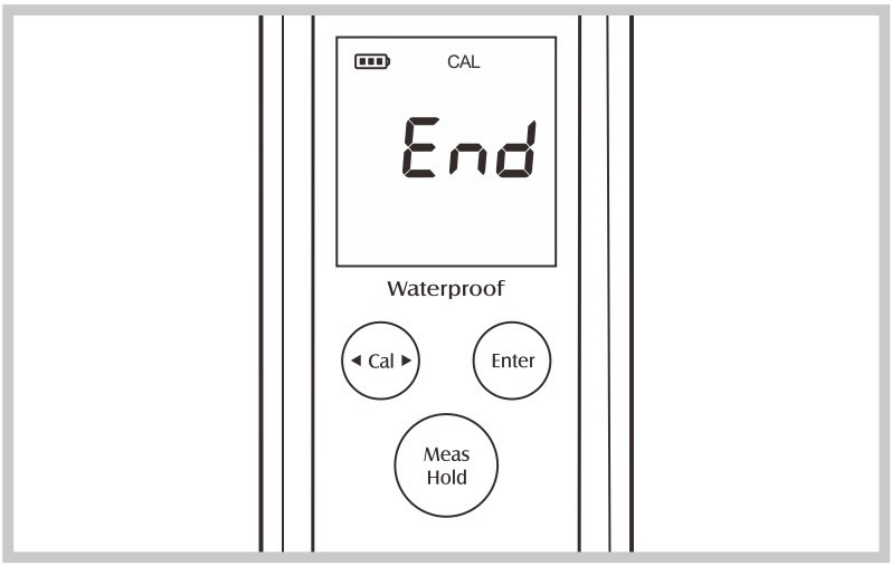
calibration is completed.



2 points calibration

- Make sure that you have selected 2 points calibration in the setup menu.
- Repeat the steps 1.2 to 1.4 above. When the first calibration point is completed, the display will show “0% / CAL2”. The tester prompts you to continue with second point calibration.
- Immerse the dissolved oxygen probe into the zero oxygen solution, stir the probe gently.
- Press the Enter key to confirm. Wait for the reading to stabilize (this can often take more than 10 minutes), the display automatically shows END. The tester returns to the measurement mode. Calibration is completed.



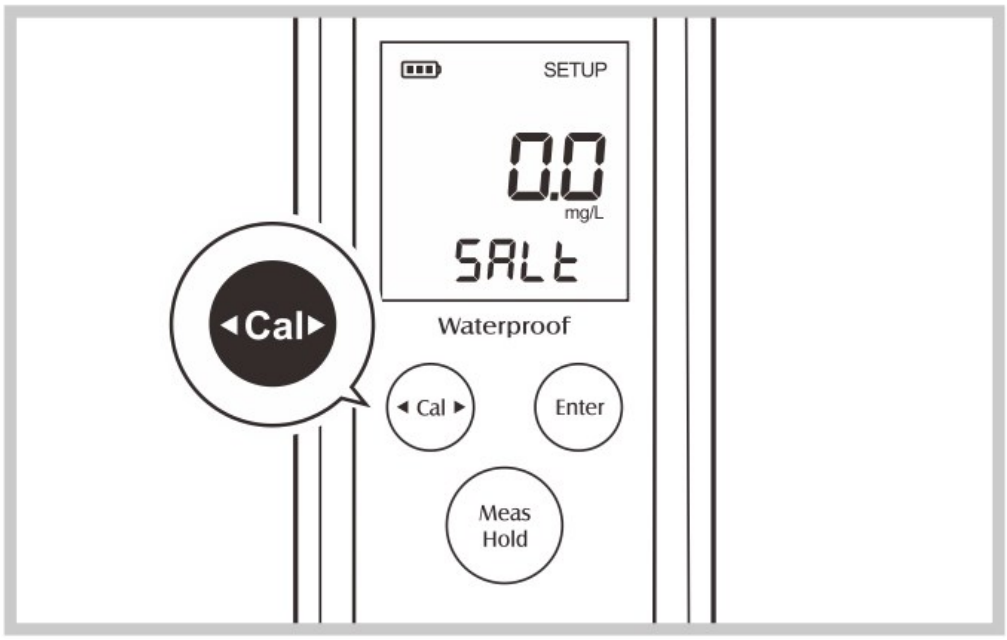


Performing a percentage saturation calibration will simultaneously calibrate the corresponding mg/L (or ppm) concentration value.

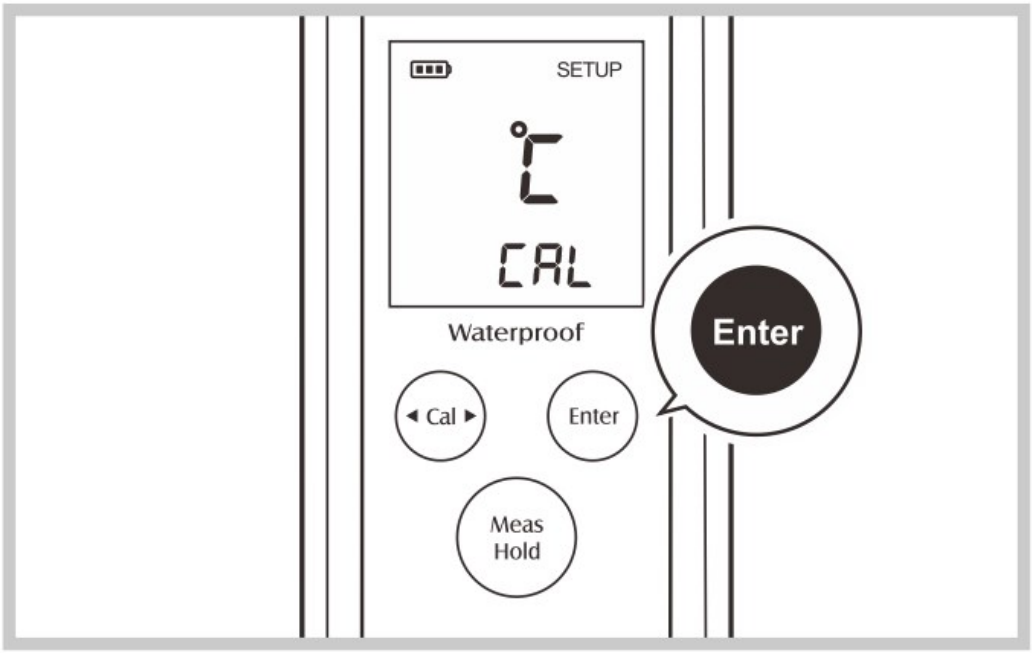
Temperature Calibration

During the measurement process, if the temperature reading displayed differs from that of an accurate thermometer, the tester needs to be calibrated.

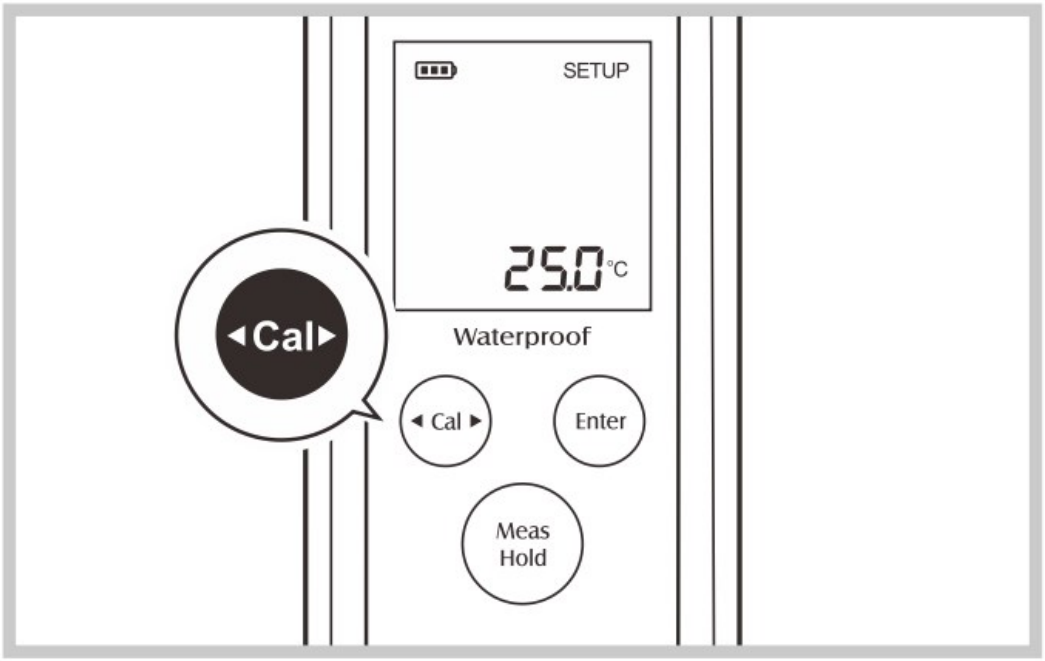
- Press and hold the Cal key for 3 seconds to enter the setup menu.



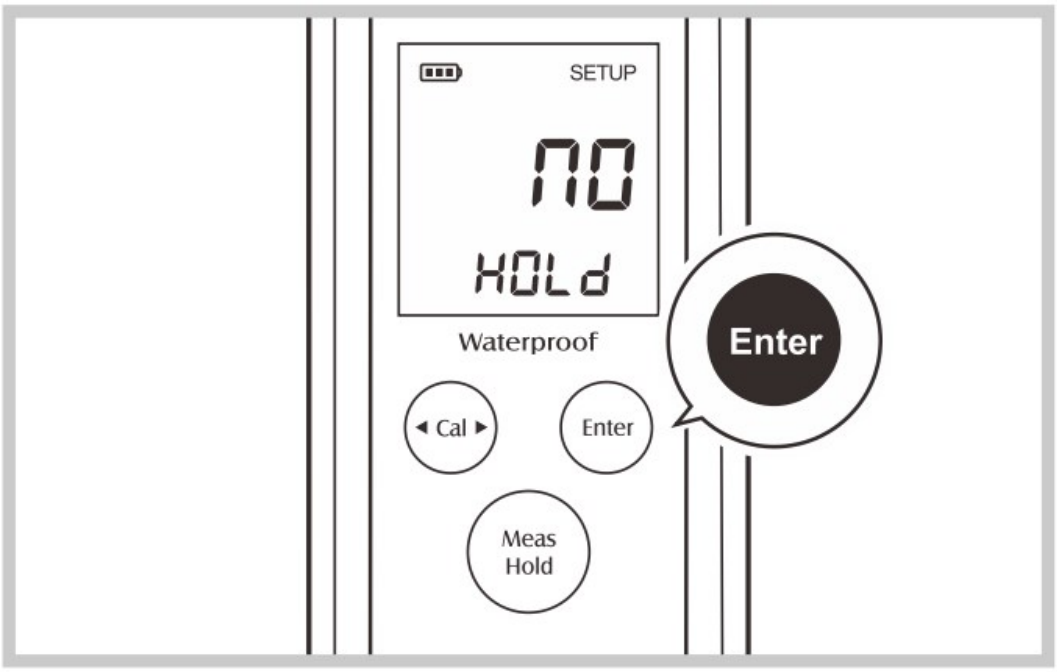
- Press the Enter key until the tester shows °C/CAL or °F/CAL.



- Press the Cal key to enter the temperature calibration mode.
- Press the Cal key again to modify the temperature value (Resolution: 0.5°C).



- Press the Enter key to confirm, the tester shows the next menu item.
- Press the Meas key to return to the measurement mode. Calibration is completed.



Dissolved Oxygen Measurement

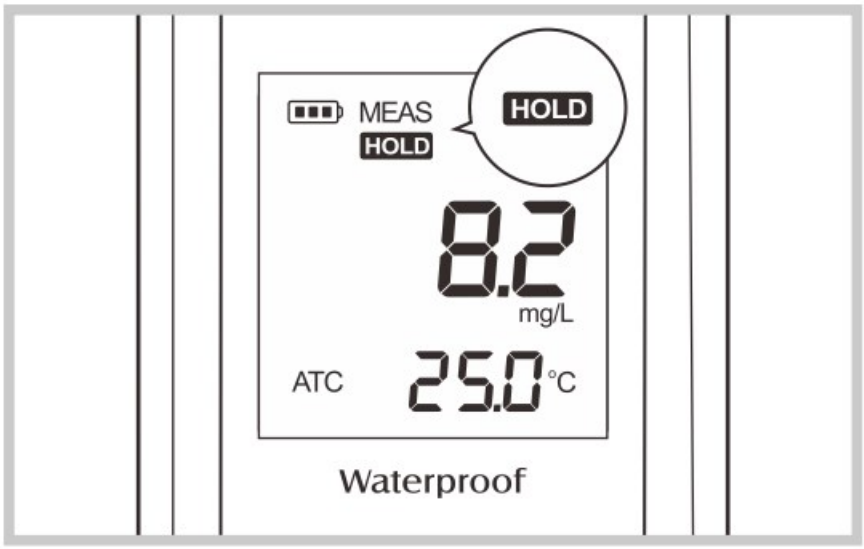
PCE-WO2 10 pocket dissolved oxygen tester is suitable for measuring the water, wastewater, brine and other liquids. If the sample is belong to the seawater or other water containing large amounts of salt, please setting the salinity coefficient before measurement. Some gas and steam such as chloride, sulfur dioxide, sulfureted hydrogen, ammonium, carbon dioxide and iodin can permeate the membrane via diffusion. So their existence will influence the measurement of dissolved oxygen. If the sample contains the solvent, grease, sulfide and alga, the membrane on the probe will be blocked, damaged or eroded.

- Connect the dissolved oxygen probe to tester and wait for 15 minutes to polarize the probe.
- If necessary, to set the barometric pressure and salinity coefficient in the setup menu (Refer to page 5).
- Immerse the probe in the sample solution, make sure the temperature sensor on the probe is fully immersed.
- Stir the probe gently. Record the measured value when the reading is stable.

Auto-Hold

PCE-WO2 10 pocket dissolved oxygen tester contains an Auto-Hold function. If enabled, the tester will

automatically sense a stable reading and lock the measurements. The icon appears on the display. If disabled, press the Hold key, the tester will immediately lock the displayed value. Press the Meas key to resume measuring



Electrode Care and Maintenance

- Always keep the membrane of the dissolved oxygen probe is wet or moist.
- If you do not use the probe for long periods, please screw off membrane cap and rinse the cathode, anode and membrane with deionized water, then soak up residual water on them with filter paper. Install the probe again.

Troubleshooting

LCD DISPLAY	CAUSE	CORRECTIVE ACTION
- - -	DO probe does not connect to tes ter	Check the connector of probe.
	Measured value is out of range	Check the DO membrane whether clogged, dirty or broken.
Err	Electrolyte solution is depleted	Refilling electrolyte solution.
	Zero oxygen solution iscontami nated	Replace the calibration solution.

Addendum: Preparation of the Zero Oxygen Solution

Dissolve 500mg of sodium sulfate (Na_2SO_3) reagent and a small amount of cobalt (II) chloride hexahydrate ($CoCl_2 \cdot 6H_2O$) in the 250mL distilled water, mix the solution until the reagent is completely dissolved.

Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European

Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either reuse them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.

PCE Instruments contact information

Germany
PCE Deutschland GmbH
Im Langel 4
D-59872 Meschede
Deutschland
Tel.: +49 (0) 2903 976 99 0
Fax: +49 (0) 2903 976 9
info@pce-instruments.com
www.pce-instruments.com/deutsch

Documents / Resources

	PCE Instruments PCE-WO2 10 Oxygen Meter [pdf] User Manual PCE-WO2 10 Oxygen Meter, PCE-WO2, 10 Oxygen Meter, Oxygen Meter, Meter

References

- France.fr : Actualités, destinations et infos du tourisme en France
- iberica.es
- instruments.cn
- Computer Instruments | Home
- Discover Italy: Official Tourism Website - Italia.it
- N.E.E.D.S., (Nutritional Ecological Environmental Delivery System) specializes in providing products, information, and education
- PCEï¼ˆåŒ—äº¬ï¼‰ç§‘æŠ€æœ‰é™å…¬å¸
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