

Instruction Manual

pH 5/6 & Ion 5/6

pH/mV & Ion/pH Meter Series



OAKTON®



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68X243601

Rev 7 04/04

Preface

This instruction manual serves to explain the use of the pH 5/6 and Ion 5/6 meters.

It functions in two ways: first as a step by step guide to help you operate the meter; second, it serves as a handy reference guide.

This manual is written to cover as many anticipated applications of the pH 5/6 and Ion 5/6 meters as possible. If there are doubts in the use of this meter, please do not hesitate to contact the nearest Eutech Instruments/ Oakton Instruments Authorized Distributor.

Eutech Instruments/ Oakton Instruments will not accept any responsibility for damage or malfunction to the meter caused by improper use of the instrument.

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Rev. 7 04/04.

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1. INTRODUCTION

Thank you for purchasing pH 5/6 or Ion 5/6 meter series. These microprocessor-based handheld meters are economical and easy to use. It has a large custom LCD (Liquid Crystal Display) for clear and easy reading.

The pH 5 measures pH and temperature ($^{\circ}\text{C}$) while the pH 6 measures pH, mV (ORP) and temperature.

Ion 5/6 allows Ion concentration measurement of various ions (mono and di valence) and mV. Besides Ion/mV modes, Ion 6 has pH and temperature ($^{\circ}\text{C}$) measurement modes. The mV mode is used for diagnosis of ion selective electrode (ISE).

Included with your meter are a robust rubber boot, 4 alkaline “AAA” batteries, temperature sensor, instruction manual and a warranty card. To order other accessories and buffer calibration or standard solutions, please refer to Section 8 on Accessories for more information.

2. GETTING STARTED

2.1 Description of Keypad Functions

pH 5/6 has four keys and Ion 6 meter has six keys on its splash-proof keypad with tactile feedback. The common keys include ON/OFF, HOLD/ENTER, CAL and MODE keys. Ion 5/6 meter has additional ▲ and ▼ keys.

ON/OFF: Powers meter on and off. Meter starts up in the mode that you last switched off from.

MODE: Selects measurement mode for Ion, mV, pH and Temperature.

CAL: Allows calibration for Ion, pH, mV or Temperature, or to abort calibration without confirming any set value.

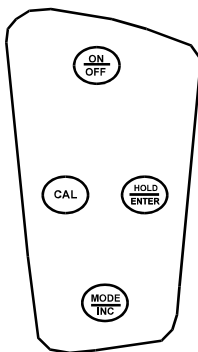
▲ (available only on Ion 5/6): Allows you to increment values during calibration mode.

▼ (available only on Ion 5/6): Allows you to decrement values during calibration mode.

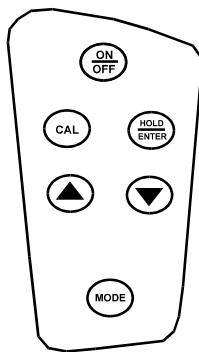
HOLD: Freezes the measured reading for easy viewing.

ENTER: Confirms calibration value.

Keypad of pH 5/6

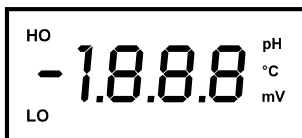


Keypad of Ion 5/6



2.2 Description of LCD Annunciators

The meter has a large custom LCD that consists of 3½-digit segments and operation annunciators for pH, mV or °C (Temperature). Note that there is no annunciator shown in Ion mode. Other annunciators include “HO” (when the HOLD function is activated) and “LO” (low battery condition).



2.3 Inserting & Removing the Rubber Boot

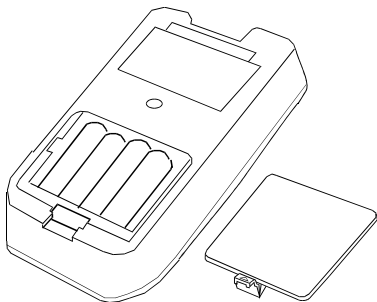
1. To remove meter from rubber boot, push out from the bottom edges of meter until it is completely out of boot. Ensure that cables of ISE/pH electrode or temperature probe are not connected.



2. To insert meter into rubber boot, slide in from the top of meter before pushing the bottom edges of meter down to set it into position. Lift up the stand at the back of meter for bench top applications if necessary.

2.4 Inserting New Batteries

The battery compartment is found at the back of instrument. To open the battery compartment, push in the direction of arrow and lift up the cover. Note the polarity of battery before inserting into position. After replacement, place cover back and press down until it locks tight.



2.5 Battery Replacement

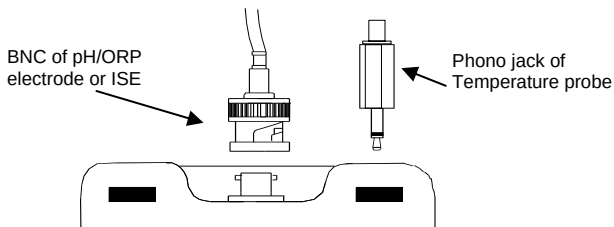
A “LO” annunciator in the LCD alerts you when battery power is running low. Replace with the same type as recommended by the manufacturer.



Caution: Power off the meter when changing battery.

2.6 Connecting the Electrode and Temperature Sensor

To connect the electrode into meter, align the connector slots with the posts of meter's socket and rotate connector clockwise until it locks. Do not force when connecting. To remove, simply rotate the connector in anti-clockwise direction until it unlocks, and slide the connector off the socket.



Insert the mini phono jack of temperature sensor into the socket on the meter. Unplug the phono jack when not in use or you measure pH without any temperature compensation.

2.7 Condition the pH Electrode

Condition the pH electrode before use or if it has not been in use for a long time by soaking it into a container filled with pH 4 buffer solution for at least 1 hour. Rinse with tap water before proceed to calibrate the electrode with meter.

2.8 Switching the Meter On

1. Press **ON/OFF** key to power up your meter. All LCD segments display momentarily as the meter performs a self-diagnostic test, as per shown in section 2.2. For Ion 5/6, the LCD switches into Ion measurement mode with “- - -” display if the meter has not been calibrated or meter has been reset.
2. Press **MODE** key to choose your desired mode of measurement with its corresponding annunciator displays in the LCD.

In temperature mode, the measured reading can be 25.0°C (factory default) or last calibrated temperature value if there is no temperature probe, or current measured value if a temperature probe is connected.

3. The LCD displays “**Or**” if the meter reading exceeds the maximum or “**Ur**” if under minimum measurement range (refer to Section 7 on Specifications).



3. CALIBRATION

3.1 pH Calibration

The meter is capable of calibrating up to 3 points using USA or NIST (nSt) pH buffer standards or 2 points with Low Ionic (Pb) pH buffer standard. All new calibration values will automatically override existing data.

USA	pH 4.01, 7.00 and 10.01
NIST	pH 4.01, 6.86 and 9.18
Pb	pH 4.10 and 6.97

It is recommended that you perform at least 2-point calibration at room temperature (25 °C) using standard buffers, starting with first buffer at pH 7.00 (USA), pH 6.86 (NIST) or pH 6.97 (Pb) followed by other buffer values.

For a 1-point calibration, calibration should be performed with a pH buffer value closest to the expected sample value being measured. Otherwise calibrating at pH 7.00, pH 6.86 or pH 6.97 is advisable.

The meter has automatic buffer recognition that identifies the correct pH buffer values during calibration. If non-standard pH buffers other than the above standards are used, or the electrode has worn out, the LCD will flash “Er1”. Press the CAL key to abort calibration and resume measurement. In general all pH buffer values have the window of up to +/- 1 pH tolerance during calibration.

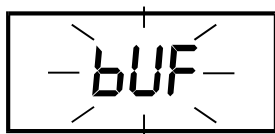
Ensure that you use new pH buffer solutions or sachets during calibration. Do not reuse buffer solutions as it may be contaminated and affect the calibration and accuracy of measurements. Always store buffer solutions in a dry, cool environment if possible.

Before use, remove the plastic protective cap of pH electrode and condition the glass bulb by soaking it in tap water for 1-2 hours. This hydrates the glass bulb if electrode is too dry or has not been used for a long period of time. Always rinse the probes with tap water or rinse solution before and after each calibration/sample measurement to avoid cross-contamination. For details refer to section 5 on Electrode care and maintenance.

3.2 Selection of pH buffer standards

You must set the meter to accept either USA, NIST (nSt) or Low Ionic (Pb) pH buffer standard values before calibration. The factory default is USA standard. If you wish to abort this operation press the **CAL** key at any sequence and the meter reverts to pH measurement mode.

1. Press and hold the **MODE** key. Switch on the meter using **ON** key. The display shows “**buF**” blinking.



2. Press **ENTER** key to get into its buffer selection mode. Use the **MODE** key to toggle between USA, NIST or Pb standards as shown.



3. Press **ENTER** key to confirm your choice of buffer standard to be used. The display then reverts to pH measurement mode.

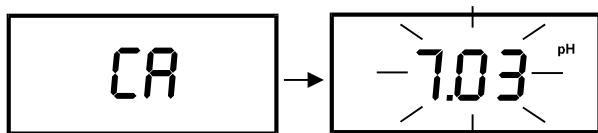
3.2.1 Resetting the User Calibrated Values

If you need to have a new set of Ion or pH measurements or mV offset (in pH 6) taken, you may wish to reset the last Ion/pH/mV calibrated values. Note only temperature offset (if set) will not be erased.

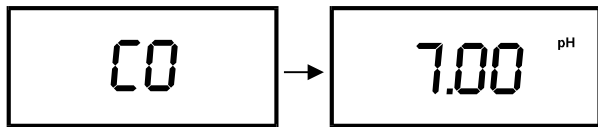
1. Press and hold the **CAL** key while switching on the meter using the **ON** key. The LCD shows “**rSt**” blinking.
2. Press **MODE** key to abort this operation if you do not wish to reset.
3. Press **ENTER** key to confirm. The meter automatically clears all stored pH/Ion calibration or mV offset values and reverts to measurement mode.

3.2.2 pH Calibration using USA standard buffers

1. Pour a known pH buffer standard solution into a clean, dry container, e.g. pH 7.00. Power on the meter and it automatically enters into measurement mode. Select pH mode by pressing **MODE** key if necessary.
2. Dip both pH electrode and temperature probe into pH 7.00 buffer solution. Swirl gently and wait for reading to stabilise (approx. 30 seconds depending on your electrode condition).
3. Press **CAL** key to enter pH calibration mode. A “CA” displays momentarily and the display shows the current uncalibrated reading flashing while in the calibration mode.



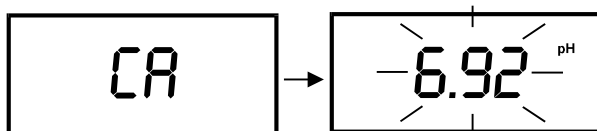
4. To abort or cancel calibration without accepting new value, press **CAL** key. The meter then reverts to pH measurement mode.
5. To proceed calibration, allow reading to stabilise. The meter automatically recognises pH 4.01, 7.00 or 10.01 buffers. Press **ENTER** key to confirm calibration and the LCD displays “CO” momentarily. The meter reverts to measurement mode.



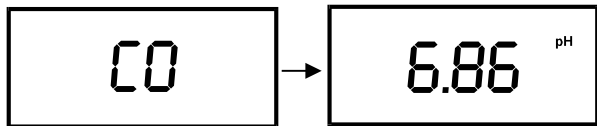
6. For 2 or 3-point calibration, repeat step 3 with other pH buffer values of 4.01 and/or 10.01 for higher accuracy.

3.2.3 pH Calibration using NIST standard buffers

1. Pour a known pH buffer standard solution into a clean container, e.g. pH 6.86. Power on meter, and it automatically enters into measurement mode. Select pH mode by pressing **MODE** key if necessary.
2. Dip both pH electrode and temperature probe into pH 6.86 buffer solution. Swirl gently and wait for reading to stabilise (approx. 30 seconds depending on your electrode condition).
3. Press **CAL** key to enter pH calibration mode. A “CA” displays momentarily and the display shows the current uncalibrated reading flashing while in the calibration mode.



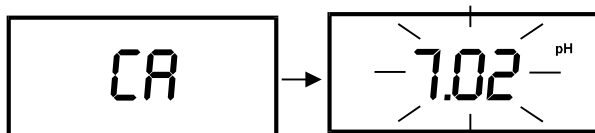
4. To abort or cancel calibration without accepting new value, press **CAL** key. The meter then reverts to pH measurement mode.
5. To proceed calibration, allow reading to stabilise. The meter automatically recognises pH 4.01, 6.86 or 9.18 buffers. Press **ENTER** key to confirm calibration and the LCD displays “CO” momentarily. The meter reverts to measurement mode.



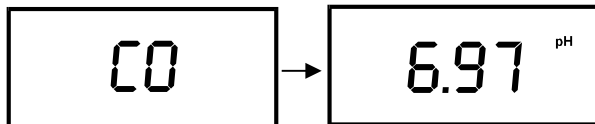
6. For 2 or 3-point calibration, repeat step 3 with other pH buffer values of 4.01 and/or 9.18 for higher accuracy.

3.2.4 pH Calibration using Pb standard buffers

1. Pour a known pH buffer standard solution into a clean container, e.g. pH 6.97. Power on meter, and it automatically enters into measurement mode. Select pH mode by pressing **MODE** key if necessary.
2. Dip both pH electrode and temperature probe into pH 6.97 buffer solution. Swirl gently and wait for reading to stabilise (approx. 30 seconds depending on your electrode condition).
3. Press **CAL** key to enter pH calibration mode. A “CA” displays momentarily and the display shows the current uncalibrated reading flashing while in the calibration mode.



4. To abort or cancel calibration without accepting new value, press **CAL** key. The meter then reverts to pH measurement mode.
5. To proceed calibration, allow reading to stabilise first. The meter automatically recognises either pH 4.10 or 6.97 buffer. Press **ENTER** key to confirm calibration and the LCD displays “CO” momentarily. The meter reverts to measurement mode.



6. For 2-point calibration, repeat step 3 with pH 4.10 buffer for better accuracy.

3.3 Ion Calibration (Ion 5 and 6)

The Ion 5/6 meter is capable of up to 3-point ion calibration (minimum 2 point) with standard solutions to ensure accuracy across the entire range of the meter.

To exit calibration after you have first entered into ion calibration, press CAL key again. No ion calibration values are stored into the meter's non-volatile memory. Note that ion calibration data is lost once the meter is reset when the batteries are being removed and replaced.

If one calibration point is performed an error message "**Er2**" is displayed after the single point calibration is completed. Recalibrate using minimum of 2 points.

Calibration values are successfully stored if the ISE (Ion Selective Electrode) slope is within the specified tolerance of 15-90mV/decade, otherwise an error message "**Er3**" is displayed.

If any of calibration points are not within 1 decade, an error message "**Er4**" will be shown at the end of calibration process. The ion calibration options available include 0.1, 1.0, 10.0, 100.0 ppm. Recalibrate and ensure that all calibration points must be at least 1 decade apart from each other.

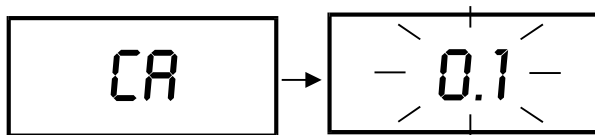
Ensure that you use new or fresh standard solutions during calibration. Do not reuse ion standard solution as it may be contaminated and affect the calibration and accuracy of measurements. Always store standard solutions in a dry, cool environment if possible. Check that your ISE and ion standard solutions are kept in good conditions, otherwise erroneous readings may be taken.

Before use, remove any plastic protective cap of ISE (at the tip of sensor) and read manufacturer's instructional manual. Briefly rinse the electrode with clean deionised water to remove any residues.

Rinse probes before and after each calibration or sample measurement to avoid cross-contamination. For more details please refer to Manufacturer's care and maintenance guide.

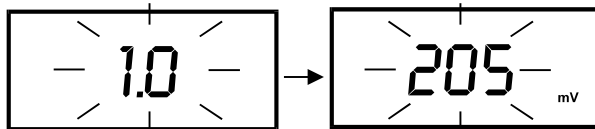
3.3.1 Multi-point Ion Calibration

1. In case if you need to start calibration using 1.0 ppm standard solution, you can skip the 0.1 ppm calibration option (as mentioned * below).
2. For this instance let's take 1.0 ppm calibration. To begin, pour a known 1.0 ppm standard solution into a clean container. Power on the meter, and set the meter to Ion measurement mode.
3. Dip the ISE into 1.0 ppm standard solution. Swirl it gently. Press **CAL** key to enter into calibration mode.
4. The display shows "CA" momentarily followed by "0.1" flashing.

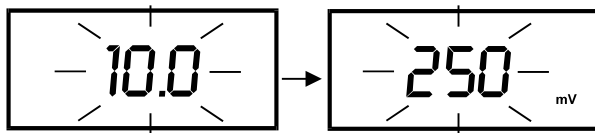


* At this moment, if you wish to calibrate 1st ion calibration option other than 0.1 ppm, use ▼ key once to select 1.0 ppm. Using ▲ or ▼ key you may select other options like 0.1, 10.0 or 100.0 ppm.

5. Press **ENTER** key and the displayed value shows corresponding measured mV reading that is equivalent to 1.0 ppm. Allow the reading to stabilise.



6. Press **ENTER** key to confirm 1st point calibration (e.g. 1.0 ppm) and the display will show the next calibration option, 10.0 ppm. Rinse the electrode with distilled water and blot it dry if necessary.
7. Pour a known 10.0 ppm standard solution into another clean container. Dip the electrode into the standard solution. Swirl it gently.
8. Press **ENTER** key and the displayed value shows measured mV reading that is equivalent to 10.0 ppm. Allow the reading to stabilise.



9. Press **ENTER** key to confirm 2nd point calibration (e.g. 10.0 ppm) and the display will show the next calibration option, 100.0 ppm.

To exit from 2-point calibration, press **CAL** key and the LCD shows “PXX mV” momentarily which is the ISE slope in mV value.



The meter then reverts to ion measurement mode. The calibration values are successfully stored into its memory. Otherwise an error message “Er3” will be displayed if the slope of ISE is lower than 15mV/decade or higher than 90mV/decade.

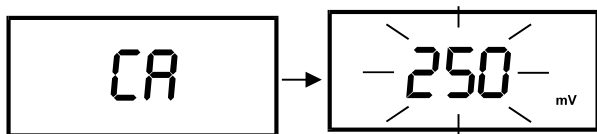
10. For 3-point calibration where the LCD last shows “100.0”, press **ENTER** key to proceed to last calibration point. Repeat the above procedure.

Likewise, at the end of 3rd point calibration the meter will display the mV slope of electrode “PXX” and the calibration values are successfully stored. Otherwise error message will appear in the LCD if the calibration was unsuccessful with no values stored into memory.

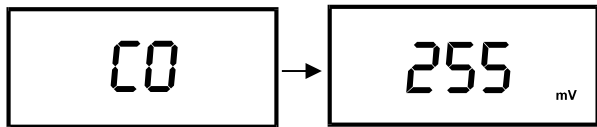
3.4 Millivolt (mV) Calibration (for pH 6 only)

mV calibration is performed for ORP or Redox measurements, where you can adjust its mV value as a base value for measurements.

1. Press **MODE** key to enter mV mode, the LCD displays “mV”.
2. Dip the ORP electrode into a known standard solution, e.g. Quinhydrone 255 and swirl it until the reading stabilizes.
3. Press **CAL** key to enter mV calibration. The LCD shows “CA” momentarily followed by displayed reading flashes.



4. To abort calibration press **CAL** key. Meter reverts to measurement mode.
5. To proceed calibration use **INC** key to adjust the reading to your desired value. The maximum adjustment you can make is ± 50 mV. Pressing **INC** key continuously allows you to scroll to the maximum allowable value and then loops back to the minimum allowable value.
6. Press **ENTER** key to confirm calibration. The display shows “CO” momentarily and meter reverts to measurement mode showing the current set value.

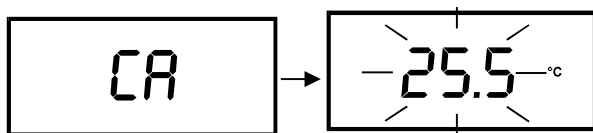


3.5 Temperature Calibration

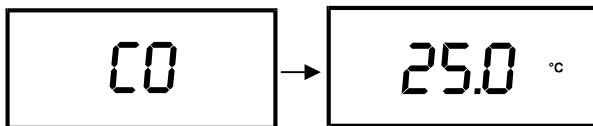
3.5.1 With Temperature probe

The temperature probe (EC-PH5-TEM01P/ 35613-05) provided with the meter is factory-calibrated. Over time, temperature calibration may drift and require calibration. If there is a need to replace with the new probe you should calibrate the temperature probe prior to pH calibration.

1. Connect your temperature probe to the meter. Press **MODE** key to enter the Temperature mode until “°C” annunciator appears in the LCD.
2. Compare the displayed value to a NIST certified thermometer or other thermometer known to be accurate. For best accuracy, place both the probe and thermometer in a constant temperature bath.
3. Press **CAL** key to enter temperature calibration mode. The LCD shows “CA” momentarily and displayed reading flashes.



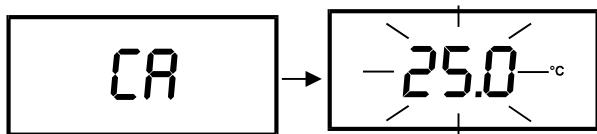
4. Press **▲** and **▼** keys (for Ion 6) or **INC** key (for pH 5/6) until the LCD display shows the desired temperature. The meter allows an adjustable maximum value of ± 5 °C from factory default.
5. To cancel or abort this operation, press **CAL** key. Note no new value will be stored into its meter's non-volatile memory. To confirm calibration, press **ENTER** key. The LCD displays “CO” momentarily, and the meter reverts to measurement mode.



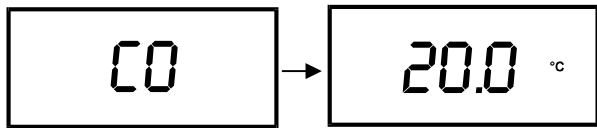
3.5.2 Without Temperature probe (no ATC)

If no temperature probe is used, the meter compensates for pH response based on a new calibrated temperature value manually set by you or at 25.0 °C (factory default).

1. Press **MODE** key to enter into Temperature mode until “°C” shows in LCD.
2. Compare the displayed value to NIST certified thermometer or thermometer known to be accurate (dipped into a constant temperature bath).
3. Press **CAL** key to enter temperature calibration mode. The LCD shows “CA” momentarily and displayed reading flashes. Note that this displayed value should either be 25.0 °C or last set temperature value.



4. Press **▲** and **▼** key (for Ion 6) or **INC** key (for pH 5/6) until the displays shows the desired temperature. You can set any value from 0 to 100 °C.
5. To cancel or abort this operation, press **CAL** key. Note no new value will be stored into its meter's non-volatile memory. To confirm calibration, press **ENTER** key. The LCD displays “CO” momentarily, and the meter reverts to measurement mode.



4. MEASUREMENT

4.1 Taking Measurements

1. Before measurement, rinse pH/ORP electrode or Ion Selective Electrode (ISE) and temperature probe (except Ion 5) thoroughly with tap or distilled water to remove any impurities stuck onto the bodies of probes.
2. Power on the meter using **ON** key. Press **MODE** key to select your desired mode of operation (pH, mV, Ion or Temperature).
3. Dip and stir both probes gently into an aqueous test sample, swirl gently and wait for the reading to stabilise. Note the reading. Freeze the displayed if necessary, for details refer to Section 4.3.
4. Rinse probes with tap water or rinse water thoroughly before taking next sample measurement or storing them.

4.2 Millivolt (mV) Reference Check (for Ion 5/6 only)

The mV mode in Ion 5/6 is used for the diagnosis of ISE or pH electrode for its condition. Press the **MODE** key to access mV mode, the “**mV**” annunciator in LCD is displayed. The displayed value shows the absolute mV value of ISE or pH electrode being measured.

4.3 Holding a Reading

To freeze or hold your displayed reading momentarily, press **HOLD** key once. The LCD displays “**HO**” annunciator to indicate the HOLD function is activated.



4.4 Releasing a Held Reading

Press **HOLD** key once again to deactivate the HOLD function or to release your frozen reading. The meter reverts to current measurement mode, and the “**HO**” annunciator disappears from the LCD.

5. ELECTRODE CARE AND MAINTENANCE

For best results, always keep the ISE capped dry and pH/ORP electrode bulb wet. Store the pH/ORP glass bulb with pH electrode storage solution. Other pH buffers are also suitable. **NEVER** use deionised water for storage. Wash the probes thoroughly with distilled water after each use. Because your ISE or pH electrode is susceptible to contamination or dirt, clean it every 1 to 2 months depending on extent and condition of use.

Clean the pH/ORP electrode using a mild detergent. Wipe the probe with a soft tissue paper. Avoid touching the glass membrane with your fingers. Wash thoroughly in tap water and then in distilled water. Recalibrate the meter after cleaning the electrode.

6. TROUBLESHOOTING

Problem	Cause	Solution
No display	Batteries not in place.	a) Insert batteries. b) Re-insert batteries in correct polarity.
"LO" displays in the LCD	Low battery	Replace batteries with fresh ones.
Unstable reading	a) Electrode not deep enough in sample b) Dirty electrode. c) Broken electrode	a) Place electrode deeper in sample. b) Clean electrode and recalibrate. c) Replace electrode.
"Er1" display	Buffer value out of tolerance	Use new pH buffer solution and recalibrate.
"Er2" display	Single point calibration	Perform at least 2 point calibration (for Ion 5/6).
"Er3" display	ISE slope not within the specified tolerance	Check ISE is in good working condition (for Ion 5/6).
"Er4" display	Any calibration points not within 1 decade	Ensure any calibration points between each other must be within 1 decade (for Ion 5/6).
Not able to calibrate	a) Display freezes b) Faulty electrode	a) Release reading by pressing HOLD key. b) Replace electrode.

7. SPECIFICATIONS

Model		pH 5	pH 6	Ion 5	Ion 6
Ion Range	0.01 to 1999 ppm			•	•
Resolution	0.01 ppm for 0.01 to 0.99 ppm; 0.1 ppm for 1.0 to 199.9 ppm; 1 ppm for 200 to 1999 ppm			•	•
Accuracy	+/- 1% of reading			•	•
No. of Calibration Pts	2 to 3 points (minimum 2 pts)			•	•
pH Range	0.00 to 14.00 pH	•	•		•
Resolution	0.01 pH	•	•		•
Accuracy	+/- 0.01 pH	•	•		•
pH Slope Range	80 to 120%	•	•		•
No. of Calibration Pts	1 to 3 points (push-button)	•	•		•
Buffer Options	pH 4.01, 7.00, 10.01 (USA) pH 4.01, 6.86, 9.18 (NIST) pH 4.10, 6.97 (Pb)	•	•		•
Temperature Range	0.0 to 100.0 °C	•	•		•
Resolution	0.1 °C	•	•		•
Accuracy	+/- 0.5 °C	•	•		•
Temperature Comp.	Automatic / Manual (0 to 100 °C)	•	•		•
Millivolt Range	-1000 to +1000 mV		•		
Resolution	1 mV		•		
Accuracy	+/- 2 mV		•		
Millivolt Range	-500 to 500 mV			•	•
Resolution	0.1 mV for -200 to 200 mV; 1 mV for 200 to 500 mV			•	•
Accuracy	+/- 0.2 and 2 mV resp.			•	•
Features					
Auto-Buffer Recognition	as above pH buffer options	•	•		•
Hold Function	"HO"	•	•	•	•
Auto Shut Off	After 17 minutes	•	•	•	•
Low Battery Indication	"LO"	•	•	•	•
Display	Single Custom LCD	•	•	•	•
Operating Temperature	0 to 50 °C	•	•	•	•
Power Requirements	4 x "AAA" Alkaline Batteries	•	•	•	•
Battery Life	500 hours	•	•	•	•
Meter Dim./Weight	14 x 7 x 3.5 cm / 200 g	•	•	•	•

8. ACCESSORIES

Replacement Meter and Meter accessories

Item	Eutech Instruments Ordering Code No.	Oakton Instruments Ordering Code No.
Epoxy-body pH Combination Electrode, Single Junction, 12 x 110 mm (1m cable length)).	EC-FC72521-01B	35801-00
Epoxy-body pH Combination Electrode, Double Junction, 12 x 110 mm (1m	EC-FC72522-01B	35805-01
Epoxy-body pH/Temperature Combination Electrode, Single Junction, 12 x 110 mm (1m cable length)	EC-FE73529-01B:	35811-71
Epoxy-body pH/Temperature Combination Electrode, Double Junction, 12 x 110 mm (1m cable length)	-	35811-72
Epoxy-body ORP Combination Electrode, Single Junction, 12 x 110 mm (1m cable length)	EC-FC79601-01B	35805-13
Electrode Storage Solution	EC-RE-005	00653-04
Electrode Cleaning Solution	EC-DPC-BT	00653-06

Calibration Solutions

Item	Eutech Instruments Ordering Code No.	Oakton Instruments Ordering Code No.
pH 4.01 buffer solution, 480 ml bottle (1 pint)	EC-BU-4BT	00654-00
pH 7.00 buffer solution, 480 ml bottle (1 pint)	EC-BU-7BT	00654-04
pH 10.01 buffer solution, 480 ml bottle (1 pint)	EC-BU-10BT	00654-08
pH 4.01 buffer sachets, 20 ml x 20 pcs.	EC-BU-4BS	35653-01
pH 7.00 buffer sachets, 20 ml x 20 pcs.	EC-BU-7BS	35653-02
pH 10.01 buffer sachets, 20 ml x 20 pcs.	EC-BU-10BS	35653-03

9. WARRANTY

This meter is supplied with a warranty against significant deviations in material and workmanship for a period of **THREE** years from date of purchase whereas probe with a **SIX**-month warranty.

If repair or adjustment is necessary and has not been the result of abuse or misuse within the designated period, please return – freight pre-paid – and correction will be made without charge. Eutech Instruments/ Oakton Instruments will determine if the product problem is due to deviations or customer misuse.

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

Exclusions

The warranty on your instrument 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

10. RETURN OF ITEMS

Authorization must be obtained from our Customer Service Department or authorized distributor before returning items for any reason. A "Return Goods Authorization" (RGA) form is available through our authorized distributor. Please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Eutech Instruments/ Oakton Instruments will not be responsible for damage resulting from careless or insufficient packing. A restocking charge will be made on all unauthorized returns.

NOTE: Eutech Instruments Pte Ltd/ Oakton Instruments reserves the right to make improvements in design, construction, and appearance of products without notice.