

**Elcometer 148**

**pH Tester**

**Operating Instructions**



This product meets the Electromagnetic Compatibility Directive.

The product is Class B, Group 1 ISM equipment according to CISPR 11.

Group 1 ISM product: A product in which there is intentionally generated and/or used conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

Class B products are suitable for use in domestic establishments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

**Note:** *In the close presence of some radio transmitters, erroneous readings may be given. If this occurs tests should be repeated at another location.*

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A copy of this Instruction Manual is available for download on our Website via [www.elcometer.com](http://www.elcometer.com).

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Thank you for your purchase of this Elcometer 148 pH Tester. Welcome to Elcometer.

Elcometer are world leaders in the design, manufacture and supply of inspection equipment. Our products cover all aspects from development through application to post application inspection.

With the purchase of this product you now have access to the worldwide service and support network of Elcometer. For more information visit our website at [www.elcometer.com](http://www.elcometer.com).

## **1 ABOUT THIS GAUGE**

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This gauge is a simple but effective instrument which is used to determine the pH value in countless applications which include leather production, chemical processing, food production, beauty care and metal finishing.

The pH value of a liquid describes its acidity or alkalinity with a scale of 1-14. Pure water is said to be neutral with a value of 7pH.

The pH value of a liquid is measured at a specific temperature. For a meaningful comparison of data, each measurement should be taken at the same temperature.

Although Redox (ORP) could be measured, this feature is not provided in the Elcometer 148.

### **1.1 FEATURES**

- Dual pH and temperature display
- Waterproof to IP57 Standard and floats on water
- Able to display temperature in °C or °F
- Able to record maximum and minimum temperature readings in a series of tests

## 1.2 WHAT THE BOX CONTAINS

- Elcometer 148 pH Tester
- pH/Temperature Sensor
- 4 x AAA Batteries
- Wrist strap
- pH4 calibration sachet
- pH7 calibration sachet
- Operating instructions

The Elcometer 148 pH Tester is packed in a cardboard and foam package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Consult your local Environmental Authority for further guidance.

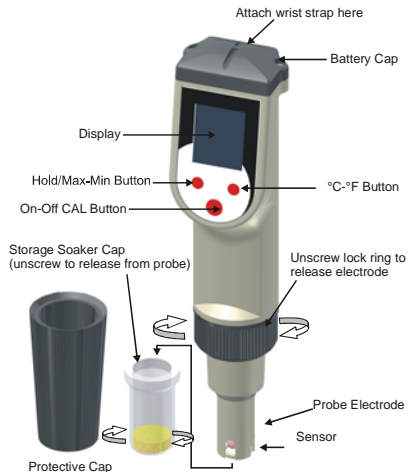
**To maximise the benefits of this instrument please take some time to read these Operating Instructions. Do not hesitate to contact Elcometer or your Elcometer supplier if you have any questions.**

## 1.3 STANDARDS

The Elcometer 148 pH Tester can be used in accordance with ASTM E 70.

## 2 GETTING STARTED

1. Remove the protective cap. Unscrew the storage Soaker Cap from the probe. Do not dispose of the storage solution as it is required to keep the electrodes wet and ready for continuous measurement.
2. If the electrode sensor is dry, a slow and sluggish reading will result. Soak the electrodes in water or pH solution for 15-30 minutes before use.
3. Rinse the sensor in tap water or preferably distilled water.
4. Press the **ON/OFF** button once to switch on.
5. Temperature display is factory preset to °C. To switch the display to °F reading, press and hold-down the **Mode** button until reading is displayed in °F
6. Repeat step 5 to return it to °C.
7. Always replace storage soaker cap with some solution in before storing the instrument.



### 3 CALIBRATION

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Calibration should be performed as frequently as possible to ensure accurate measurement, depending on the frequency of tests performed. Additional calibration solution should be purchased for future needs (See “Spares & Accessories” on page 10).

1. Cut open the shorter end of the pH7 calibration sachet.
2. Dip the sensor fully into the sachet, stir a little to remove the bubbles.
3. Press and hold-down the **ON/OFF/CAL** button until **CAL** is displayed, followed by a flashing **7.00**.
4. When **SA** is displayed followed by **End**, calibration is complete and the unit resumes measurement.
5. Rinse the sensor with distilled water and blot dry before proceeding.
6. To perform a second point calibration, choose either pH4 or pH9 solution for calibration. For example, if you are measuring between pH7 and pH4, then pH4 should be selected.
7. Cut open the short end of the calibration sachet.
8. Dip the sensor fully into the sachet and again stir gently to remove any bubbles.
9. Press and hold-down the **CAL** button until **CAL** is displayed, which should be followed by a flashing **4.00 (or 9.00)**.
10. When Elcometer 148 pH Tester displays %, followed by **SA**, then **End**, calibration is completed and the unit resumes measurement.
11. Rinse the sensor with distilled water and blot dry before proceeding.
12. To perform a third point calibration, repeat 6 to 11 with the other solution.
13. **ERROR CODE:** If **SA** does not appear after calibration, calibration has failed. Check if electrode is damaged by swapping for a new one.

14. **Always perform a single point calibration with pH7 first before performing the second or third point calibration.**
15. After each successive second and third point calibration, the 'percentage of slope' % reading will be displayed. This is an indication of the condition of the electrode. If the % reading shows 100%, it means the electrode is in good condition. However, if the % reading is below 70% or above 130%, then the electrode has deteriorated and should be replaced.

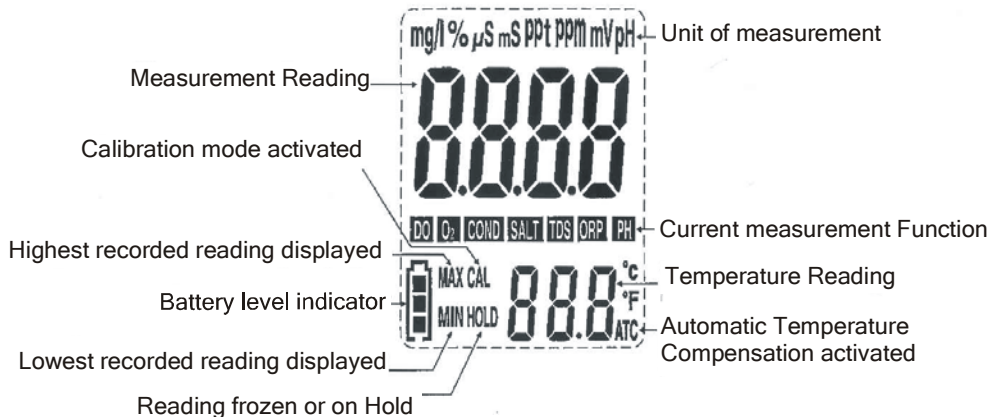
#### **4 TAKING A pH MEASUREMENT**

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1. Switch on the unit
2. Rinse the electrode in water then shake the unit dry with a snap motion as shaking a mercury thermometer.
3. Dip the sensor into test solution, shake to remove bubbles.
4. Once the reading stabilises, a reading is established.
5. Press the **Hold** button once to freeze the display, press again to release it for another reading.
6. Always rinse the electrode before and after each test.



## 5 DISPLAY PANEL



## 6 MAXIMUM/MINIMUM RECORDING

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1. To register the maximum and minimum reading over a series of tests, press and hold-down the **Hold/Max-Min** button until the display shows **MAX** and **MIN** blinking.
2. In this mode, proceed to make a series a tests.
3. To display the highest and lowest reading for the series of tests, press the **Hold/Max-Min** button once, the highest reading will appear with the **Max** icon momentarily followed by the lowest reading with the **Min** icon, following which the unit resumes measurement.
4. To stop or make a new recording, press and hold-down the **Hold/Max-Min** button until the **MAX** and **MIN** annunicator disappear. Repeat step 1 to begin new recording.
5. Auto shut-off is disabled when recording is activated.

## 7 MAINTENANCE

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Elcometer products are designed to give many years reliable service under normal operating and storage conditions. The instrument does not contain any user-serviceable components. In the unlikely event of a fault, the instrument should be returned to your local Elcometer supplier or direct to Elcometer. The warranty will be invalidated if the instrument has been opened.

When the batteries are nearly depleted the battery symbol starts flashing and batteries need to be replaced.

Unscrew the two screws from the battery cap. See Figure 1.

Change all four batteries with new ones. Observe polarity.

Ensure black sealing ring is in place. Replace the battery cap and tighten both screws.

**Note:** Alkaline batteries must be disposed of carefully to avoid environmental contamination. Please consult your local Environmental Authority for information on disposal in your region.

**Do not dispose of any batteries in fire.**



Figure 1.

## 8 TECHNICAL SPECIFICATION

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	<b>pH</b>	<b>Temperature</b>
Range:	0 to 14pH	0 to 89°C (32-192°F)
Resolution:	0.01pH	0.1°C (0.1°F)
Accuracy:	±0.03pH	±0.5°C (±1°C)
Battery:	4 x 1.5 Volt AAA size battery	
Calibration:	3 point at 7pH, 4pH and 9pH	
Size:	195 x 40 x 36mm (7.7 x 1.6 x 1.42")	
Weight:	150g (5.3 ozs)	

## 9 SPARES & ACCESSORIES

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The following spare parts and optional items are available from Elcometer, or your local supplier:

<b>Description</b>	<b>Part Number</b>
E148 Electrode	T14821766
E148 4pH Buffer Solution Capsules (x10)	T14821768-1
E148 7pH Buffer Solution Capsules (x10)	T14821768-2
E148 9pH Buffer Solution Capsules (x10)	T14821768-3
E148 4.01pH Buffer Solution 100ml	T14821767-1
E148 7pH Buffer Solution 100ml	T14821767-2
E148 10.01pH Buffer Solution 100ml	T14821767-3

## **10 RELATED EQUIPMENT**

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In addition to the Elcometer 148 pH Tester, Elcometer produces a wide range of other coating testing equipment.

Users of the Elcometer 148 pH Tester may also benefit from the following Elcometer products:

- Elcometer 130 Salt Contamination Meter
- Elcometer 134S Chloride Ion Test Kit for Surfaces
- Elcometer 138 Bresle Salt Kit

For further information contact Elcometer or your local supplier.

Details of Elcometer offices around the world are given on the outside cover of these operating instructions. Alternatively visit the Elcometer website, [www.elcometer.com](http://www.elcometer.com)