



PCE Americas Inc.  
711 Commerce Way  
Suite 8  
Jupiter  
FL-33458  
USA  
From outside US: +1  
Tel: (561) 320-9162  
Fax: (561) 320-9176  
info@pce-americas.com

PCE Instruments UK Ltd.  
Units 12/13  
Southpoint Business Park  
Ensign way  
Hampshire / Southampton  
United Kingdom, SO31 4RF  
From outside UK: +44  
Tel: (0) 2380 98703 0  
Fax: (0) 2380 98703 9  
info@pce-instruments.com

[www.pce-instruments.com/english](http://www.pce-instruments.com/english)  
[www.pce-instruments.com](http://www.pce-instruments.com)

*Pen type, all in one,*

# SALT METER

**Model :** PCE-SM 11



Your purchase of this SALT METER marks a step forward for you into the field of precision measurement. Although this METER is a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.

## OPERATION MANUAL

# TABLE OF CONTENTS

1. FEATURES.....	1
2. SPECIFICATIONS.....	1
3. FRONT PANEL DESCRIPTIONS.....	3
3-1 Battery compartment/Cover.....	3
3-2 Display.....	3
3-3 Power Button.....	3
3-4 Hold Button.....	3
3-5 REC Button.....	3
3-6 Salt Sensing Head.....	3
3-7 Protection Cover for Sensing Head.....	3
4. MEASURING PROCEDURE.....	4
4-1 Salt measurement .....	4
4-2 Data hold.....	5
4-3 Data record ( Max., Min. reading ).....	6
4-4 Auto power off management.....	6
5. CALIBRATION PROCEDURES.....	6-7
6. REPLACEMENT OF BATTERY.....	7

## 1. FEATURES

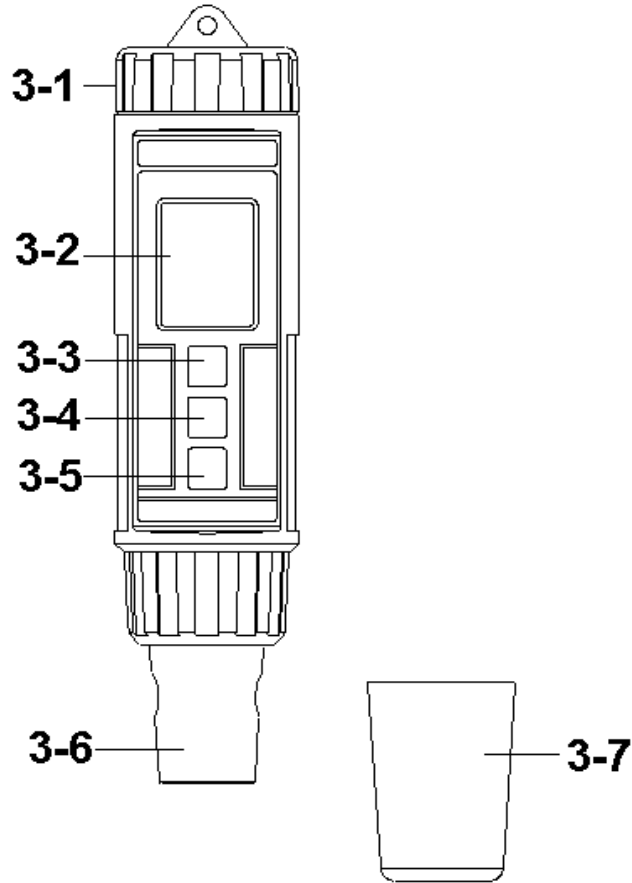
- \* The pen type, all in one Salt meter provides fast, accurate readings, with digital readability and easy operation.
- \* Measuring range : 0 to 12 % salt ( % weight ).
- \* Build in temperature sensor, ATC ( auto temperature compensation ).
- \* Carbon rod electrode for long life.
- \* IP67, water proof and protection.
- \* LCD display, read. to read.
- \* Data hold function for freezing the desired value.
- \* Auto power off to save the battery life.
- \* Records max. and min. value with recall.
- \* Microcomputer circuit, intelligent function, high accuracy.
- \* Compact size, light weight.
- \* Built-in Low battery indicator.
- \* Power supply by DC 1.5 V battery ( UM4/AAA ) x 4 PCs.
- \* Application : Water conditioning. aquarium, food processing, photography, school, laboratory, industrial and quality control.

## 2. SPECIFICATIONS

Display	LCD, size : 20 mm x 28 mm.
Measurement Range	0 to 12 % salt ( % weight ).
Resolution	0.01 % salt.
Accuracy	0.5 % salt value * <i>F.S. : full scale.</i> * $23 \pm 5^{\circ}\text{C}$
Temperature Compensation	Automatic, 0 to 50 °C ( 32 to 122 °F ).

Probe Structure	Carbon rod electrode for long life.
Data Hold	Freeze the display reading.
Memory Recall	Maximum & Minimum value.
Sampling Time	Approx. 0.8 second.
Circuit	Custom one-chip of microprocessor LSI circuit.
Power off	Auto shut off saves battery life or manual off by push button. <i>* Power will off automatically after 10 min., if no button be pressed.</i>
Operating Temperature	0 to 50 °C ( 32 to 140 °F ).
Operating Humidity	Less than 80% RH.
Power Supply	DC 1.5V battery ( UM-4/AAA ) x 4 PCs.
Power Consumption	Approx. 5.7 mA.
Dimension	190 x 40 x 40 mm ( 7.5 x 1.6 x 1.6 inch ).
Weight	171 g/0.38 LB.
Standard Accessories	Instruction Manual..... 1 PC PCE-SM 11

### 3. FRONT PANEL DESCRIPTION



- 3-1 Battery compartment/Cover
- 3-2 Display
- 3-3 Power Button
- 3-4 Hold Button
- 3-5 REC Button
- 3-6 Salt Sensing Head
- 3-7 Protection Cover for Sensing Head

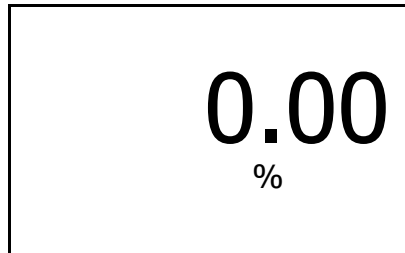
## 4. MEASURING PROCEDURE

### ***4-1 Salt measurement***

1) Turn on the meter by pressing the " Power Button " ( 3-3, Fig. 1 ) momentarily.

*\* Press the " Power Button " ( 3-3, Fig. 1 ) momentarily again will turn off the meter.*

The " Display " ( 3-2, Fig. 1 ) will show the unit as :



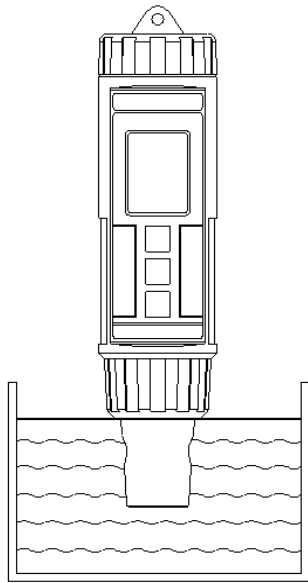
0.00  
%

Now the meter is ready for the measurement.

2) Hold the meter by hand and immerse the " Salt Sensing Head " ( 3-6, Fig. 1 ) immersed wholly into the measured solution. Shake the " Sensing Head " to let the electrode's internal air bubble drift out from the " Sensing Head ".

" Display " ( 3-2, Fig. 1 ) will show the salt value in and salt ( % weight value ).

Fig. 2



When make the measurement should immerse the " Sensing Head " immersed wholly into the measured solution.

- 3)The " Sensing Head " build in the temperature sensor for the usage of automatic Temp. compensation. If the temperature of measured salt solution is changed, then it should take few minutes to let the display reading reach the stable value.

#### **4-2 Data Hold**

- 1)During the measurement, press the " Hold Button " ( 3-4, Fig. 1 ) momentarily to hold the measured value. The LCD will show a " HOLD " symbol.
- 2)Press the " Hold Button " once again to release the data hold function.

#### **4-3 Data Record ( Max., Min. reading )**

- 1)The data record function records the maximum and minimum readings. Press the " REC Button " ( 3-5, Fig. 1 ) momentarily to start the Data Record function, shows " REC " on the display.
- 2)With the " REC " symbol on the display.
  - a)Press the " REC Button " ( 3-5, Fig. 1 ) momentarily, the " REC MAX " symbol along with the maximum value will appear on the display.

b) Press the " REC Button " ( 3-5, Fig. 1 ) momentarily again, the " REC MIN " symbol along with the minimum value will appear on the display.

*\* When display shows " REC MAX " or " REC MIN ", press the " Hold Button " ( 3-4, Fig. 1 ) momentarily will delete the max. ( min. ) value, the display will show the " REC. " only and execute the memory function continuously.*

c) To exit the memory record function, press the " REC " button for 2 seconds at least. The display will revert to the current reading, not show " REC " indicator.

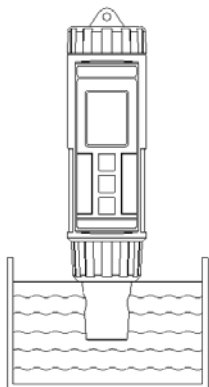
#### **4-4 Auto power off management**

The meter has built-in "Auto Power Shut-off " function in order to prolong battery life. The meter will switch off automatically if none of the buttons are pressed within 10 min..

## **5. CALIBRATION PROCEDURES**

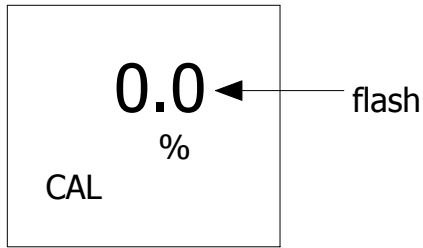
1) Power off, use the finger to press the " Hold button " continuously ( not release ) then power On . Until power on ( Display on ) then release fingers from the " Hold button " .

2) Insert the Probe head into the calibration standard solution.



3) Press the " Hold button " once, display will show " HOLD " indicator, press the " REC button " once, the upper display will show " CAL " within a short period.  
Then display will show



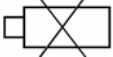


- 4) Use the " Up button " , " Down button " to select the desired calibration value, then wait about 5 second, the calibration data will saved into the memory circuit, and finish the calibration procedures.

*Note :*

*During execute the calibration procedures and before not finish the complete calibration procedures, if intend to exit the calibration procedure, then just press the " Hold button" to exit.*

## 6. REPLACEMENT OF BATTERY

- 1) When the LCD display show "  " , it is necessary to replace the battery. However, in-spec measurement may still be made for several hours after Low Battery Indicator appears before the instruments instrument become inaccurate.
- 2) To replace the battery, rotate and remove the " Battery Cover " ( 3-1, Fig. 1 ), take out the old batteries, install new batteries :  
**DC 1.5V battery ( UM-4/AAA ) x 4 PCs.**
- 3) **When install the batteries, should make attention the battery polarity.**
- 4) After install the batteries, reinstall the battery cover again.