

# 使用說明書 ■8372S, 海水版鹽度計

## 產品簡介

感謝您購買本公司筆型測量儀器。請您於開始使用此儀器前，詳細閱讀本說明書，並妥善保存，供日後使用之參考。使用前請先將感應棒浸潤30分鐘，尤其當感應棒久未使用，務必執行此步驟。

產品特色：

- IP65 防水外殼
- 測量範圍寬並多種測量單位可選,符合各行各業不同的應用需求
- 雙讀值顯示具溫度補償功能
- 讀值暫留功能
- 筆型設計，輕巧易攜帶
- 低電量顯示
- 自動關機功能
- C/F溫度單位切換
- 簡易更換 LR44 電池
- 多點校正設計
- 一按鍵即自動校正

## 產品配備

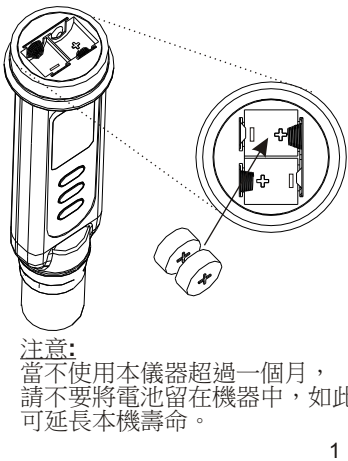
配備包含：

- ✓筆型水質計
- ✓LR44鈕扣電池四顆
- ✓使用說明書
- ✓彩盒或白盒

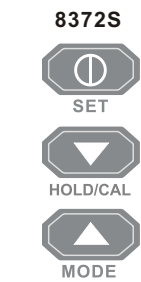
## 電源供應

水質計由4顆LR44鈕扣電池供應電源，當有如下情形時，請檢查電池狀況：

1. 第一次使用時
  2. 低電量顯示出現在螢幕上時
  3. 無法開機時
- 裝置電池：
1. 關閉電源
  2. 以逆時針方向打開電池蓋(注意勿丟棄黑色墊圈)
  3. 更換4顆新的LR44鈕扣電池
  4. 裝入電池並確定磁極都正確
  5. 蓋上電池蓋及黑色電圈並以順時針方向鎖緊



## 螢幕顯示 &功能鍵說明



## 產品規格

Model	8372S	Operating temp.	0~50°C
Salinity range	0.0~42.0 ppt or 0.0%~4.2% or 0.950~1.080(S.G.) based on SEA WATER	Operating RH%	Humidity<80%
Salinity accuracy	+/-1%F.S +/- 1 digit	Storage temp.	0~60°C
Salinity resolution	0.1 ppt or 0.1% or 0.001(S.G.)	Storage RH%	Humidity < 90%
Temp. range	-5~60.0°C	Sensor life time	>6 months (with good maintenance)
Temp. accuracy	+/-0.5°C	Dimension	165(L)x35(W)x32(H)mm
Temp. resolution	0.1	Weight	115g
ATC	ATC	Battery	LR44 x 4pcs
LCD size	30(H)x18(W)mm	Standard Package	Meter/Battery/Manual/Paper box

## 操作說明

1. 按 "SET" 鍵開機，全螢幕將會顯示數秒後進入正常模式。
2. 每次開機，儀器均被設置為自動量程切換狀態。自動量程切換功能可自動偵測量測範圍，並提供您最準確的分析與測量值。本水質計無法手動調整量測範圍。
3. 使用本儀器之前，請用蒸餾水或去離子水清洗電極，以清除電極表面附著的污染物。若是長時間沒有使用本儀器，請在使用前將電極浸泡30分鐘，以消除電極的惰性效應。
4. 將電極浸入待測溶液中，並確保電極表面沒有氣泡附著。您可在空氣中甩晃本儀器然後再浸入溶液，重覆幾次來消除表面氣泡。測棒浸入溶液時，注意電極須完全覆蓋至待測溶液中,包含溫度感測的部位。



5. 輕搖晃浸入溶液中的儀器，可幫助獲得一個較精確的測量值。幾秒鐘後，儀器的溫度讀值和溶液的溫度將會一致。（十五分鐘後，讀值趨於穩定。）

6. 按 "HOLD/CAL" 鍵可以暫留目前的讀值。此時螢幕中會出現 "H" 字樣，再按一次 "HOLD/CAL" 即可退出暫留模式。

7. 鹽度測量：  
8372是海水鹽度測量儀器，具有三種顯示單位: ppt 或 % 和比重 (Specific Gravity, S.G.). 按 "MODE" 鍵切換不同鹽度單位。

8. 按 "SET" 鍵關機。

9. 電極維護：  
a) 請確保電極是乾淨的！  
b) 請小心存放電極。每次使用前，請以去離子水小心清洗電極。使用完畢後，請晾乾，保存置於0~50°C的環境溫度中存放。

10. 準確度&氣泡：  
電極若測量時有空氣泡附著會影響其準確度。若有發現要盡量甩掉。甩動濕的測棒約五次可移除氣泡。沾溶液>甩氣泡>沾溶液>甩掉氣泡...

## 自動關機(睡眠模式)

本儀器在20分鐘未操作後會自動關機。若使用者需長時間操作，可以解除此睡眠模式。

解除睡眠模式：  
在開機之前,同時按 "SET" + "HOLD/CAL" 鍵，直到螢幕出現 "n" 後再放開按鍵，即可回復到正常模式。

注意：  
解除睡眠模式的設定將在每次關機後失效。

## 參數設定

本儀器具有便捷的參數設定方式，讓您能夠依照自己的需求來設定各種參數。

當您需要變更參數時，在測量模式下，長按 "SET" 鍵超過2秒，儀器則進入參數設定模式。

### P3.0: 查看校正訊息: (CAL)

按鍵後選擇 P3.0。有一種校正範圍可選,即為P3.5。此處只供"查看"校正訊息，並非用來校正筆型水質計。

P3.5: 範圍 3 校正訊息：  
在 P3.0時，按 "SET" 馬上進入P3.5並且可以看到上次校正濃度。

按下 "SET" 回到P3.0。

在重新校正時，前次的校正資料將會被取代。

### P4.0 電導常數 (查看)

P4.0 是用來查看電導常數。數值應介於0.8至1.2。這是用來提醒是否應選購新的筆型水質計。

1. 按鍵後選擇 P4.0。有一種範圍可選，即是P4.5。按 "SET" 進入P4.5。

2. 再按 "SET" 鍵回到CEL P4.0銀幕。

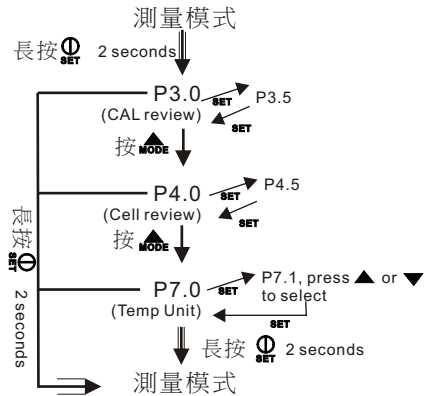
### P7.0: 溫度單位設定: (unt)

P7.1: 改變溫度單位 (tUt):  
校當筆型水質計在測量模式，按 "SET" 2秒進入設定模式，按鍵選擇P7.0，再按 "SET" 進入單位設定。

按 "MODE" 或 "▲" 選擇C / F。  
按 "SET" 確認單位並回到P7。

在P7.0時，按 "SET" 2秒來返回測量模式。

以流程圖來說明設定的操作如下表：



## 校正程序 (CAL)

### 校正準備

校正前需準備及注意事項：

1. 何調正確的校正標準？
2. 何時該校正？

### 選擇校正標準

使用過的校正溶液請勿重複使用。因為溶液中的污染物會影響到儀器的校正和準確度。每次校正時，請使用新的標準溶液。

最好的是選擇35ppt 的海水緩衝液作為校正使用。如買不到，採用50m/s的電導標準液也可提供類似的效果。

該海水用鹽度計中，可校正範圍如下：

Cond. Range	value
Range 3 (P3.5)	0.0~42.0 ppt

### 何時校正

本儀器需要定期的校正。  
-如果您的測量溶液的測量值是在中間範圍，請每月至少校正一次。在校正或測量之前，浸潤測棒約15分鐘，可以濕潤測棒表面並清除附著於測棒上的雜質。

-如果測量時的環境溫度過高或過低，或是測量值在下表所列範圍內，請至少每星期校正一次，以確保準確度。

## 鹽度校正步驟

請依照下列步驟進行海水鹽度校正。請在室溫下進行校正。

1. 將電極部份浸入蒸餾水或者去離子水中約30分鐘。
2. 離選擇適當的電導率標準來執行校正。
3. 將標準溶液注入至兩個乾淨的容器內直至3cm高。
4. 開機。
5. 將電極部分浸入其中任意一個容器內，小心的攪拌清洗電極。
6. 浸潤洗過的測棒至其它容器。請確認電極處沒有氣泡。在空中甩動測棒可輕易的移除氣泡只要。只要浸潤及甩動測棒約五次。
7. 棒均勻的攪拌及等待15分鐘，使測棒穩定至溶液溫度。
8. 按 "HOLD/CAL" 鍵超過2秒後，儀器開始校正。LCD上的鹽度值會開始閃爍。螢幕會出現35ppt, 正好是預設值。

9. 該款海水專用的水筆只能校正35ppt的海水濃度，所以當螢幕閃爍35ppt時是無法用任何按鍵作微調的。

10. 當測量的緩衝液已經足夠穩定，水質計會於15秒內自動記錄校正資料，或按 "SET" 確認數值，將會看到"SA"顯示於銀幕，表示校正成功。

11. 若要不儲存就結束校正模式，可於步驟9按 "SET" 2秒來結束，將不會看到"SA"顯示於銀幕，這可讓水質計於目前的範圍保留前次的校正資料。

## 保養與維護

✓請確保感應棒是乾淨的。在每次測量後，應以去離子水清潔感應棒。若感應棒已暴露於非親水性的溶劑時，應以酒精等溶液清洗之後，再以清水清洗乾淨。

✓請小心存放感應棒。收藏前請用去離子水清潔乾淨並於儲存時保持乾燥。

## 疑難解答

### ◆開機後無顯示

1. 未正確按下電源鍵
2. 未裝電池或電池沒有安裝正確

### 解決方法:

1. 確定按開機鍵的時間至少有0.3秒以上。
2. 檢查電池是否已放妥、接觸良好且磁極正確。或取下電池超過十分鐘再重新裝入一次。

### ◆低電量圖示

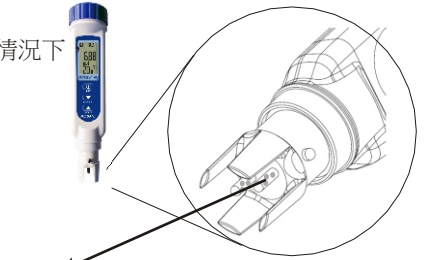
1. 電池電量太低無法提供準確讀值

### 解決方式:

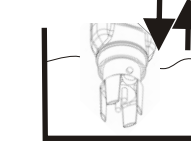
1. 移除舊電池約十分鐘後，再重新安裝新電池，並確認電池的接觸良好且磁極正確。請勿混合新舊電池使用，如此容易造成電解質洩漏。

### ◆不準確的讀值

1. 電極周圍容易產生氣泡。此情況下準確度將會受影響。



減少氣泡的放法:短暫的將電極浸潤入溶液中，並拿出甩掉氣泡。



浸潤電極並取出甩掉氣泡，重複約五次來去除氣泡。

若氣泡仍無法完全消除，請將儀器從溶液取出並將氣泡吹除。

2. 溶液的溫度與濃度可能不均勻,造成不穩定的讀值。
3. 測棒浸潤至樣品溶液的深度不夠，請確認電極與溫度感應器完全浸潤至溶液中。
4. 測棒太髒需要清潔維護。
5. 測棒已經損毀。
6. 測量環境的無線電波與電磁場干擾太強
7. 低溫樣品也會產生較慢的反應。

### ◆錯誤碼

#### 錯誤碼E02/E03

1. E02 解表示讀值低於指定範圍
2. E03 解表示讀值高於指定範圍。

### 解決方法:

1. 將測棒放於室溫的自來水中，等待30分鐘來消除 E02/E03。
2. 如果無法消除錯誤碼，請校正儀表。

#### 錯誤碼E04

1. E04 表示原始資料錯誤

### 解決方法:

1. 解檢查是否測量溫度超過範圍，如果超過，請範圍將測棒放於室溫的自來水中,等待30分鐘來消除 E04 錯誤碼

#### 錯誤碼E16

1. E16 表示 電導常數值已超標

### 解決方法:

1. 重開機數次來取消錯誤碼的顯示
2. 重新校正測棒來取消E16錯誤碼讀值

#### 錯誤碼E31

1. E31 表示儀表測量電路硬體錯誤

### 解決方法:

1. 重複開關機數次來修正

## 保固事項

本公司提供產品自購買後一年內瑕疵或非故意毀損之換貨及維修保證。此產品保證係指正常使用下之產品問題，不包含運送過程或因為意外、濫用、不適當維護、或因電池漏液所造成的產品損壞。保固期內之產品送廠維修或換貨需提具購買收據或相關購買日期證明單據。本產品一經拆解後，保固即失效。

## 退貨授權

本產品退貨需取得供應商之授權，消費者應檢附不良原因說明，向供應商索取RA(退貨授權書)，並將不良品妥善包裝退回，以免在運送過程中有任何的毀損或不必要的損失。已過保固期之產品送回原廠維修，本公司則酌收工本及服務費用。

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2024/02 v03NECR



# INSTRUCTION ■ 8372S, Salinity pen for sea water

## INTRODUCTION

Congratulations on your purchase of this pen type meter. Please read the manual completely before using this meter. Filing and keeping the manual for future reference. Recommended to soak the electrode for at least 30 min. before using to clear up the lazy effect.

### Features:

- IP65 Waterproof housing.
- Dual display with ATC
- Data hold to freeze readings.
- Pen size, easy to fit into pocket.
- Low battery indicator.
- Auto power off.
- C/F unit switchable.
- Powered by 4 pcs LR44 batteries.
- Multi points calibration.
- One touch only for calibration.

## MATERIAL SUPPLIED

This package contains:

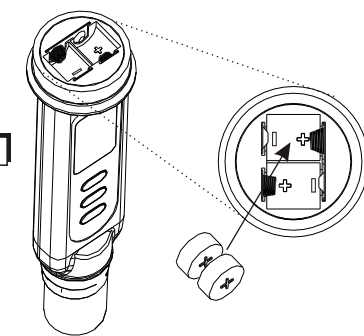
- ✓ The meter x 1
- ✓ LR44 button battery x 4
- ✓ Operation manual
- ✓ Color box or plain box

## POWER SUPPLY

The meter is powered by 4 pcs LR44 batteries. To check the battery when:

1. First time use
  2. The battery symbol appears on LCD
  3. The meter can not power on
- To install the batteries:

1. Turn off the meter.
2. Loose the battery cover in counter clockwise direction. (DON'T discard the black washer!)
3. Replace the old batteries with four new button cells Lr44.
4. Make sure the batteries are in place and the polarity is correct.
5. Put back the battery cover and turn it tightly in clockwise direction.



NOTE:

Remove battery from instruments that you do not plan to use for a month or more. Do not leave battery in instrument.

## LCD DISPLAY & KEYPAD



- The 1st display shows the measured reading.
- The 2nd display shows the reading of temp.
- Ppt, S.G. or % is the unit of salinity
- C or F is the unit of liquid temperature
- is the battery low icon

8372S



## SPECIFICATION

Model	8372S	Operating temp.	0~50°C
Salinity range	0.0~42.0 ppt or 0.0%~4.2% or 0.950~1.080(S.G) based on SEA WATER	Operating RH%	Humidity<80%
Salinity accuracy	+/-1%F.S +/- 1 digit	Storage temp.	0~60°C
Salinity resolution	0.1 ppt or 0.1% or 0.001(S.G)	Storage RH%	Humidity < 90%
Temp. range	-5~60.0°C	Sensor life time	>6 months (with good maintenance)
Temp. accuracy	+/-0.5°C	Dimension	165(L)x35(W)x32(H)mm
Temp. resolution	0.1	Weight	115g
ATC	ATC	Battery	LR44 x 4pcs
LCD size	30(H)x18(W)mm	Standard	Meter/Battery/Manual/Paper box

## OPERATION

1. Press " " to power on the meter. Full LCD will be displayed for some seconds and then enter normal display.
2. The meter is designed as auto-ranging since powered on. Auto-ranging determines and selects a range which gives you the greatest resolution and accuracy. There is no manual-ranging function in this water pen.
3. Rinse the probe with deionized or distilled water before use to remove any impurities adhering to the electrode. If the meter is not used for a long time, please soak the probe more than 30 minutes to clear up the lazy effect of probe.
4. Dip the probe into the sample till the temperature sensor point is also immersed into water. Make sure there are no air bubbles trapped on the probe. To remove air bubbles, insert the probe into liquid and then swing in air to get rid of water. Repeat this procedure many times till you can't see air bubble attached on probe.

5. Stir the probe gently in the sample to create a homogenous sample. Allow a few seconds to reach temp. equilibrium. (Wait about 15 minutes can get a stable reading)



6. Salinity Measurement: 8372 is designed for salinity measurement with 3 different display unit: ppt, % and specific gravity. press " " to switch to different salinity unit

7. Turn off the meter by pressing " ".

### 8. Electrode Maintenance:

- a) Make sure your electrode is clean!
- b) Store the electrode carefully! Before storage, rinse it carefully in deionised water and store **dry** and store the meter under 0~50°C.

### 9. Accuracy & Air bubbles:

The air bubbles are easy to adhere around the electrode and will affect the accuracy a lot. By swing wet probe in air can get rid of bubble easily, just need to repeat this procedure about 5 times:

**Dip in water ->Swing to get rid of bubble->Dip in water -> Swing to get rid of bubble....**

## AUTO POWER OFF (SLEEP FUNCTION)

This meter will shut off automatically 20 minutes of inactivity. For operating longer time, you can disable the sleep mode.

To disable the auto power off:

Before power on, pressing " " + " " keys simultaneously until a "n" appeared on the screen and then release keys to return to normal mode.

### NOTE:

The disable sleep mode will be invalid after every power off.

## SETUP

The advanced setup mode lets you customized your meter's preferences and defaults.

To change the parameters, you can press " " more than 2 sec. to enter setup mode when the meter is in measurement mode.

### P3.0: Review Calibration Info.: (CAL)

Press key to select P3.0. For special sea water testing pen, there is only ONE calibration ranges so what you can find is P3.5 here. This section is for you to "review" the calibration information. **Not for you to calibrate the pen.**

### P3.5: Range 3 calibration info.:

In P3.0, press " " to enter P3.5 and you can see the last calibration concentration.

Press " " momentarily to return to P3.0.

In this calibration range, the previous calibration data will be replaced after re-calibration.

### P4.0 Cond. Cell Constant (Review)

P4.0 is used to review the current cell constant. This value should be between 0.8 to 1.2. This is an indicator to remind you if it is necessary to purchase a new pen.

1. Press key to select P4.0. There is ONE range so you can find P4.5 here.

2. Using " " to enter to P4.5 to view constant. Press " " again to return to CEL P4.0 screen.

### P7.0: temperature unit setting: (unt)

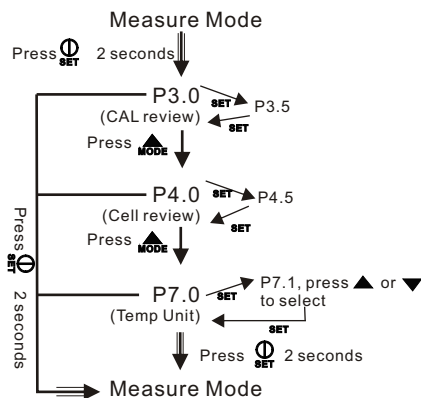
### P7.1: Change temperature unit (tUt):

When meter is in measurement mode, press " " more than 2 sec to enter setup mode. Press key to select P7.0, then press " " momentarily again to enter unit setting.

Press " " to select C /F. Press " " momentarily to confirm the unit and return to P7.0

While in P7.0, press " " for more than 2 seconds to return to measurement mode.

To be summarized, the operation procedure of setting up function is:



## CALIBRATION MODE (CAL)

### PREPARATION FOR CALIBRATION

Two issues need to be prepared and considered before operation.

**First, what is the right calibration standard?**

**Second, when should you calibrate?**

### Selecting a calibration standard

DO NOT reuse the calibration solution. Contaminants in the solution will affect the calibration and the accuracy. Be sure to use fresh solution everytime.

This pen is designed for sea water measuring so **it is suggested to use 35ppt sea water buffer** for calibration purpose. If not available, 50m/s buffer can provide similar result.

There is only one calibration range in this sea water salinity pen .

Cond. Range value  
Range 3 (P3.5) 0.0~42.0 ppt

### When should you do the calibration?

Calibration is necessary and should be done regularly.

-If you are measuring the mid-ranges, calibrate the meter at least once a month. Soak the probe for 15 mins before calibration or measurement can saturate the

probe surface and minimize drift.

-If measure at the extreme temperatures or in very low/very high concentration, calibrate the meter at least once a week to get specified accuracy.

## SALINITY CALIBRATION

Please follow up below steps to proceed the conductivity calibration. It is strongly suggested to do the calibration in room temperature.

1. Insert the probe into demineralized water or distilled water for about 30 minutes to rinse the probe.
2. Select the proper conductivity standard for calibration.
3. Pour 3 cm height of the solution into two separate clean containers.
4. Power on the meter.
5. Rinse the probe into one of above containers. Gently stir the probe.
6. Dip the rinsed probe into the other container. **Please make sure there is no air bubbles attached on electrode.** Swing the probe in air can get rid of the bubble easily. Just repeat dip & swing this procedure for about 5 times.
7. Gently stir and let the probe stabilize to the solution temperature by waiting about 15 mins.
8. Press " " more than 2 seconds to begin calibration. The detected conductivity value of solution will blink on LCD. If your solution is or closed to 35ppt, 35ppt will be displayed as default.
9. For this sea water salinity pen, 35ppt is the only available calibration point. No need to press up or down key to adjust.
10. When the detected buffer condition is stable enough, meter will auto save calibration data in 15 seconds or you may also press " " to confirm the value. You will see "SA" appear on LCD to indicate the calibration is successfully done.
11. To exit calibration mode without saving, you can press " " in step 9 more than 2 seconds to quit. You won't see "SA" by doing this. This lets you retain the previous calibration data for the current range.

## MAINTENANCE

- ✓ Make sure the electrode is clean! Between measurements, rinse the electrode with deionised water. If the electrode has been exposed to a solvent immiscible with water, clean it with a solvent miscible with water e.g. Ethanol and rinse carefully with water.

- ✓ Store the electrode carefully! Before storing, rinse it carefully in de-ionised water and store **dry**.

## TROUBLESHOOTING

### ◆ Power on but no display

1. Didn't press the power key properly
2. Batteries are not installed or are not installed properly

### Solution:

1. Press power key for more than 0.3 seconds to turn on the device.
2. Check whether batteries are in good contact and correct polarity. You can also remove the batteries >10 mins and then install the batteries again..

### ◆ Low Battery icon

1. Battery power is too low to provide accurate reading

### Solution:

1. Remove all old batteries > 10 mins and then install new batteries with correct polarity and good contact. Please don't mix new and old batteries since it is easy to cause battery electrolyte leakage.

### ◆ Unstable reading

1. The air bubbles adhered around electrode will seriously affect the reading.

Many air bubbles adhered!



To reduce the air bubbles, dip the electrode completely and swing in air to get rid of bubble



If above method are not working, remove the electrode out of solution and blow the electrode may also remove the air bubbles from electrode

2. The sample solution is possible asymmetric to cause unstable reading
3. The probe isn't immersed deep enough in the sample solution. Please make sure both electrode and temperature sensor are immersed in solution.
4. The probe is too dirty and need maintenance
5. The probe is broken
6. The RF interference from field is too strong.
7. The low sample temperature will also cause slow response

### ◆ Error code

#### Error code E02/E03

1. E02 means the measured value is lower than specified range
2. E03 means the measured value is higher than specified range

### Solution:

1. Put the probe in normal tap water at room temp. for 30 mins to cancel E02/E03 from display.

2. If above is not working, please try to do calibration

#### Error code E04

1. E04 means the original data error are in error

### Solution:

1. Check whether the measured temp. is over range. If yes, leave the probe in normal tap water at room temp. for 30 mins to cancel E04 from display.

#### Error code E16

1. E16 means Cell constant is out of the range

### Solution:

1. Re-turn on meter several times to cancel the error code from display.
2. Try to calibrate the conductivity probe to cancel E16 from display

#### Error code E31

1. E31 means the measuring circuit of device hardware failure.

### Solution:

1. Power on/off several times to fix.

## WARRANTY

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers normal operation but does not cover battery, misuse, abuse, alteration, tampering, neglect, improper maintenance, or damage resulting from leaking batteries. Proof of purchase is required for warranty repairs. Warranty is void if the meter used to be taken apart.

## RETURN AUTHORIZATION

Authorization must be obtained from the supplier before returning items for any reason. When requiring a RA (Return Authorization), please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible damage or loss .