

# OPERATION MANUAL

## IP67 COMBO PH/CONDUCTIVITY/ SALINITY/D.O. METER



**Model:** ■ 8602  
■ 8603

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## **INTRODUCTION**

Thank you for purchasing Multi-function waterproof pH/Cond./Salt/D.O. meter. Please read this manual thoroughly before operating your meter.

Features:

- Large LCD with multiple parameters display : PH, Conductivity, Salinity, D.O. and temperature. (Displayed parameter is decided by probe type)
- IP 67 Waterproof.
- Auto temperature compensation.
- Multiple points calibration.
- Manually altitude compensation and salinity compensation function for D.O. measurement.
- 99 points memories w/recall function.
- Easy replacement probes.
- Temp. unit °C/°F is switchable.
- 1 hour auto power off.
- Application:
  - Excellent to use in fresh water aqua farm.
  - Excellent to use in sea water aqua farm.

## **MATERIAL SUPPLIED**

A basic package contains:

- Meter x1pc
- Battery x 6pcs
- Operation manual x 1pc
- Hard carry case x 1pc
- Probe (probe type & Qty is depended on your ordering p/n)

Probes for this series:

- pH probe
- Conductivity probe
- D.O. Probe (w/maintenance accessory)

## POWER SUPPLY

The meter is powered by 6pcs AAA batteries. If any of the following situations occurred, please check the battery power, polarity and contact:

1. Brand new meter and first time using.
2. When the battery low icon appears on the LCD.
3. When you can not turn the power on.

## KEY PAD OPERATION



SET

-Press this key to switch the meter **ON/OFF**.

-In the normal mode, press >1 sec to enter **SET** mode.

CAL  
ESC

-Press to switch between “normal” and “calibration” .

-In calibration, setting or recall mode, press to return to normal mode.

EC  
SALT  
RECALL

-Press to switch between CON(us) or Salt (ppt) unit.

-Hold down this key more than 2 seconds to read memory value.

96  
mg/L



-Press to switch between D.O.in% or D.O.in mg/l(ppm).

-Press to increase the setting value in **SET** mode.

MEM



-Press to save the current reading.

-Press to decrease the setting value in **SET** mode.

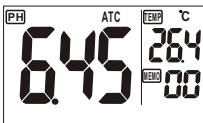
ENTER

-Press to confirm the calibration or parameter setting.

## LCD DISPLAY

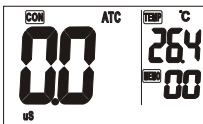
PH probe

8602



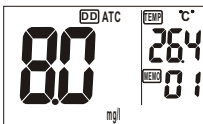
- 1.The pH value will be displayed on the left side of the LCD
- 2.The temperature value will be displayed in the upper right corner of the LCD.
- 3.The MEMO number which is the total number of records saved in the meter will be displayed in the lower right corner of the LCD

Conductivity probe



- 4.The conductivity value will be displayed on the left side of the LCD. The Temp. value will be displayed on the upper right corner.
- 5.The temperature value will be displayed in the upper right corner of the LCD.
- 6.The MEMO number which is the total number of records saved in the meter will be displayed in the lower right corner of the LCD.

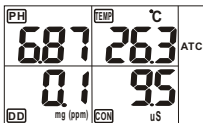
## D.O. probe



- The DO value will be displayed on the left side of the LCD.
- The temperature value will be displayed in the upper right corner of the LCD.
- The MEMO number which is the total number of records saved in the meter will be displayed in the lower right corner of the LCD.

## **8603**

### PH /Conductivity/ D.O.probes



- The pH value will be displayed on the upper left corner of the LCD.
- The temperature value will be displayed on the upper central part of the LCD.
- The DO value. will be displayed on the lower left corner of the LCD.
- The COND value will be displayed on the lower central part of LCD.
- The auto temperature compensation icon (ATC) will be displayed on the right side of the LCD.

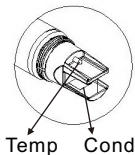
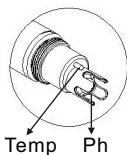
## OPERATION

**Note: Please turn the power off before replace the probe. Turn the power on after the probe is plugged and screw tightly.**

### START UP

1. Install the batteries into the meter.
2. There are three probes which can be connected to the meter. PH probe with black connector, COND. probe with blue connector, D.O. probe with green connector.

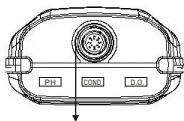
The charts below indicates the electrode and temperature sensor location.



There is guide way design between the probe plug and the meter connect to help you easily install the probe by plug the probe with the aligned guide way, then put the probe guard on and screw it tight moderately.

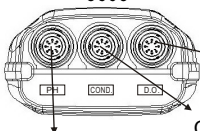
Top view

8602



Probe connect port

8603



DO probe port

COND probe port

PH probe port

## PH MEASUREMENT

This meter is designed with an automatic temperature compensation feature.

Please remove the pH electrode soaker bottle on the electrode before use.

### **Step 1**

Rinse the probe with de-ionized or distilled water before use in order to remove any impurities adhering on the probe. If the electrode is dehydrated, soak it for 30 minutes in KCl solution before taking the reading

### **Step 2**

Press power on key.

### **Step 3**

Dip the electrode into the sample, the electrode must be completely immersed into the sample. Stir the probe gently to create a homogenous sample and shorten the stabilizing time.

### **Step 4**

Wait until the reading is stabilized.



## CONDUCTIVITY MEASUREMENT

Please remove the Cond. electrode protective cap from the probe before use.

### **Step 1**

Rinse the probe with de-ionized or distilled water before use to remove any impurities adhering on the electrode. If the meter is not used for a long time, please soak the probe in clear water for more than 30 minutes to eliminate the inert effect of the probe.

### **Step 2**

Press the power on key.

### **Step 3**

Dip the probe into the sample. Make sure there is no air bubbles trapped in the slot of the probe. Gentle stir the probe to remove the air bubbles, Making sure the electrode tips is totally immersed in the testing sample.

### **Step 4**

Wait until the reading is stabilized.

## SALINITY MEASUREMENT

Under normal mode, please connect the Cond. probe to the meter. Press EC SALT key to switch to SALT ppt unit. Please follow the conductivity measurement as step 1~4 above to take the salinity measurement.

## DISSOLVED OXYGEN MEASUREMENT

Please remove the DO electrode protective cap on the electrode before use.

### **Step 1**

Press the power on key.

It might take a few minutes to more than 10 minutes for the meter to have a stable DO reading in the air. The D.O. will be displayed on LCD with mg/l unit .

### **Step 2**

Dip the probe into the sample. Making sure the electrode tips is totally immersed when you stir it.

### **Step 3**

Wait until the reading is stabilized.

You can press “% mg/L” key to switch measurement unit to % .

## **MEMORY RECORD**

In the normal mode, press MEM key can memorize up to 99 points records. The MEMO number will be displayed on the screen. “FUL” “ on the screen when the 99 points memory is full.

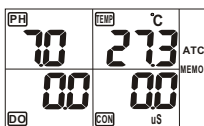
**NOTE: DO value in % unit can't be memorized , Please switch to mg/l (ppm) mode before proceed memory recording.**

## **RECALL MODE**

To enter RECALL ( REC) mode, press and hold RECALL key for more than one second in the measurement mode, then press  $\Delta$  or  $\nabla$  to view memorized data in rounds( Fig 18). Press ESC key for more than one second to return to normal mode.



8602 fig 18



8603 fig 18

### Temp. Display change (only 8603)

In normal mode, press enter to switch temperature display of different probes. The TEMP icon will blink with a second parameter, like DO, COND, or pH on the LCD. Then the temp column shows the current temperature from the probe with blinking icon. For example, when TEMP and DO icons are blinking, the temperature reading on the TEMP column means the measured temperature status comes from D.O. Probe.

## SETUP

This meter has the advanced setup mode which allows you to customize and check your meter's preferences and defaults. If you would like to change the parameters, please press "SET" for more than 2 sec. to enter the setup mode when the meter is in the measurement mode.

### NOTE:

To exit the function without saving in the setup mode, press the CAL/ESC key until the measurement mode appears. If the meter is under the setting value status, press the CAL/ESC key twice to exit.

The table below shows the programmable functions of each probe .

Parameters	PH	COND	DO
P10 Memory Clear-CLr adjustable	V	V	V
P20 PH Electrode Slope Review	V		
P30 Cond. Calibration Review		V	
P40 Cond. Cell Constant Review		V	
P60 DO Review and Set parameters adjustable			V
P70 Temperature unit setting adjustable	V	V	V
P90 Reset to Default Setting Adjustable			

### **P10 Memory Clear-CLr (adjustable)**

To clear the stored data from meters.

1. Enter setup mode to select memory clear function. CLr P10 will be displayed on the LCD (Fig 1) Press ENTER for P11 setting (Fig 2). The default “no” icon will be flashed on the display and P11 will be displayed on the upper part of the screen.

2. Press  $\Delta$  or  $\nabla$  key to change the status from no to YES (Fig 3), press ENTER key again to confirm to clear all memory. The LCD will return to P10 when memories are deleted. ( Fig 1)

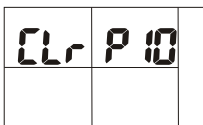
#### **NOTE:**

The memory clear option is designed to clear 99 memories at once. Please consider carefully if you decide to clear the memory. This operation can not be recovered

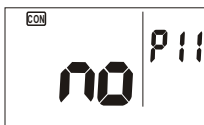
The clearing function only delete the current using probe records. For example: in mode 8602 if the ph probe is currently used, it only delete the ph records in the memory. If the dissolved oxygen is plugged, then only the dissolved oxygen records will be deleted. In model 8603, press yes to clear memory will delete all records of the 3 parameters saved in the meter.



8602 Fig. 1



8603 Fig.1



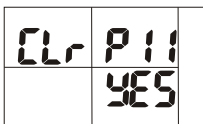
8602 Fig.2



8603 Fig.2



8602 Fig.3



8603 Fig.3

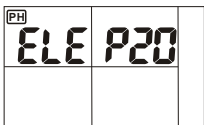
### P20 PH Electrode Slope (Review)

To view the pH electrode data (slope value).

1. Enter setup mode, press  $\Delta$  or  $\nabla$  key to enter the ELE P20 (Fig 4) display.
2. Press ENTER to view P22, the slope value will be displayed on LCD, same as P23 (Fig 5). As maximum 3 PH calibration points is allowed in this meter so the user can review two slopes value. If the value is  $<75\%$  or  $>115\%$ , it is suggested to change electrode immediately.



8602 Fig.4



8603 Fig.4



8602 Fig.5

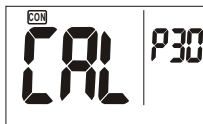


8603 Fig.5

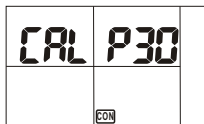
### P30 Cond. Calibration (Review)

Press  $\Delta$  or  $\nabla$  key in the setup mode to check the CAL P30 calibration message.(Fig 6)This feature is only to facilitate the user to view the previous conductance calibration message

-Press ENTER key, to enter the calibration information screen with P32 . P33. P34. P35 CON. uS or mS calibration information.(Fig 7)P32 will display calibration information in Range1. P33 will display calibration information in Range 2. ...P35 will display calibration information in Range 4. Press ENTER key to return to CAL 30 screen.(Fig 6)



8602 Fig.6



8603 Fig.6



8602 Fig.7



8603 Fig.7

## P40 Cond. Cell Constant (Review)

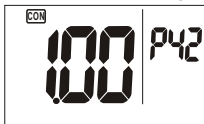
Press  $\triangle$  or  $\nabla$  key in the setup mode to check CEL P40 display(Fig 8). Press ENTER key to enter P42. P43.P44 and P45 screen (Fig 9) and review each range cell constant. Press ENTER key again to return on the CEL P40 screen. (Fig 8)



8602 Fig. 8



8603 Fig.8



8602 Fig.9



8603 Fig.9

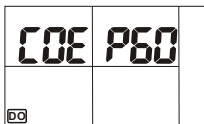
## P60 DO Review and Set parameters adjustable

Press  $\triangle$  or  $\nabla$  key in the setup mode to enter COE P60 screen (Fig 10). When the monitor is under DO screen. Press ENTER key to display P61 and review previous DO calibration temperature (Fig 11). Then press "ENTER" into P62 ppt, the value will be flashed on the screen (Fig 12 ). You can manually enter the salinity compensation.( Use salinity value measured by the conductivity probe). Press  $\triangle$  or  $\nabla$  to adjust the salinity value. The value can be adjusted from 0.0 to 42.00ppt.

Press Enter to confirm. then enter P63M to measure height from sea level with manually enter compensation (Fig13). The value will be flashed on the screen. You can manually enter  $\Delta$  or  $\nabla$  key to adjust from 0~3500M (100 M per step),press ENTER to confirm and return to COE P60 screen.(Fig 10)



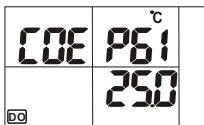
8602 Fig.10



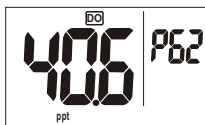
8603 Fig.10



8602 Fig.11



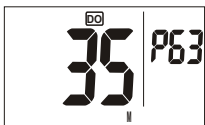
8603 Fig.11



8602 Fig.12



8603 Fig.12



8602 Fig.13



8603 Fig.13



## P70 Temperature unit adjustable

This function allows you to select the unit of the temperature:

1. Press  $\Delta$  or  $\nabla$  key in the setup mode to enter the temperature unit P70 screen. Press the ENTER key to select temperature unit setting. "unt" will display on the left side of the screen ( Fig 14 )

2. At P70 screen, press ENTER key to enter P71.

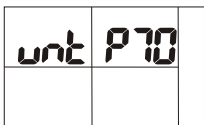
The default "C" will be flashed on the main screen.

(Fig15). If the unit you need is degree  $^{\circ}\text{C}$ , press ENTER key to confirm.

3. If the unit you desired is degree  $^{\circ}\text{F}$ , press  $\Delta$  or  $\nabla$  key to change the C to F and then press ENTER key to confirm. The meter will return to P70 screen (Fig 14)



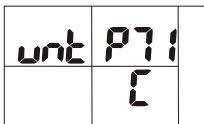
8602 Fig.14



8603 Fig.14



8602 Fig.15



8603 Fig.15

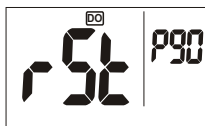
## P90 Reset to Default Adjustable

Use this option to reset the meters to the factory default setting.

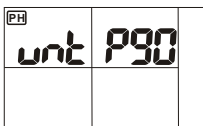
Press  $\triangle$  or  $\nabla$  in the setup mode to enter the r St P90 screen and select the reset to default setting (Fig 16)

1. At P90 screen, press Enter key to enter P91. The default set "no" icon will be flashed on the main screen. (Fig 17) If you do not desire to reset to the default setting, press Enter key to confirm.

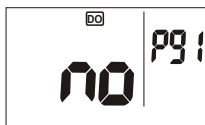
2. If you would like to reset the meter to its factory default setting, press  $\triangle$  or  $\nabla$  to switch the icon from "no" to "YES" and then press ENTER key to confirm. The screen will return to P90 screen. (Fig 16)



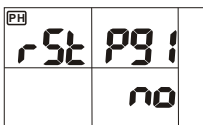
8602 Fig. 16



8603 Fig. 16



8602 Fig. 17



8603 Fig. 17

Parameters	Default Setting Value
P10 Memory Clear-CLr adjustable	No.
P20 PH Electrode Slope Review	100%
P30 Cond. Calibration Review	146.6uS, 1413uS 12.88mS, 51.5mS
P40 Cond. Cell Constant Review	1.00
P60 DO Review and Set parameters adjustable	25 <sup>0</sup> C, 0ppm, 0Meter
P70 Temperature unit setting adjustable	Degree $^{\circ}$ C
P90 Reset to Default Setting Adjustable	No

## CALIBRATION

In model 8603, first select the probe type you want before entering calibration mode. To select the probe type, simply press "ENTER" to select, a flashing icon **PH** or **CON** or **DD** will appear with each press.

### PH probe

Rinse the electrode in de-ionized water or pure water. DO NOT wipe the pH probe dry. Wiping the probe may cause static and cause calibration and measurement instability.

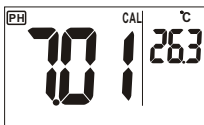
Selecting the valid buffer will help the meter to recognize the buffer and calibrate the probe precisely. Please clear the electrode with de-ionized water or detergent, and follow the procedures for PH calibration value setup.

The Ph calibration procedure is as followings:

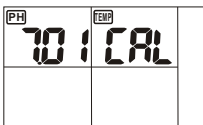
Insert the PH probe into the meter.

1. Power on the meter
2. Pour PH buffer into a clean container and put the electrode into buffer. Suggest to start from middle range buffer, such as pH7.01
3. Make sure the pH electrode is completely immersed in buffer.

4. Press CAL/ESC key to enter “calibration” mode.
5. Once the probe auto recognize the pH buffer. For example, 7.01, the “CAL” and 7.01 will flash. (Fig 19)
6. If the auto recognized value is different from your standard buffer, pressing  $\triangle$  or  $\nabla$  key to adjust.
7. Wait for 30 seconds or pressing ENTER key, SA ( Fig 20) will be displayed on the LCD to indicate the calibration is saved.
8. Repeat step 1~7 to do 4.01 & 10.01 calibration.



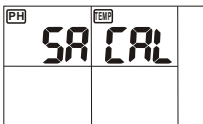
8602 Fig.19



8603 Fig.19



8602 Fig.20



8603 Fig.20

## CONDUCTIVITY CALIBRATION

Please plug the COND. probe into the meter. Select a standard buffer which is closed to your measuring range or referring to following table. Normally calibrate at 2/3 full range is suitable for most condition. For example, if the measuring range is 0~1999mS. You can use 1413uS solution to calibrate. DO NOT reuse the calibration solution. Contaminants in the solution will affect the calibration and the accuracy. Be sure to use fresh solution each time.

Cond.	Measuring range	Suggested buffer range
1	0~199.9uS	60.0~170.0uS
2	0~1999uS	600~1700uS
3	0~19.99mS	6.00~17.00mS
4	0~199.9mS	60.0~170.0mS

For Conductivity calibration, you only need to do single point calibration. The previous calibration data will be replaced after re-calibration. For example, if you previously calibrated conductivity meter at 1413 uS in the 0 to 1999 uS range, when you re-calibrate it at 1500 uS again (also in 0~1999uS range), the previous 1413uS will be replaced in this range (0~1999uS). However, the meter will retain the calibration data for other ranges which are not yet re-calibrated.

## When should you do the calibration?

We strongly suggest you calibrate the probe before the first time measuring. If the conductivity of measured solutions are  $<100 \mu\text{S}$ , please calibrate the meter at least once a week to maintain specified accuracy. If the meter is used in the mid ranges, the calibration is suggested at least once a month. If the measurement is proceed at extreme temperature, we suggest to calibrate at least once a week.

Please follow steps below for conductivity calibration:

1. Insert the probe into de-mineralized water or distilled water for about 30 minutes to rinse the probe.
2. Select appropriate conductivity solution for calibration.
3. Pour the solution into a clean container.
4. Turn the meter on. Enter normal mode.
5. Dip the probe into above container. Tap probe on the bottom of container to remove air bubbles from sensing area. Ensure the sensing area is completely soaked in the solution.

6. Press CAL key more than 2 seconds to enter calibration. The probe will automatically detect the conductivity solution value and the value will be flashed on the LCD. ( Fig 21 ) Press the  $\triangle$  or  $\nabla$  key to adjust the value on the LCD to match the standard calibration value.

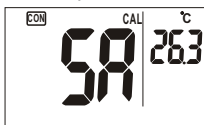


8602 Fig. 21

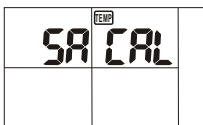


8603 Fig. 21

7. When the conductivity solution value on the LCD matches the calibration solution value, Press ENTER key, the "SA" will be displayed on the LCD. (Fig 22). Then the LCD will stop flashing and return to normal mode then the conductivity calibration is completed.



8602 Fig 22



8603 Fig 22

#### NOTE:

The characteristics of the Probe may degrade with time and usage. Whenever an E16 occurs after calibration, please replace a new probe immediately.

8.Repeat step 1~8 for other ranges calibration if needed.

**NOTE:**

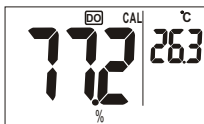
If you would like to exit the conductivity calibration mode without saving, please press CAL/ESC key instead and it will retain the meter's previous calibration data for the current range.

**DO % SATURATION CALIBRATION**

We recommend the users to calibrate the meter before operate it each time.

**Calibration Step for DO % SATURATION**

- a. In normal mode, hold the probe in the air , wait for few minutes until the reading on LCD is stabilized. Press CAL/ESC to calibrate for 100% saturation calibration, CAL icon is flashing on LCD.(Fig 23)
- b. Wait couple seconds, when the reading is stable, press ENTER to finish the calibration.
- c. You can stop the calibration by pressing CAL/ESC.
- d. Whenever an error occurs during calibrating, the ERR indicator will appear. It might cause by low electrolyte condition or probe defect.



8602 Fig. 23



8603 Fig. 23

**Note:**

While following condition happens, Please turn on the meter and wait for



5~10 minutes until the reading on LCD is stabilized then follow the steps above to calibrate.

1. DO probe has just been plugged into the meter.
2. The electrolyte solution has been refilled.
3. The membrane has been replaced.
4. The batteries have been replaced.

## **PROBE MAINTENANCE**

Electrode maintenance:

- A) Make sure the electrode is clean!
- B) Please store the electrode carefully, rinse it carefully in de-ionized water before using. Please keep it under 0~50°C temperature after each usage.

### **PH probe maintenance**

The pH glass bulb should always be moistened by using the cap for protection and storage. Always rinse the pH electrode with pure water or distilled water before next use. Never touch or rub the glass bulb for lasting pH electrode life. Always rinse the pH electrode in de-ionized water before next use.

### **COND probe maintenance**

Please soak the conductivity probe in distilled water for 30 min before each usage in order to avoid the inert effect of the electrode. Please take the cap on the electrode off before each calibration and measurement.

DO NOT use anything to rub the surface of electrode, or the original constants might be changed and thus affected the testing range.

If the surface of testing electrode is contaminated, place the probe in a diluted detergent or diluted acid about 15 minutes, then rinse it with distilled water. After clearing, please keep dry for storage and put the cover to protect the probe.

### **DO probe maintenance**

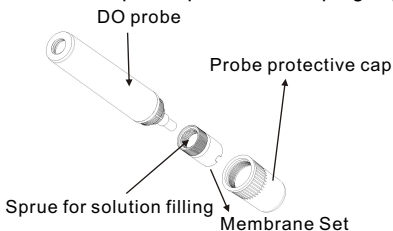
Please protect and storage the probe with the transparent cover, and always moistened the probe with clean water while in storage.

### **To refill DO electrolyte solution**

If you can see through the probe or the probe has many bubbles, it means that the electrolyte solution in the front end of the probe has evaporated, you need to refill the electrolyte solution. Please fill the electrolyte solution as the step below

There are one bottles of electrolyte solution in the package, they are ready to use for refilling.

1. Rotated the probe and take the probe protective cap off.
2. Use inclusive syringe to inject the solution to the membrane set on the probe.
3. Assembled the membrane set
4. Put the probe protective cap back.
5. Screw the probe protective cap tightly.



Note:

Before refilling the electrolyte solution, place the probe flat on the table and hold the syringe vertically. Inject slowly to ensure there are no bubbles presented in the probe.

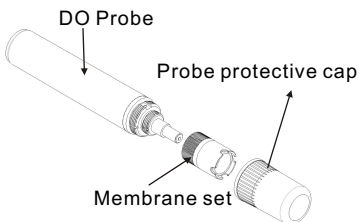
Electrolyte solution:

The electrolyte solution we used is Kbr. Users may need to replace with fresh electrolyte when error message tells there are inaccurate readings.

### How to replace membrane set

Two packs of membranes sets are included as accessory with D.O. probe. Changing membrane is required when the calibration can not be performed or the membrane is damaged or dirty.

1. Prepare a new membrane set.
2. Unscrew the probe protective cover.
3. Remove the membrane set from the probe.
4. Secure and Install a new membrane set on the probe.
5. Put the protective cap back and screw tightly then the membrane set replacement is completed.



# TROUBLE SHOOTING

## Power on but no display

Check the batteries are in place and in correct position or replace a new battery and try again.

## Unstable reading

Clear and re-calibrate the probe. Make sure the sample solution covers the entire sensor ball or replace a new probe and re-calibrate to check if the probe has been damaged.

## Slow response

Clearing the electrode under the tap water for 10~15 minutes, and soak into distilled water or use other electrode detergent for clearing.

## Error Codes

Error	Problem	Solution.
E02	The value is under the lower limit.	The concentration of the testing solution is out of the range or replace new probe.
E03	The value is over the upper limit.	The concentration of the testing solution is out of the range or replace new probe.
E04	This error is caused by the mistake in the original data	Check mV or temperature reading.
E13	PH calibration error.	Re calibration or replace new probe.
E16	Cell constant of Cond probe is out Of the range.	Re calibration or replace new probe.
E31	Measuring circuit failure.	Repair.
E32	Memory IC failure. Reading failure.	Repair.

## SPECIFICATION

### 8603 / 8602

pH range	2.00~12.00
pH accuracy	+/-0.1
pH resolution	0.01
Cond. range	0~199.9, 0~1999uS/cm;0~19.99, 0~69.9mS/cm
Cond. accuracy	+/-1% F.S +/- 1 digit
Cond. resolution	0.1uS/cm, 1uS/cm;0.01mS/cm, 0.1mS/cm
Salinity range	0~10.00ppt; 0~42.0ppt(SEA WATER)
Salinity accuracy	+/-1% F.S +/- 1 digit
Salinity resolution	0.01 ppt, 0.1ppt
D.O. range	0.0~199.9% (0.0~30.0mg/L)
D.O. accuracy	+/-3% of F.S. +1 digit
D.O resolution	0.1
Temp. range	0~60.0°C
Temp. accuracy	+/-0.5°C
Temp. resolution	0.1
Compatible probe	PH PROBE, COND. PROBE AND D.O. PROBE
LCD size(mm)	32.5(H)x54(W)
Operating temp.&RH%	0~50°C, Humidity<80%
Storage temp.&RH%	-20~60°C, Humidity < 90%
Dimension(mm)	169(L)x78.3(W)x43.4(H)
Weight	200g
Power	6PCS / 4PCS AAA Batteries

## 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 and 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 has been opened

## 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.

## **Accuracy, the Zenith of Measuring / Testing Instruments !**

Hygrometer/Psychrometer  
Thermometer  
Anemometer  
Sound Level Meter  
Air Flow meter  
Infrared Thermometer  
K type Thermometer  
K.J.T. type Thermometer  
K.J.T.R.S.E. type Thermometer  
pH Meter  
Conductivity Meter  
T.D.S. Meter  
D.O. Meter  
Saccharimeter  
Manometer  
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