OPERATION MANUAL

COMBO PH/CONDUCTIVITY/ TDS/SALINITY/D.O. METER

Contact :

EASTERN ENERGY CO.,LTD. (HEAD OFFICE)

40/4 Vitoondumri Rd., Banbueng, Banbueng
Chonburi 20170 THAILAND
Tel: 0-3844-6117 Fax: 0-3844-6200
Email: info@ete.co.th

CE

www.ete.co.th

Model: ■ 84051

INDEX

INTRODUCTION

Thank you for purchasing Multi-function waterproof pH/Cond./TDS/Salt/D.O. Meter. Please read this manual thoroughly before operation.

Features:

- Large LCD with multiple parameters display: PH, Conductivity, TDS, Salinity, D.O. and temperature. (Displayed parameter is decided by probe type)
- Green backlight for dark environment.
- Auto temperature compensation.
- Multiple points calibration.
- Manually altitude compensation and salinity compensation function for D.O. measurement.
- 99 points memories w/recall function.
- Probes w/ anti collision hood.
- Temperature °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
-AAA Battery x 4pcs
-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/TDS/Salt probe
-D.O. Probe (w/maintenance accessory)

POWER SUPPLY

The meter is powered by 4pcs 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

-Press this key to switch the meter **ON/OFF**.
-In the normal mode, press >1 sec to enter **SET** mode.

-Press to switch between "normal" and "calibration".
-In calibration, setting or recall mode, press to return to normal mode.

-Press to switch between CON(us) or TDS(ppm/ppt) or Salt (ppt) unit.
-Hold down this key more than 2 seconds to read memory value.

-Press to switch between D.O.in% or D.O.in mg/l(ppm).
-Press to increase the setting value in **SET** mode.

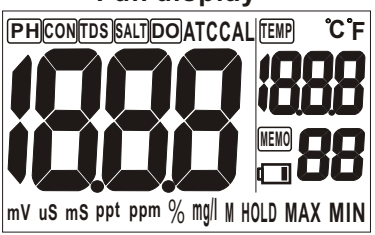
-Press to save the current reading.
-Press to decrease the setting value in **SET** mode.

ENTER

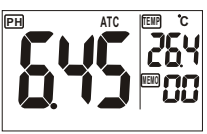
-Press to confirm the calibration or parameter setting.
-Press to turn on/off backlight.

LCD DISPLAY

Full display

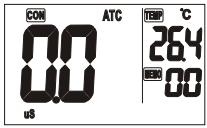


Using PH probe

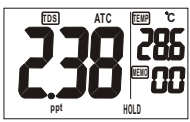


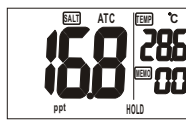
1.The pH value will be displayed on the left side of the LCD
2.The temperature value will be displayed in the upper right corner of the LCD.
3.The MEMO number will be displayed in the lower right corner of the LCD and is the total number of saved records.

Using Conductivity/TDS/Salinity probe

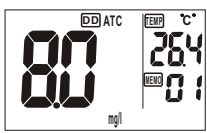


4.The conductivity value will be displayed on the left side of the LCD.
5.The temperature value will be displayed in the upper right corner of the LCD.
6.The MEMO number will be displayed in the lower right corner of the LCD and is the total number of saved records.
7. Press “EC mode”key to switch the display to TDS or salinity reading.





Using D.O. probe



8.The DO value will be displayed on the left side of the LCD.
9.The temperature value will be displayed in the upper right corner of the LCD.
10..The MEMO number will be displayed in the lower right corner of the LCD and is the total number of saved records.

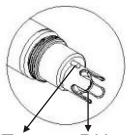
OPERATION

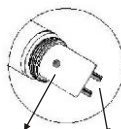
Note: Please turn the power off before replace the probe. Turn the power on after the probe is plugged and screw tightly.

START UP

1.Install the batteries into the meter.
2.Read the section of **calibration** and **Setup** and take necessary action first.
3.Three probes which can be connected to the meter: PH probe with black connector, COND./TDS/Salinity probe with blue connector, D.O. probe with green connector.

The charts below indicates the electrode and temperature sensor location.



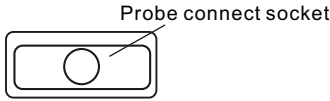


All probes are provided with a anti-collision hood to provide protection in measuring. Please remove protection hood in below condition:

1. To store pH probe.
2. To do pH calibration.

There is installation guide between probe plug and meter socket. Find the guide, screw probe tight moderately.

Top view



PH MEASUREMENT

This meter is designed with 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. Then, put on anti-collision hood for better protection.

Step 2

Press power on key.

Step3

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. Be careful , don' t create air bubble.

Step4

Wait until the reading is stabilized.

CONDUCTIVITY MEASUREMENT

Please put on anti-collision hood to provide better protection. There is no need to remove hood even when you plan to do calibration.

Step 1

Rinse the probe with de-ionized or distilled water to remove 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 power key and dip the probe into sample. Making sure the electrode tips is totally immersed. Stir the probe gently to create a homogenous sample.

Be careful, don't create air bubble.

Step 3

Wait until the reading is stabilized.

SALINITY MEASUREMENT

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

TDS MEASUREMENT

Under normal mode, please connect the Cond. probe to the meter. Press "EC mode" key to switch to TDS display. Please follow the above conductivity measurement step 1~4 to take the TDS measurement.

DISSOLVED OXYGEN MEASUREMENT

Put on anti-collision hood to provide better protection. There is no need to remove hood even during calibration.

Step 1
Press the power on key. The D.O.will be displayed on LCD with mg/l unit.

It might take from seconds to nearly 10 minutes to have a stable D.O. reading. It is depended on what kind of D.O. Activation mode you choose.

Two D.O. Activation modes are provided: Slow and Fast. Meter is default at **Fast** but it is programmable in setting mode P6.4 (page 15)
- If D.O. probe is unplugged from meter and not in use for long time, it might take about 10 mins to activate.
- If D.O. probe is plugged on meter for most of time, to set the activation mode to **Fast** can make the reading stabilized in few seconds. The dis-advantage of Fast mode is electrolyte consumption is much higher so the need to refill and doing probe maintenance is frequent.
-If D.O. probe is plugged on meter for most of time, to set the activation mode to **Slow** can make the reading stabilized in 10 mins. The advantage of Slow mode is electrolyte consumption is lower and less maintenance work to do.

Step2
Run 100% calibration in air.

Step 3
Dip the probe into the sample. Making sure the electrode tips is totally immersed when you stir it.

Step 4
Wait until the reading is stabilized.

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

If your application is to measure dissolved oxygen in aqua farm, it is suggested to measure at least 1 meter deep and do it regularly at fixed time, fixed location and fixed water deep to get proper data for comparison.

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 memories are 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△ or ▽ to view memorized data in rounds(Fig 18). Press ESC key for more than one second to return to normal mode. While in RECALL mode , “MEMO” icon appears on display.

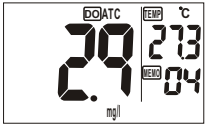


Fig 18

BACKLIGHT

In normal mode, press “ENTER” key to switch on the backlight. To turn if off, press “ENTER” key again.

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 programable 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	
P50 Tds factor adjustment		V	
P60 DO Review and Set parameters adjustable			V
P70 Temperature unit setting adjustable	V	V	V

P10 Memory Clear-CLr (adjustable)

P10 is used 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 flash on the display and P11 will be displayed on the upper part of the screen.
2. Press △ or ▽ key to change the status from no to YES (Fig 3), press ENTER key again to confirm and clear all. The LCD will return to P10 when memories are deleted. (Fig 1)
3. If the ph probe is currently attached, it only deletes the ph records in the memory. If the D.O. probe is plugged, then only the D.O. records will be deleted.

Fig. 1

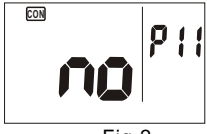


Fig.2

Fig.3

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.

P20 PH Electrode Slope (Review)

P20 is used to view the pH electrode data (slope value) and used this data to judge the availability of pH probe.

1. Enter setup mode, press △ or ▽ 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.

Fig.4

Fig.5

P30 Cond. Calibration (Review)

P30 is used to review the previous conductivity calibration data at different range.

1. Enter to setup mode and press △ or ▽ key in the setup mode to check the CAL P30 calibration message.(Fig 6)
2. Press ENTER key, to enter the calibration information screen with P32 . P33. P34. P35 CON. uS or mS calibration information.(Fig 7)
3. P32 will display calibration information in Range1. P33 will display calibration information in Range 2. ···P35 will display calibration information in Range 4.
4. Press ENTER key to return to CAL 30 screen.(Fig 6)

Fig.6

Fig.7

P40 Cond. Cell Constant (Review)

P40 is used to review the current cell constant at different 4 ranges. This value should be between 0.8 to 1.2.

1. Enter to setup mode and and press △ or ▽ key in the setup mode to check CEL P40 display(Fig 8).
2. Press ENTER key to enter P42. P43. P44 and P45 screen (Fig 9) and review cell constant of each range. Press ENTER key again to return on the CEL P40 screen. (Fig 8)

Fig. 8

Fig.9

P50 Cond. TDS factor (Adjustbale)

P50 is used to customize the factor to convert conductivity into TDS value.

1. Enter to setup mode and and press △ or ▽ key in the setup mode to check tdF P50 display.
2. Press ENTER key to enter and press △ or ▽ to adjust. The default is 0.50 and adjustable range is 0.30 ~1.00. Press ENTER key again to save and return to P50 screen.

P60 DO Review and Set parameters adjustable

P60 is used to review and customize the suitable setting for D.O. Measuring.

For example, if the measured target is sea water or in plateau, it is required to setup correct salinity value and altitude.

1. Enter to setup mode and press △ or ▽ key in the setup mode to enter COE P60 screen (Fig 10). Press ENTER key to display P61 and review previous DO calibration temperature (Fig 11). This value helps to judge root cause while seeing error code E21 on LCD. E21 means the measured temp. & calibration temperature has 10 degree C difference.
2. 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△ or ▽ to adjust the salinity value. The value can be adjusted from 0.0 to 42.00ppt.
3. Press Enter to confirm. then enter P63 M to program the height from sea level (Fig13). The value will be flashed on the screen. You can manually press △ or ▽ key to adjust from 0~3500M (100M per step),press ENTER to confirm and enter COE P64 FAS screen.
4. See page 8 for the definition of FAS and SLOW. You can press△ or ▽ key to adjust, press ENTER to confirm.

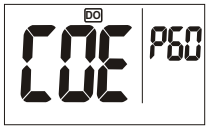


Fig.10

Fig.11

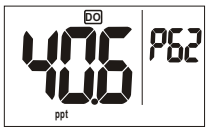


Fig.12

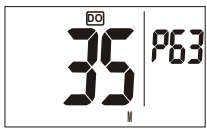


Fig.13

Contact :

EASTERN ENERGY CO.,LTD. (HEAD OFFICE)

40/4 Vitoondumri Rd., Banbueng, Banbueng
Chonburi 20170 THAILAND
Tel: 0-3844-6117 Fax: 0-3844-6200
Email: info@ete.co.th

www.ete.co.th

P70 Temperature unit adjustable

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

1. Press △ or ▽ 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 °C, press ENTER key to confirm.
3. If the unit you desired is degree °F, press△or ▽ key to change the C to F and then press ENTER key to confirm. The meter will return to P70 screen (Fig 14)

Fig.14

Fig.15

P10 to P70 summary w/ default value

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
P50 Cond. TDS factor adjustable	0.5
P60 DO review and Set parameter adjustable	25°C, 0ppm, 0Meter, FAS
P70 Temperature unit setting adjustable	Degree ℃

CALIBRATION

PH probe

Remove the anti-collision hood from probe and rinse the electrode in de-ion ized 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 proper and fresh 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. It is suggested to do the calibration every half month.

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 and stir for about 1 minute to get homogenous condition without creating bubble.
4. Press CAL/ESC key for 2 seconds 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 △ or ▽ 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. Now, the displayed pH value should be in +/-0.02pH accuracy tolerance range.
8. Repeat step 1~7 to do 4.01 & 10.01 calibration.
9. Always use clean water to wash before immersing into different buffer.
10. Put on semi transparent probe cover to protect sensor before storage and ensure there is enough storage buffer inside cover.

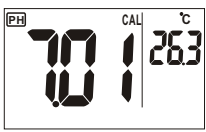


Fig.19

Fig.20

CONDUCTIVITY CALIBRTAION

There is no need to remove anti-collision hood from probe before calibration. It is also nice to clean the electrode by soft brush to sweep the dirty away before immersing into buffer.

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 uS, 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 buffer and stir for about 1 minute to create homogeneous buffer.

   Tap probe to remove air bubbles from sensing area. Ensure the sensing area is completed soaked in the solution, no bubble attached. Don't make the sensor touch the bottom of the glass since it will affect the conductivity.

Dip/tap probe in buffer to remove air bubble from electrode.

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 △ or ▽ key to adjust the value on the LCD to match the standard calibration value.

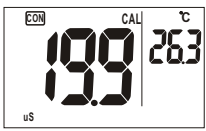


Fig. 21

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.

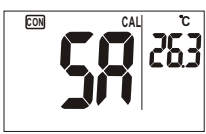


Fig 22

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

8. Repeat step 1~7 for other ranges calibration if needed.
9. Always use clean water to wash before immersing into different buffer.

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

For accurate reading, before each operating and after replacing the membrane set, calibration is highly recommended. No need to remove anti-collision hood before calibration.

Calibration Steps

1. In normal mode, switch the D.O. Unit to % and hold the probe in air, wait for few minutes until the reading is stabilized. Press **CAL/ESC** to calibrate for 100% saturation calibration, **CAL** icon is flashing on LCD.(Fig 23)
2. Wait some seconds, when the reading is stabilized, press **ENTER** to finish the calibration.
3. You can stop the calibration by pressing **CAL/ESC**.
4. After calibration, the displayed value should be 99.0% to 101.0%.
5. Whenever an error occurs during calibrating, the **ERR indicator** will appear. The error might be caused by the condition of low electrolyte or probe defect. See next section to learn how to maintain D.O. Probes

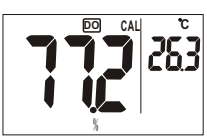


Fig. 23

FIRST TIME LONG TERM WARM UP

While following condition happens, please turn on the meter and wait for about one hour until the reading on LCD is stabilized, then follow the steps in above section to run calibration.

(1) D.O. probe has just been plugged into the meter.
(2) The membrane set has been replaced.
(3) 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 probe cover with storage buffer. Always rinse the pH electrode with pure water or distilled water before use. Never touch or rub the glass bulb for lasting pH electrode life.

COND probe maintenance

Please soak the conductivity probe in distilled water for 30 min before each usage to avoid the inert effect.
Only use soft brush or clean water to clean probe surface if dirt is attached on surface.
If the electrode surface is contaminated, place the probe in a diluted detergent for about 15minutes,then rinse it with distilled water. After clearing, please keep probe dry for storage.

DO probe maintenance

Please plug the probe onto meter even during storage to shorten the activation time.

INSPECTION D.O. PROBE

Inspection probe while receiving a new probe or seeing strange reading or probe has been used for one year.

1. It is fine to see electrolyte is not full. Only fulfill electrolyte and replace membrane set when it is less than ½ full.
2. Be sure to check the central of the electrode surface. It should be clean in the working area as below photo:

3. If the working area is not clean, check following section to clean it up.

HOW TO CLEAN THE ELECTRODE

If too many residues have been found on electrode working area, it is suggested to clean the electrode as too many residues attached might disturb the chemical reaction during measuring. You can do membrane change and electrolyte refill together.

(1) Rotate to unscrew and disassemble the probe.

(2) Use soft / long fiber cloth to clean the “surface of working area” where residues attached on.

NOTE: If the residues cannot be removed by cloth, please use fingernail to scrape lightly on the “surface of working area” to remove it.

Disassemble the probe

Clean the surface of working area by cloth

(3) Use a knife blade to scrape lightly on the “electrode” to remove the white residue as below image.

NOTE: Please take care on this part, do not scrape the “surface of working area” by knife blade to prevent damage.

BEFORE

AFTER

(4) After scrap off the white residues, use clean water to wash away the remaining impurities.

HOW TO REPLACE MEMBRANE SET

Please replace membrane set when any of following situation occurs:

a. The probe has been used for >1 year

b. Seeing error code E2/E3 but the probe central working area is still clean.

c.Electrolyte is less than ½ full

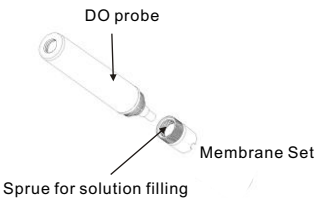
d.Membrane is broken or wrinkled
e.Measuring speed is much slower than before.

The procedures are:

(1) Prepare a new membrane set.

NOTE: Due to the structure of membrane is delicate, once the membrane set has been removed from the probe, it is "not suggested" to re-installed the same membrane set repeatedly as it might influence the reading.

(2) Rotate to unscrew the probe protective cover and remove the membrane set from probe.



(3) Follow the steps in above section to "**clean the electrode**".

(4) Slowly pour the electrolyte solution to the new membrane set till full.

(5) Secure and install the new membrane set on the probe properly.

After install the new membrane set with electrolyte filled, it is normal to found some small bubbles inside of the membrane.

(6) Proceed "calibration" as above section after replace the membrane set.

NOTE: Under normal use, the extra membranes set enclosed in package will be enough to cover the replacement need for entire DO probe life time.

TROUBLE SHOOTING

Can't power on

1. Did'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 pH reading

1. Means the pH electrode is aging

Solution:

1.pH probe need to be replaced

Error code E02

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

Solution:

1. Put the probe in normal tap water at room temp. for 30 mins to cancel E02 from display.
2. If above is not working, run below procedure:

-For pH probe, run calibration
-For conductivity probe, run calibration
-For D.O, probe, run 100% calibration

Before this, check if the probe electrode require routine maintenance.

Error code E03

1. E03 means the measured temp. is higher than specified range
2. On D.O probe, it can also mean D.O. probe hasn't be actived yet.

Solution:

1. Put the probe in normal tap water at room temp. for 30 mins to cancel E03 from display.
2. If above is not working, run below:
   -For pH probe, run calibration
   -For conductivity probe, run calibration
   -For D.O, probe, connect the D.O probe with meter, turn on the meter and leave it for at least one day to activate the D.O. Probe, and then proceed the D.O. calibration. Keep the D.O. Probe connected with meter after using is suggested. Besdies, check if the probe electrode require routine maintenance.

Error code E04

1. E04 means the original data error are in error, only for pH and Conductivity.

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 E13

1.E13 means pH probe calibration error

Solution:

1. Run pH calibration again. While doing this, make sure pH buffer is correct and fresh to get good result.

Error code E16

1. E16 means Cell constant of Cond prober 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 E21

1. This is for D.O. probe, means the temp. between measurement and calibration is differed for > 10 C

Solution:

1. Run the D.O. 100% calibration again in air at the place where the temp. is closed to measuring liquid. EX: if your testing pond is 35C, do the calibration in 35C air, don't do the calibration in cool air-conditioned room.

Error code E31

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

Solution:

1. Power on/off several times to fix.

Error code E32

1. E32 means the memory IC of device hardware failure

Solution:

1. Power on/off several times to fix.

Error code - - -

1. - - - means the probe isn't plug.

Solution:

1. Check the probe plug again, make sure the contact is good and tight.
2. If probe is well plugged but still seeing - - -, turn off device and power on again to have device link to probe again.

SPECIFICATION

	84051
pH range/resolution	2.00~12.00/resolution:0.01
pH accuracy	+/-0.1
Cond. range	0~199.9, 0~1999uS/cm;0~19.99, 0~150.0mS/cm
Cond. accuracy	+/-1% F.S +/- 1 digit
Cond. resolution	0.1uS/cm, 1uS/cm;0.01mS/cm, 0.1mS/cm
TDS range(**f is TDS factor**)	0~199.9*f, 0~1999*f ppm;0~19.99*f, 0~150.0*f ppt
TDS resolution &accuracy	0.1, 1ppm, 0.01, 0.1ppt / +/-1% F.S +/- 1 digit
TDS factor	0.30~1.00
Salinity range/resolution	0~10.00ppt; 0~42.0ppt*(SEA WATER)*/0.01 ppt, 0.1ppt
Salinity accuracy	+/-1% F.S +/- 1 digit
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	-5~60.0°C
Temp. accuracy	+/-0.5°C
Temp. resolution	0.1
Compatible probe	PH PROBE, COND. PROBE AND D.O. PROBE
LCD size(mm)	26(H)x44(W)
Operating temp.&RH%	0~50°C, Humidity<80%
Storage temp.&RH%	-20~60°C, Humidity < 90%
Dimension(mm)	175(L)x70(W)x33(H)
Weight	200g
Power	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

Contact :

EASTERN ENERGY CO.,LTD. (HEAD OFFICE)
40/4 Vitoondumri Rd., Banbueng, Banbueng
Chonburi 20170 THAILAND
Tel: 0-3844-6117 Fax: 0-3844-6200
Email: info@ete.co.th

www.ete.co.th

More products available !

2017.06.V01