FISON

Dissolved Oxygen Meter

FM-DOM-A100

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1. Introduction

Dissolved Oxygen meter FM-DOM-A100 boasts a saturation range of 0.00 to 20.00 mg/L, with an accuracy of ±0.2 mg/L. It shows minimal measurement error for its salinity and barometric pressure. Features an alert to inform calibration due within a range of 1 to 31 days. Auto-Read function is available for sensing and locking the measurement endpoint. The setup menu customizes calibration points, resolution, units, stability, date, and time. Our oxygen meter is capable of 1 or 2-point calibration using either air-saturated water or zero-oxygen solutions.

2. Features

- ✓ Automatic temperature compensation
- ✓ Manual barometric pressure correction
- ✓ Manual salinity correction
- ✓ Custom LCD display
- ✓ Expandable memory
- ✓ USB communication interface
- ✓ Auto-Power Off feature for longer battery life
- ✓ User-friendly and portable

3. Specification

Model No	FM-DOM-A100
Range	0.00 to 20.00mg/L 0.0 to 200.0% saturation
Resolution	0.01mg/L, 0.1%
Accuracy	±0.2mg/L, ±2.0%
Calibration Points	1 or 2 points
Temperature Compensation	0 to 50°C (32 to 122°F)
Barometric Pressure Correction	60.0 to 112.5kPa (450 to 850mmHg)
Salinity Correction	0.0 to 50.0g/L
Stability Criteria	Low or high
Calibration Due Alarm	1 to 31 days or off
Hold Function	Manual or auto-endpoint
Auto-Off	10, 20 or 30 minutes after last key pressed
Memory	500 data sets
Communication Interface	USB
Connector	6-pin nimi-DIN
Display	Custom LCD (80× 60mm)
Power Requirements	3 × 1.5V AA batteries or DC5V power adapter
Dimensions (L × W × H)	170 × 85 × 30 mm
Package Size (W × D × H)	475 × 155 × 350 mm
Weight	300g
Gross Weight	1.7 Kg

4. Applications

Dissolved Oxygen meter is ideal for monitoring water quality in environmental studies, aquaculture, wastewater treatment, medical research, biochemistry lab, and beverage industries. It provides accurate, on-site measurements essential for ensuring optimal oxygen levels and compliance with regulatory standards.

5. Instrument Introduction

5.1 Display

The dissolved Oxygen meter FM-DOM-A100 is equipped with a clear and bright LCD that is used to show measured values, mode indicators and help messages. The following table describes the meaning of each indicator.

Figure-1

Symbol	Indication
Measure	**Measure mode Indicator:** Indicates meter is in the measurement mode.
Calibration	**Calibration mode Indicator:** Indicates meter is in the calibration mode.
Setup	**Setup Mode Indicator:** Indicates meter is in SETUP mode.
Memory	**Memory mode Indicator**: Indicates data is stored in memory.

	**Low Battery Alarm:** When a battery is depleted, the indicator will disappear.
	**Stable Indicator:** Indicates the measured value has stabilized.
	**Hold Indicator:** Indicates the Displayed Value has been Frozen.
	**Calibration Due Reminder:** Prompts the user to calibrate the meter regularly.

5.2 Keypad

The meter has a succinct membrane keypad, and names and symbols describe each function key control.

Figure-2

Key	Description
MEAS	• Power the meter **ON/OFF**. • Freeze the measured value on the display and press the key again to resume measuring. • In the calibration or setting mode, exits the Current mode and returns to measurements.
MODE | °C	• Toggles between Saturation and Concentration mode. • Press and hold the key to enter temperature setting mode.
CAL	• Press the key to enter the calibration mode. • Press and hold the key to enter the step-up menu.
	• Press the key to store the current measured value.

MI | ▲	• Press the key in setup mode to scroll up through the menu. • Press the Key in temperature setting mode to increase the setting value
MR | ▼	• Press the Key to View the calibration report or stored Data. • Press the key in setup mode to scroll down through the menu. • Press the key in temperature setting mode to decrease the setting value.
ENTER |	• Confirm the calibration, setting value, or displayed option. • Press and hold the key to turn on/off the backlight.

6. Installation

6.1 Unpacking

Before unpacking, ensure that the current work environment meets the following conditions.

- Relative humidity is less than 80%.
- The ambient temperature is greater than 0℃ and less than 60℃.
- No potential electromagnetic interference.

6.2 Connectors

The dissolved Oxygen meter FM-DOM-A100 provides 2 connectors for connecting the various types of sensors. Listed in the below table are the details of these connectors.

Figure-3

1) 6-pin Connector. For connecting the dissolved oxygen probe.
2) Phone Jack. For connecting the temperature probe.

6.3 Inserting the Batteries

Before using the meter, insert three 1.5V "AA" alkaline batteries into the battery compartment, and follow the procedure outlined below.

1) Remove the battery cover from the meter's backside.

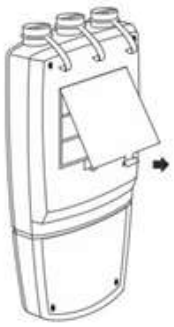

Figure-4

2) Insert the batteries into the battery compartment and note the polarity.
3) Replace the battery cover in its original position. Installation is completed. When batteries are depleted, the meter allows you to use the USB cable connected to the computer as a temporary power supply.

6.4 Connecting the DO Probe

Take out the dissolved oxygen probe from the carrying case. Insert the 6-pin connector into the corresponding connector socket. Ensure the connector is fully seated. After the connection is completed, do not pull on the sensor cord. Always make sure that the connector is clean and dry.

Figure-5

6.5 Refilling Electrolyte Solution for DO Probe

1) Take out the DO probe from the carrying case. Unscrew the membrane cap from the probe.

Figure-6

2) Fill the membrane cap halfway with electrolyte solution.

Figure-7

3) Screw the membrane cap onto the probe, excess electrolyte will drain out.
4) Be sure the cathode of the probe contacts the membrane cap, the electrolyte solution in the membrane cap should be without an air bubble.

Figure-8

6.6 Before Use

Remove the protective cap from the bottom of the dissolved oxygen probe.

Figure-9

Turn on the meter for 10 to 15 minutes and wait for the probe to polarize.

6.7 Power ON/Off

- Press the **MEAS** key to turn on the meter, the display shows measured values, mode indicators and help messages.
- Press and hold the **MEAS** key for 3 seconds, and the meter will turn off.
- If the user does not press any key within the specified period, the meter will turn off automatically.
- To disable the auto-off function, kindly read the SETUP MENU section.

6.8 Setup Menu

FM-DOM-A100 The Dissolved Oxygen meter-contains an integrated setup menu that allows you to customize each displayed option to meet measurement requirements.

Parameter	Description	Options	Description	Default
CAL	**Calibration Points:** Select the Number of Calibration Points.	1	1 point	•
		2	2 points	
PrES	**Pressure Coefficient:** Select the default barometric Pressure coefficient.	760	**Setting Range:** 450 to 850 mmHg	760
SAL	**Salinity Coefficient:** Select the Salinity Coefficient of the Sample Solution.	0.0	**Setting Range:** 0.0 to 5.0ppt	0.0
rESO	**Resolution:** Sets the Resolution for DO measurement.	0.01	0.01mg/L (0.1%)	•
		0.1	0.1mg/L(1%)	
UNIt	**Measurement Unit:** Sets the default measurement Units	°C	Degrees Celsius	•
		°F	Degrees Fahrenheit	
		mg/L	Milligrams Per Litre	•
		ppm	Parts Per Million	
		mmHg	Pressure Unit	•
		kPa	Pressure Unit	
StA	**Stability Criteria:** Sets the stability criteria for the measurement. When the'' option is enabled, measuring value will stabilize quickly, but reading is less accurate. When the ''HI'' option is enabled, measuring value will stabilize slowly, but guarantees high accuracy	LO	Low	•
		HI	High	
HOLd	**Auto-Hold:** When the auto-hold function is enabled, the meter will automatically sense a stable end-point reading and freeze it.	YES	Enable	
		nO	Disable	•
OFF	**Auto-Power off:**	10	10 Minutes	

	When the auto-off power is enabled, if you do not press any key within a specified time, the meter will automatically turn off.	20	20 minutes	
		30	30 Minutes	
		nO	Disable	•
CAL	**Calibration Due:** When calibration due reminder is enabled, if you do not recalibrate the meter within a specified period, the meter will automatically show- indicator.	1...31	1 to 31 days	
		OFF	Disable	•
dAtE	**Date and Time:** Sets the date and time of the meter.		---	
CLr	Clear Stored Data: Clear all Stored Data.	YES	Enable	
		nO	Disable	•
rSt	**Reset:** The reset function allows the user to restore the meter back to factory default parameters. when this function is enabled, all calibration values and selected parameters will be lost or reset.	YES	Enable	
		nO	Disable	•

7. Operations

7.1 Setting the Default Parameters

1) Press and hold the key for 3 seconds, the meter enters the setup menu, and the display shows selectable parameters and page number.

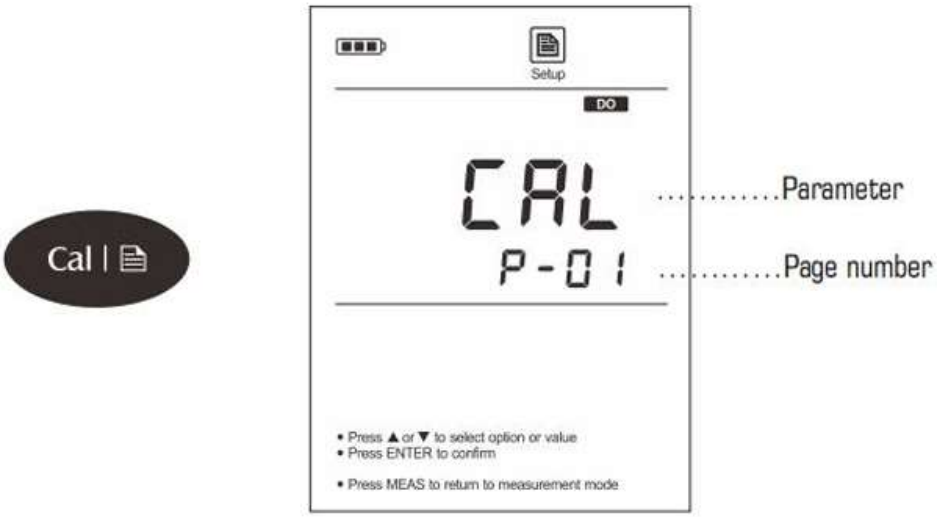

Figure- 10

2) Press ▲ or ▼ key to scroll through the menu and select the parameter you want to set.
3) Press the **ENTER** key to confirm, and the display shows an option in the submenu.

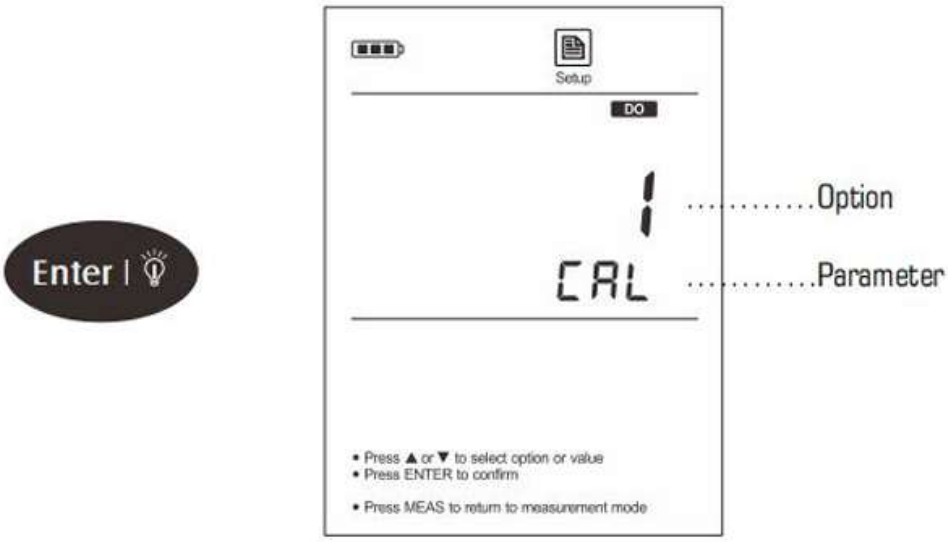

Figure-11

4) Press ▲ or ▼ key to select the desired option.
5) Press **the ENTER** key to confirm, that the meter returns to measurement mode. The setting is completed.

Exit the Setup Menu

7.2 Setting the Data and Time

FM-DOM-A100 Portable meter has a real-time clock that is used to timestamp stored measured value and calibration data. Follow the steps below to set the date and time during the first use.

1) Press and hold the key for 3 seconds to enter the setup menu.
2) Press ▲ or ▼ key until the display shows the "**DATE**" option.

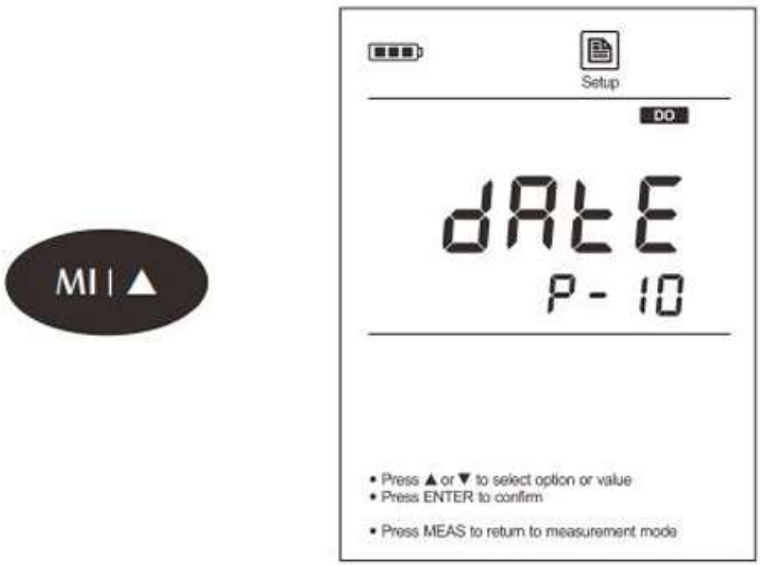

Figure-12

3) Press the **ENTER** key to confirm, that the meter shows the current year.

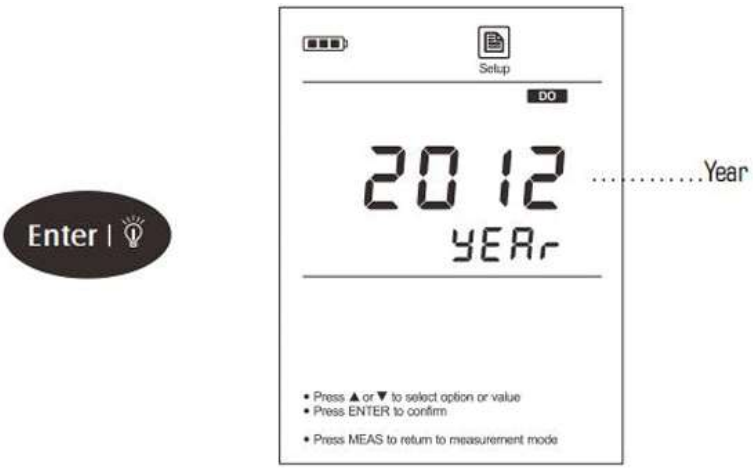

Figure-13

4) Press ▲ or ▼ key to set the year.
5) Press the **ENTER** key to confirm, the meter shows the current date and time.

Figure-14

6) Press ▲ or ▼ key to set the date and time.
7) Press the **ENTER** key to confirm, that the meter returns to measurement mode. The setting is completed.

7.3 Setting the Barometric Pressure

The following table shows the relationship between altitude and barometric pressure. Before calibration or measurement, kindly select the compatible parameter according to your local altitude.

ALTITUDE(m)	kPa	mmHg
0	101.3	760
100	100.1	750
200	98.8	741
300	97.6	732
400	96.4	723
500	95.2	714
600	94	705
700	92.8	696
800	91.7	688
900	90.5	679
1000	89.4	671
1100	88.3	662
1200	87.2	654
1300	86.1	646
1400	85	638
1500	84	630
1600	82.9	622
1700	81.9	614
1800	80.9	607
1900	79.9	599
2000	78.9	592

1) Press and hold the key for 3 seconds to enter the setup menu.
2) Press ▲ or ▼ key, and the display shows the "PRES/P-02" (Pressure) option.

Figure-15

3) Press the **ENTER** key to confirm, the meter enters the setting mode**.**

Figure-16

4) Press ▲ or ▼ key to set the default barometric pressure.
5) Press the **ENTER** key to confirm, the meter returns to measurement mode. The setting is completed.

7.4 Setting the Salinity Coefficient

Salt dissolved in water will influence the oxygen content of water. If your sample belongs to high-concentration liquids, kindly make sure that you have selected an applicable salinity coefficient before measurement. For the low-concentration liquids, kindly use the default coefficient of 0.0 g/L.

1) Press and hold the key for 3 seconds to enter the setup menu.
2) Press ▲ or ▼ key, the display shows the "SAL/P-03" (Salinity) option.

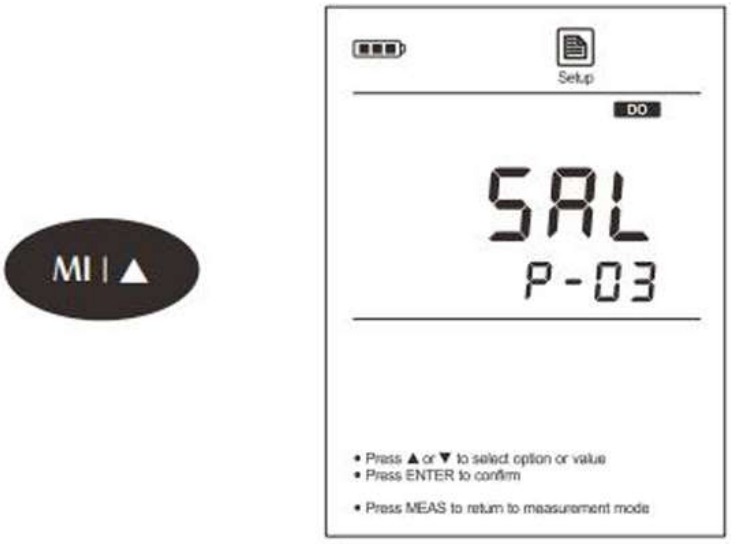

Figure-17

3) Press the **ENTER** key to confirm, the meter enters the setting mode.

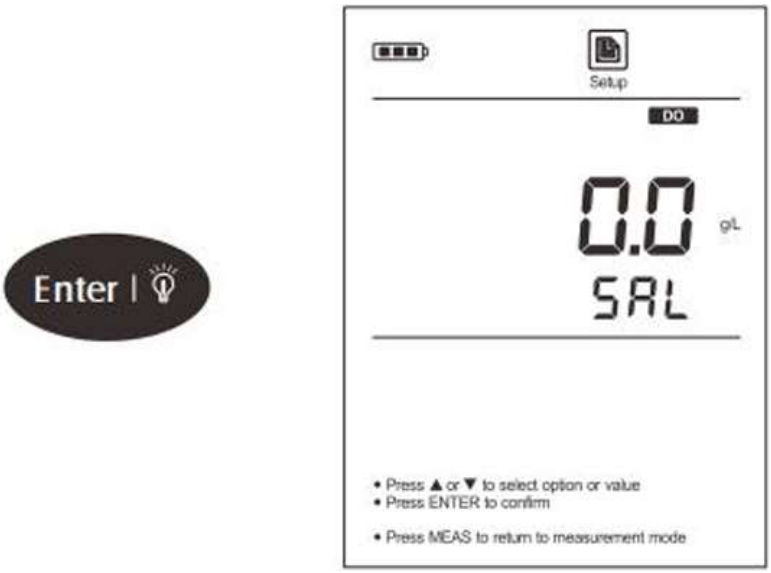

Figure-18

4) Press ▲ or ▼ key to set the default salinity coefficient.
5) Press the **ENTER** key to confirm, that the meter returns to measurement mode. The setting is completed.

7.5 DO Calibration in % Saturation Mode

FM-DOM-A100 Dissolved Oxygen meter can be calibrated quickly in the air. The meter can perform either 1- or 2-point calibration in the percentage saturation mode. For single-point calibration, we recommend that you perform 100% saturation calibration in the air. For the 2-point calibration, you must use a saturated anhydrous sodium sulfite (zero oxygen) solution.

7.5.1 100% Saturation Calibration

1) Press **the MODE** key until the meter shows the indicator and measurement unit "%".

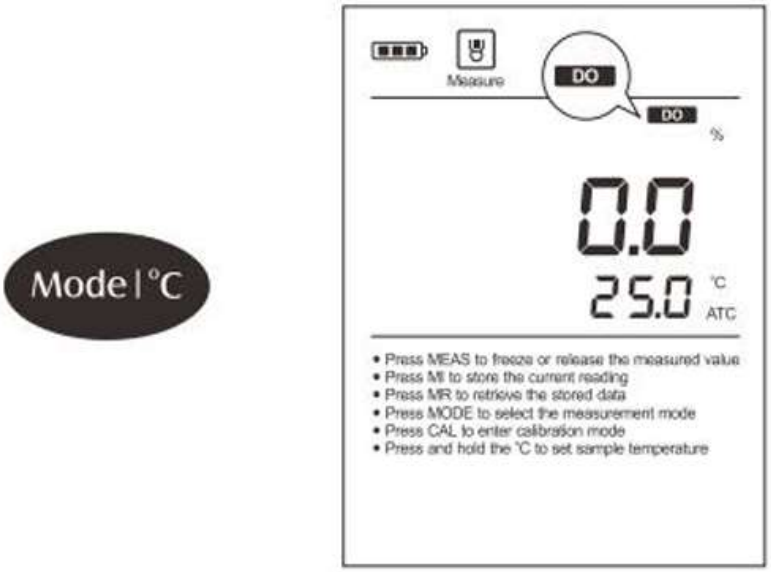

Figure-19

2) Make sure that you have selected 1-point calibration in the setup menu.
3) Press **CAL** key, the meter enters calibration mode, the display shows "100%/CAL1".

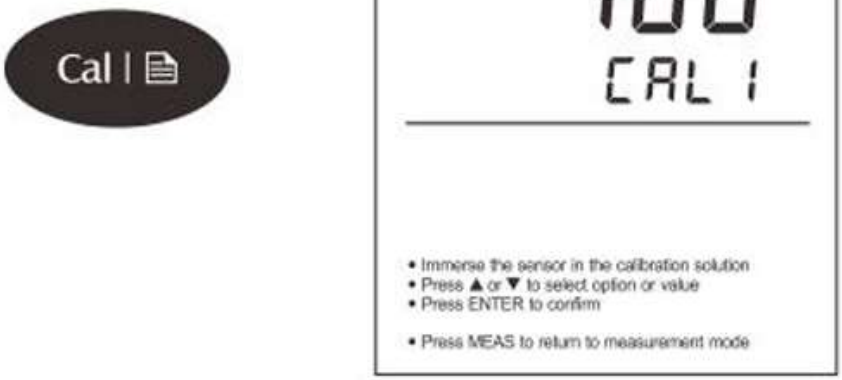

Figure-20

4) Hold the dissolved oxygen probe in the air or place the sensor into air-saturated water for 3 to 5 minutes, press **ENTER** key to confirm. Wait for the measured value to stabilize, the display shows "**END**". Single-point calibration is completed.

7.5.2 Points Calibration

1) Make sure that you have selected 2 points of calibration in the setup menu.
2) Press **the CAL** key, and the meter shows "100/CAL1".
3) Press ▲ or ▼ key until the display shows "0/CAL1".

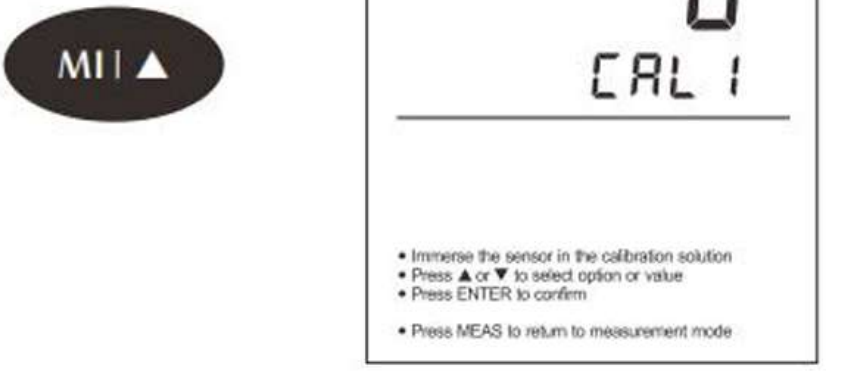

Figure-21

4) Dip the dissolved oxygen probe into the saturated anhydrous sodium sulfite solution (Zero Oxygen Solution). Stir the probe gently.
5) Press the **ENTER** key to confirm, and the "Calibration" indicator begins flashing.

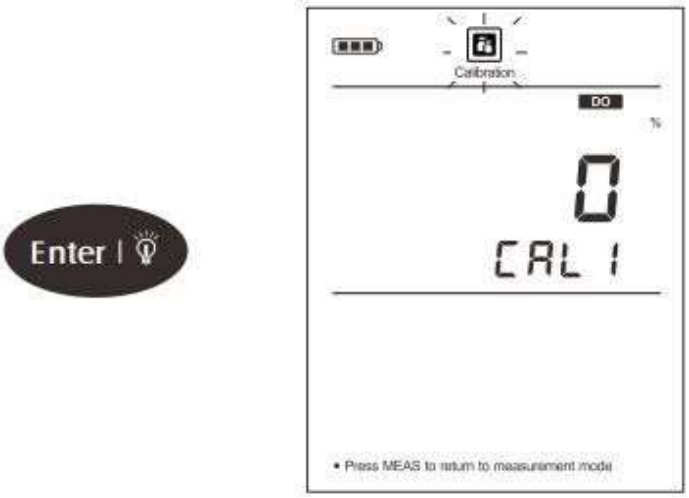

Figure-22

6) Wait for the measured value to stabilize, the display shows "100/CAL2". The meter prompts you to continue with the second point calibration.

Figure-23

7) Dip the dissolved oxygen probe into air-saturated water for 3 to 5 minutes and press the **ENTER** key to confirm. Wait for the measured value to stabilize, the display shows "END". The meter returns to measurement mode automatically. Calibration is completed.

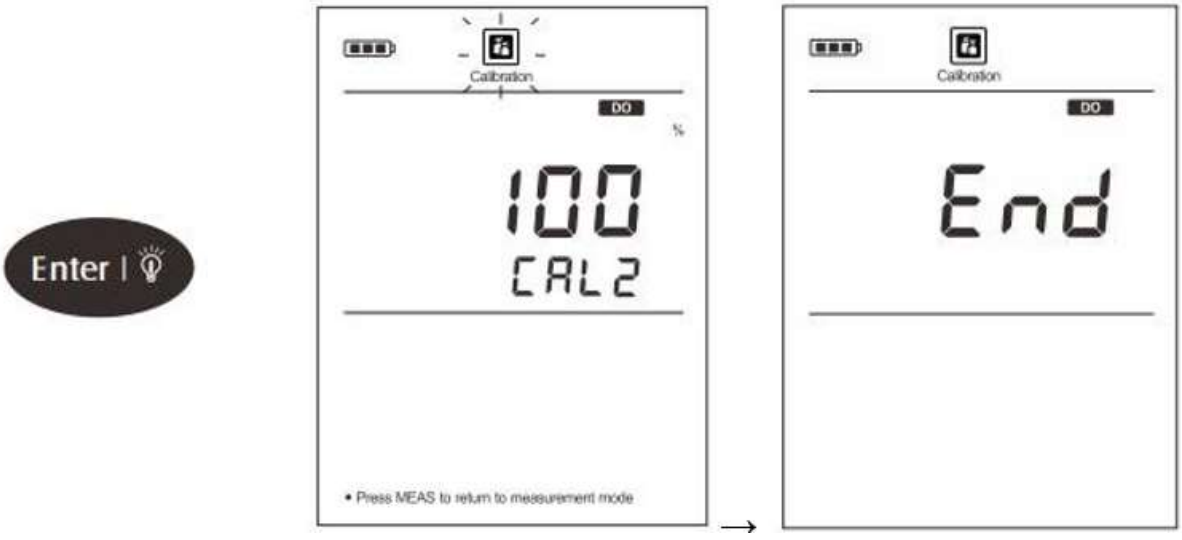

Figure-24

Performing a percentage saturation calibration will simultaneously calibrate the corresponding mg/L (or ppm) concentration value. Therefore, additional mg/L calibration isn't required in most circumstances.

7.6 DO Calibration in mg/L or ppm Mode

1) Press the **MODE** key until the meter shows the indicator and measurement unit "mg/L" or "ppm".

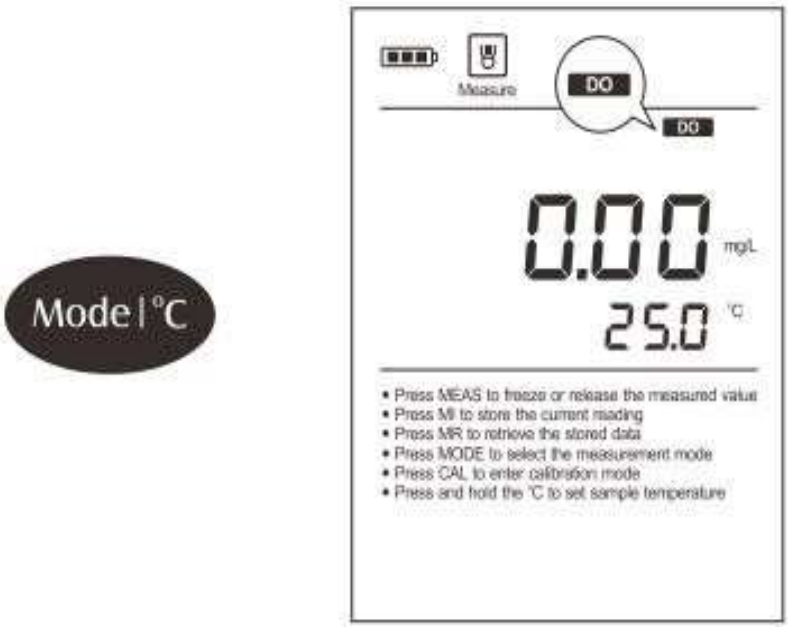

Figure-25

2) Make sure that you have selected 1-point calibration in the setup menu.
3) If necessary, set the salinity and barometric pressure coefficient in the setup menu (Refer to the Setup Menu section).

4) Press the **CAL** key, and the display shows "8.25mg/L/CAL1" (@25℃).

Figure-26

5) Dip the dissolved oxygen probe into the air-saturated water for 3 to 5 minutes.
6) Press the **ENTER** key to confirm, and the "Calibration" indicator begins flashing.

Figure-27

7) Wait for the measured value to stabilize, the display will show "END". The meter returns to measurement mode automatically. Single-point calibration is completed.

7.6.1 Points Calibration

1) Make sure that you have selected 2 points of calibration in the setup menu.
2) Press the **CAL** key, and the meter shows "8.25mg/L/CAL1" (@25℃).
3) Press ▲ or ▼ key until the display shows "0.00mg/L/CAL1".

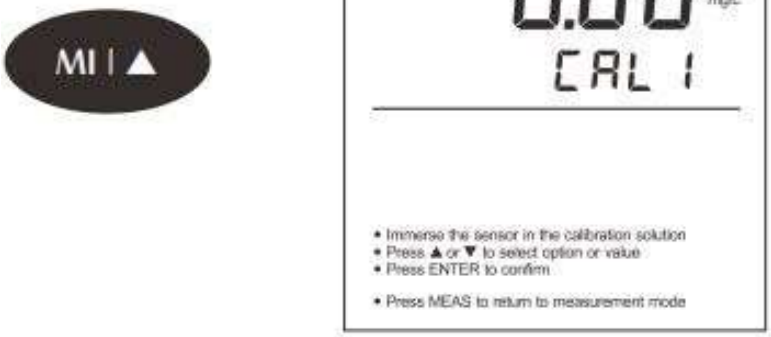

Figure-28

4) Dip the dissolved oxygen probe into the saturated anhydrous sodium sulfite solution (zero oxygen solution). Stir the probe gently.
5) Press the **ENTER** key to confirm, and the "Calibration" indicator begins flashing.

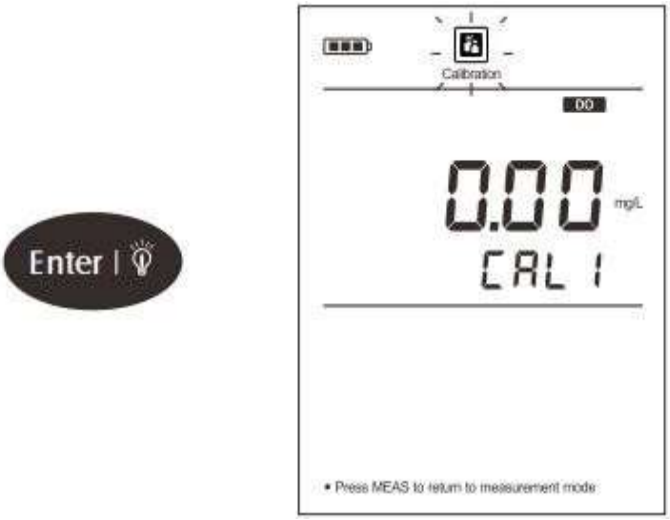

Figure-29

6) Wait for the measured value to stabilize, the display shows "8.25/CAL2". The meter prompts you to continue with the second point calibration.

Figure-30

7) Dip the dissolved oxygen probe into air-saturated water for 3 to 5 minutes and press **the ENTER** key to confirm. Wait for the measured value to stabilize, the display shows "END". The meter returns to measurement mode automatically. Calibration is completed.

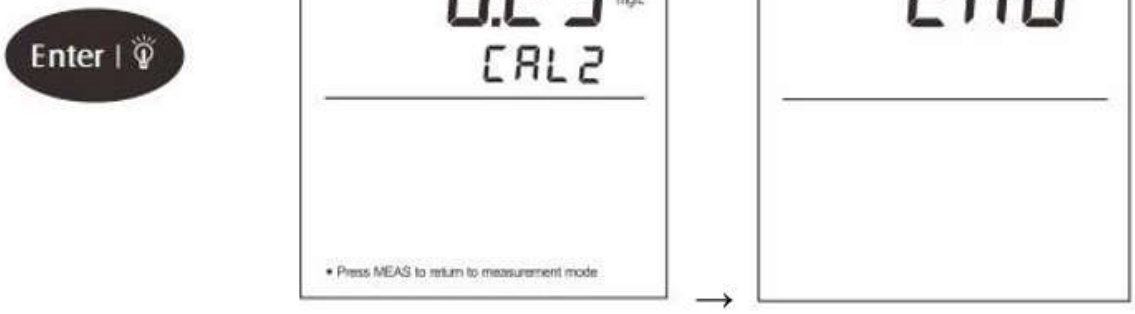

Figure-31

7.6.2 Exit The calibration

During the calibration process, press the **MEAS** key, and the meter will return to measurement mode immediately.

7.7 Temperature Calibration

During the measurement, if the temperature reading displayed differs from that of an accurate thermometer, you need to calibrate the meter.

1) Press and hold the ℃ key for 3 seconds to enter temperature calibration mode, and the display shows the current temperature reading.

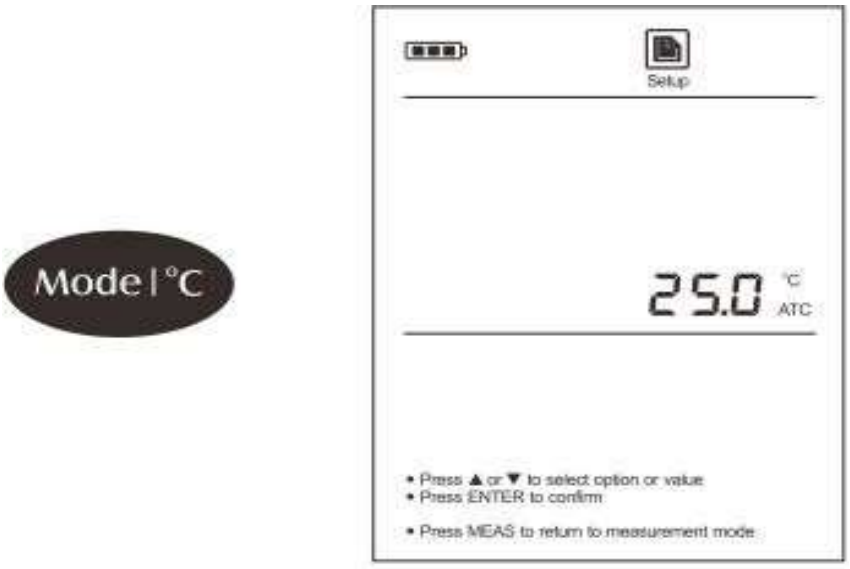

Figure-32

2) Press ▲ or ▼ key to set the temperature value.
3) Press the **ENTER** key to confirm. Calibration is completed.

7.8 Dissolved Oxygen Measurement

FM-DOM-A100 portable dissolved oxygen meter is suitable for measuring water, wastewater, brine, and other liquids. If you use a meter to measure seawater or other water containing large amounts of salt, kindly set the salinity coefficient before use. Some gases and steam such as chloride, sulfur dioxide, sulfurated hydrogen, ammonium, carbon dioxide, and iodine can permeate the membrane via diffusion. So, their existence will influence the measurement of dissolved oxygen.

If the sample contains solvent, grease, sulfide, and alga, the membrane on the probe will be blocked, damaged, or eroded.

1) Connect the dissolved oxygen probe to the meter and wait for 15 minutes to polarize the sensor.
2) If necessary, set the barometric pressure and salinity coefficient in the setup menu (Refer to the "**SETUP MENU**" section).
3) Submerse the probe in the sample solution, and make sure the temperature sensor on the probe is fully immersed.

4) Stir the probe gently, wait for the reading to stabilize, and record the measured value on the display.

7.9 Hold Function

The meter contains two data hold modes. When the Auto-Hold function is enabled, the meter will automatically sense a stable endpoint reading and freeze it, “HOLD" indicator appears on the display. If the Auto-Hold function is disabled, press the key, and the meter will immediately freeze the currently displayed value.

Press the key again to resume measuring.

Figure-33 Storing and Recalling Data from Memory

FM-DOM-A100 portable dissolved oxygen meter allows up to 500 data sets to be stored and recalled.

7.9.1 Memory Input

During the measurement process, press the MI key to input the measured value into the memory, "Memory" indicator appears on the display.

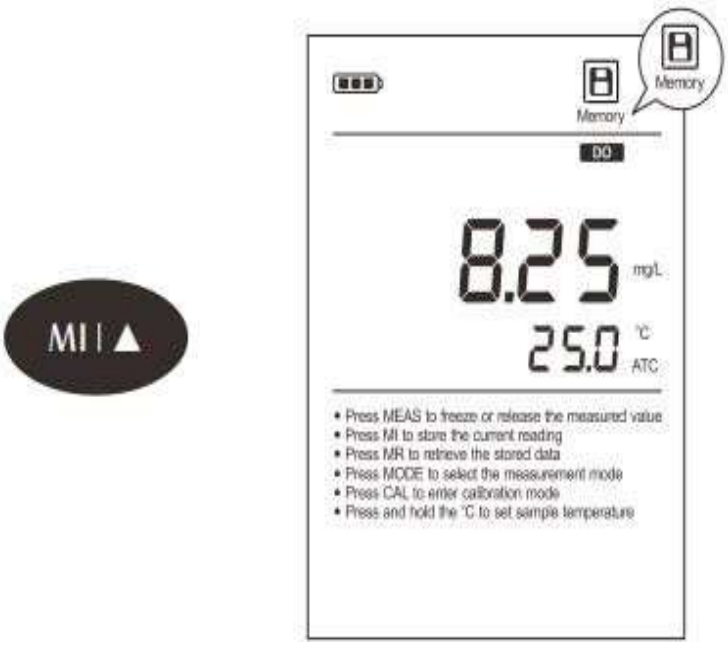

Figure-34

7.9.2 Memory Recall

1) Press the **MR** key in the measurement mode, and the meter shows "LOC/P-01" (Data Log).

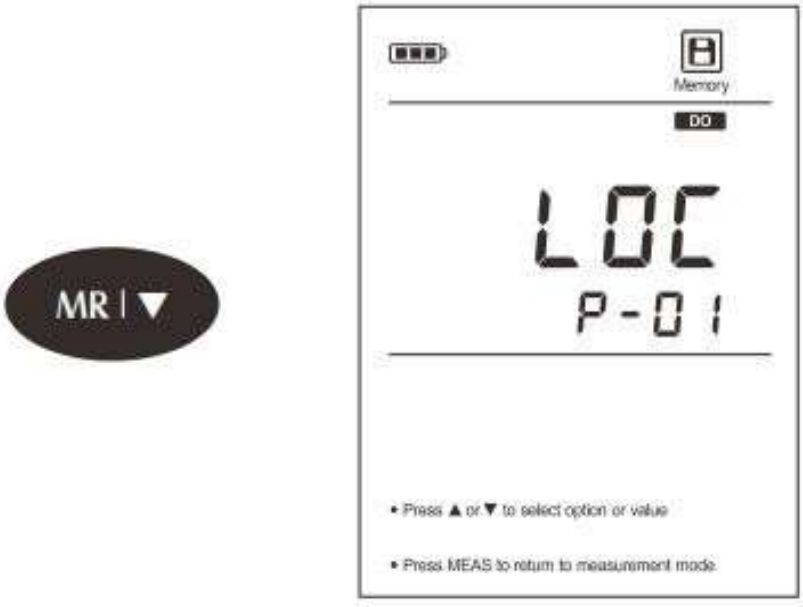

Figure-35

2) Press the **ENTER** key to confirm, the meter shows the page number of the stored data.

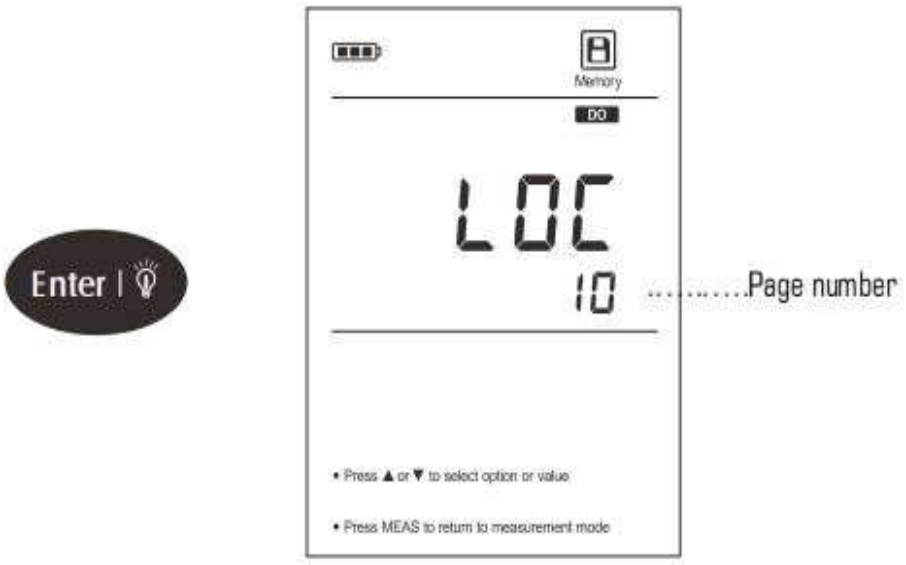

Figure-36

3) Press ▼ the key, and the meter shows the date and time of the stored data (Format: mm-dd, hh-mm).

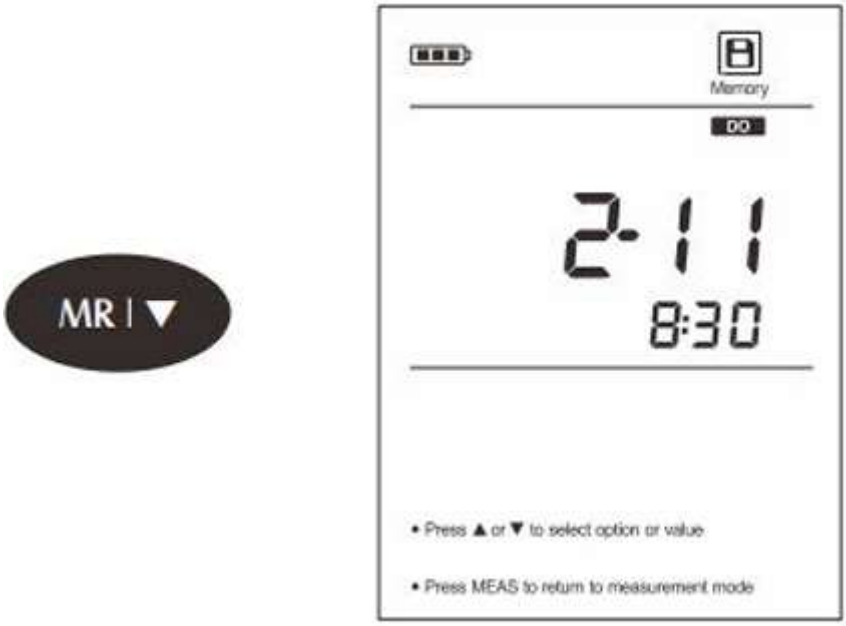

Figure-37

4) Press ▼ key again, and the display shows the stored data**.**

Figure-38

5) After the browsing, press the **MEAS** key to exit the current mode.

7.10 Communication

A free Data Acquisition System is available for use, allowing data transfer, measurement value reception, or data import to Excel. Before using, ensure that the Windows 7/8/10 operating system is installed on the computer.

7.10.1 Receiving Data

- Connect the USB cable to the meter and computer. Click the **DAS** icon, the system will automatically scan an available communication port and show the message box " Found a port on your computer".
- Click the **OK** button, and the application starts.

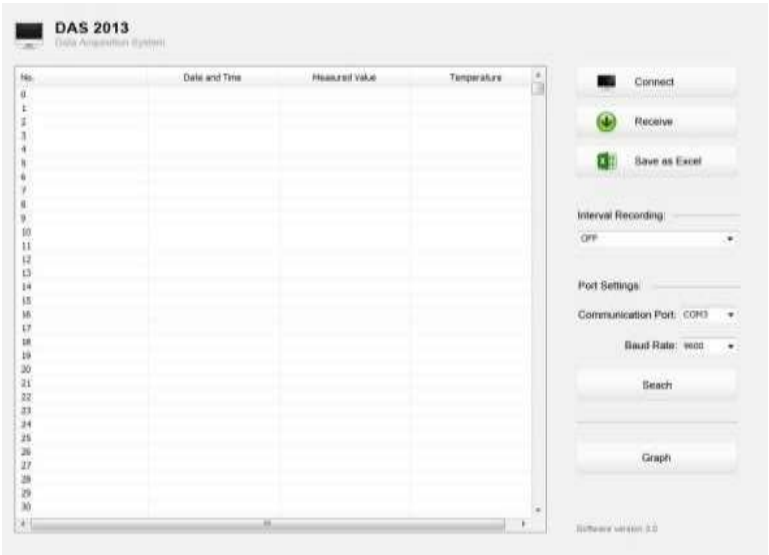

Figure-39

- Click the **Connect** button, and the screen shows "Port is connected" indicating that communication between the meter and the computer has been established.
- Click the **OK** button to confirm.
- Click the **Receive** button, and the stored data in the meter will automatically be sent to the computer.

7.10.2 Internal Recording

This function helps you to record the measuring value within the specified period.

- Click the **Interval Recording** button and select a time option.
- Click the **Receive button**, and the measured value will automatically send to the datasheet.
- The first data need 1 minute to be shown on screen.
- Do not press any key on the meter during the Interval Recording mode, it will cause communication interruption.

7.10.3 Graph Mode

This function helps you to view variations of the measured parameter continuously. Click the **Graph** button, the screen will immediately show a curve graph. If you want to quit the current mode, click the **Back** button.

7.10.4 Create the Excel File.

When the transfer is completed, click the "**Save as Excel**" button, and the measured values in the data sheet will automatically convert to an Excel file.

7.10.5 Warning

Once the software is closed, all received data will be lost and cannot be recovered.

8. Maintenance

Do probe Care and Maintenance

- Kindly always keep the probe's membrane moist.
- If you do not use the dissolved oxygen probe for long periods, Kindly screw off the membrane cap and rinse the probe's cathode, anode, and the membrane with deionized water, then soak up residual water on them with filter paper and install the probe.

Figure-40

9. Troubleshooting

LCD Display	Cause	Corrective Action
- - -	DO Probe Does not connect to the meter	Check the Connector of the Sensor.
	Measured Value is Out of Range	Check the DO membrane whether clogged, dirty, or broken.
Err	The electrolyte solution is depleted	Refilling the Electrolyte solution.
	Zero Oxygen Solution is Contaminated	Replace the Calibration.