



# **Operation Manual**

**MODEL 9011M**

**Basis Portable**

**DO/Temperature Meter**

# **9011M**

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## GENERAL INTRODUCTION

Thank you for selecting the 9011M meter. The 9011M is a precision tool that measure dissolved oxygen in % and mg/L and temperature. A built-in microprocessor stores, calculates and compensates for all parameters related to DO determinations including DO electrode temperature characteristics.

This unit has a waterproof IP67 case. The touch mode keys are highly reliable with tactile and audio feedback. This meter can operate with one 9 V battery. Re-calibration is not required when power is turned on again.

The front of the meter has a large LCD that displays DO % or ppm, and temperature simultaneously along with user prompts and mode indicators. The unit prompts the user through calibration and measurement procedures.

The 9011M uses a Polarographic electrode with convenient screw-on cap membranes. The field probe comes with a built-in temperature sensor for automatic temperature compensation.

The unit is also equipped with a non-volatile memory allowing the user to store 50 different sets of readings. This unit will assign a site number for each set of reading, so the user can review the data easily.

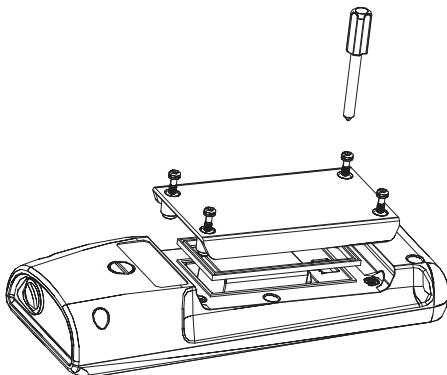
Other features include long battery life and 50/60 Hz AC noise rejection. This meter is user-friendly for field, industrial and laboratory applications.

## INITIAL INSPECTION

Carefully unpack the unit and accessories. Inspect for damages made in shipment. If any damage is found, notify your **Jenco** representative immediately. All packing materials should be saved until satisfactory operation is confirmed.

## INSTALLING THE BATTERIES

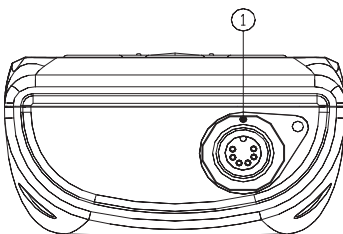
The 9011M meter is packaged with one 9 V battery required for operation. To insert the batteries into the meter, follow the procedure outlined below.



**Figure 1: Battery compartment**

1. Use a screw driver to remove the four screws and battery cover to expose the battery compartment. (Figure 1.)
2. Replace the 9 V battery.
3. Replace the battery cover and make sure to secure the four screws for the water-tight feature.

## CONNECTOR



**Figure 2: Connector**

1. DO and temperature probe connector (6 PIN Waterproof connector)

# DISPLAY & KEYS FUNCTIONS

## A. Display

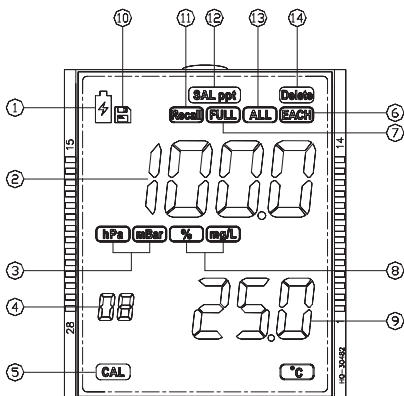









Figure 3: Active LCD screen

1.  Low battery indicator.	2. <b>MAIN DISPLAY-</b> Main display for DO dissolved oxygen values.
3. <b>mBar-</b> Display during calibration to prompt user for barometric pressure.	4. Data storage site number.
5. <b>CAL-</b> Calibration mode indicator	6. <b>Each-</b> To delete a single set of data from the data storage.
7. <b>Full-</b> This will indicate that all 50 data storage sites are used up.	8. <b>% / mg/L-</b> Unit indicators.
9. Temperature and unit display	10. <b>Save-</b> To save a reading into the data storage.
11. <b>Recall-</b> To recall data from the data storage.	12. <b>SAL ppt-</b> Displays during calibration when user is prompted for the approximate salinity of the sample in parts per thousand (ppt).

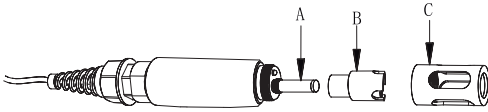
<p>13. <b>All-</b> To delete all the data in the data storage.</p>	<p>14. <b>Delete-</b> To delete stored data.</p>
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## B. Keys

	<p><b>On/Off-</b> Powers on and shuts off the meter.</p>
	<p><b>Mode-</b> Selects display mode. In normal operation, press this key to sequentially display Dissolved Oxygen in % air saturation, Dissolved Oxygen in mg/L, Recall and Delete interface. In calibration mode, press this key to exit the current calibration parameter and enter into the next one. In “Recall” and “Delete” modes, press this key to exit “Recall” and “Delete” modes respectively.</p>
  	<p><b>Up/Down-</b> Increases or decreases the display value as desired. In “Recall” mode, view saved data and data storage site number by pressing these keys. In “Delete” mode, press these keys to select between the “Delete Each” and “Delete All” mode. In “Delete Each” mode, view to be deleted data and data site numbers by pressing these keys.</p>
	<p><b>CAL-</b> In “Measurement” mode, press this key to enter into “Calibration” mode.</p>
	<p><b>Enter-</b> In “Calibration” mode, press this key to save the current parameter to memory. In “Measurement” mode, press this key to save reading into the next available data storage site. At the Recall interface, press this key to display the last set of saved data. At the Delete interface, press this key to go into “Delete” mode. In the “Delete All” mode, press this key to delete all saved data. In the “Delete Each” mode, press this key to delete a single set of data.</p>

# OPERATIONAL PROCEDURES

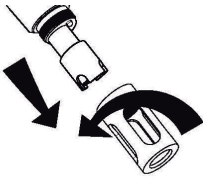
## A. Probe Preparation



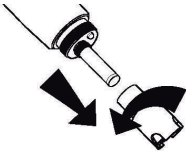
(A) Lead

(B) Membrane Cap

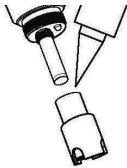
(C) Guard Cap



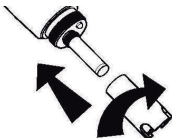
1. Remove the guard cap.



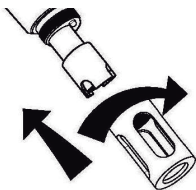
2. Remove the membrane cap.



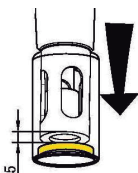
3. Fill solution into cover cap.



4. Twist the membrane cap back on to the probe. Rinse the probe well with distilled water, wipe the end of the probe dry.



5. Twist the guard cap back on to the probe.



6. Place 5 to 6 drops of clean water into the sponge inside the calibration bottle. Slide the probe into the calibration bottle. Be sure the membrane does not touch the sponge, at least 5mm space between the probe and the sponge.

## **B. Dissolved Oxygen Calibration**

The 9011M can be calibrated quickly and easily in air.

1. Power meter on with DO probe attached for 10 to 15 minute warm up.
2. For the field probe, place 5 to 6 drops of clean water (tap, distilled, or deionized) into the sponge inside the calibration bottle. Turn the bottle over and allow any excess water to drain out of the bottle. The wet sponge creates a 100% water-saturated air environment, the probe remains in a water saturated air atmosphere and is not submersed. Press **“Mode”** key to select **“Dissolved Oxygen in %”** mode.
3. Wait for the dissolved oxygen and temperature reading to stabilize, press the **“CAL”** key to enter the **“Calibration”** mode. The **“CAL”** icon appears on the LCD. The main screen will display **“1013 mBar”** (factory default value). The meter is now ready for atmospheric pressure calibration.
4. To change the pressure factor, use the **“Up”** and **“Down”** keys to adjust the value between 600 to 1100 mBar. Press **“Enter”** key to save the new value and the unit will automatically go into the next calibration parameter which is the value of 100% saturation in air. If **“Mode”** key is pressed instead of the **“Enter”** key, any changes made will be cancelled and the previous calibration settings will be retained.



5. In this interface, the user can view the calibration value in the secondary display. Once the value in the main display stabilizes, press **“Enter”** key to save the new value and the unit will automatically go into the salinity compensation parameter. If **“Mode”** key is pressed instead of the **“Enter”** key, any changes made will be cancelled and the previous calibration settings will be retained.
6. The salinity default factor value is 0.0 ppt. To change the salinity compensation factor, use the **“Up”** and **“Down”** keys to adjust the value between 0.0 to 40.0 ppt. Press **“Enter”** key to save the new value and the unit will automatically switch to **“Measurement”** mode. Calibration is now complete. If **“Mode”** key is pressed instead of the **“Enter”** key, any changes made will be cancelled and the previous calibration settings will be retained and will automatically switch to **“Measurement”** mode.

### **C. Dissolved Oxygen Measurements**

Press **“Mode”** key to choose the dissolved oxygen in % mode or dissolved oxygen in **“mg/L”** mode. Rinse the DO probe with distilled water and immerse it in the sample to be measured.

### **D. Save, Recall and Delete Data**

#### **a. Saving readings to memory.**

1. In **“Measurement”** mode, press the **“Enter”** key to save data. The **“Save”** icon with the corresponding site number will lit up for a brief moment to indicate a successful data save.
2. If the **“Full”** icon is displayed, this means that all 50 data saving sites are used up. No new data can be saved until existing saved data are deleted.

#### **b. Recalling readings from memory.**

1. To recall saved data, press **“Enter”** key at the Recall interface to go into **“Recall”** mode.
2. Press the **“Up”** or **“Down”** keys to select the storage site number.
3. Press **“Mode”** key to exit **“Recall”** mode.

#### **c. Deleting data.**

1. Press the **“Enter”** key at the Delete interface to go into **“Delete”** mode.

2. Select "Delete All" or "Delete Each" mode by pressing the "Up" or "Down" key.
3. In the "Delete all" mode, press "Enter" key to clear all stored data. Deletion is now complete.
4. In the "Delete Each" mode, use "Up" and "Down" key to select data to be deleted. Then press "Enter" key to delete. Deletion is now complete. The next set of saved data will automatically move up a slot in the storage site.
5. Press "Mode" key to exit "Delete" mode.

## ERROR DISPLAYS AND TROUBLESHOOTING

Main Display	Possible Cause(s)
"OvEr" or "Undr"	1. Check membrane and electrolyte solution. 2. Clean anode and cathode.
Secondary Display	Possible Cause(s)
"Udr"	1. Heat the sample to above -6.0 °C.
"Ovr"	1. Cool the sample to below 46.0 °C.

[**Note:** If the meter still does not perform normally after the above measures are taken, call **Jenco Service Department.**]

## SPECIFICATIONS

Display	Range	Resolution	Accuracy
Dissolved Oxygen	0 to 20.00 mg/L	0.01 mg/L	±0.5% F.S.
DO% saturation	0 to 200.0 %	0.1%	±0.5% F.S.
Temperature	-6.0 to 46.0 °C	0.1 °C	±0.3 °C

<b>Pressure compensation</b>	600 to 1100 mBar
<b>Salinity compensation</b>	0.0 to 40.0 ppt
<b>Temperature sensor</b>	Thermistor, 10 kΩ at 25 °C
<b>Calibration Back-up</b>	EEPROM
<b>Datalogging capabilities</b>	50 data sets
<b>Automatic shut off function</b>	30 minutes of non-use
<b>Audio Feedback</b>	All Touch Keys

<b>Screen</b>	Segmented LCD
<b>Power</b>	9 Volt battery
<b>Battery Life</b>	250 Hours
<b>Ambient Temperature Range</b>	0 to 50 °C
<b>Relative Humidity</b>	At 90% RH
<b>Waterproof</b>	IP67
<b>Dimensions</b>	214 X 74 X 42 mm 216 X 80 X 50 mm (Have jacket)
<b>Weight</b>	290 g

## WARRANTY

**Jenco** warrants this product to be free from significant deviations in material and workmanship for a period of 1 year from date of purchase. If repair or adjustment is necessary and has not been the result of abuse or misuse, within the year period, please return-freight-prepaid and the correction of the defect will be made free of charge. If you purchased the item from our **Jenco** distributors and it is under warranty, please contact them to notify us of the situation. **Jenco** Service Department alone will determine if the product problem is due to deviations or customer misuse.

Out-of-warranty products will be repaired on a charge basis.

### RETURN OF ITEMS

Authorization must be obtained from one of our representatives before returning items for any reason. When applying for authorization, have the model and serial number handy, including data regarding the reason for return. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. **Jenco** will not be responsible for damage resulting from careless or insufficient packing. A fee will be charged on all authorized returns.

**NOTE:** **Jenco** reserves the right to make improvements in design, construction and appearance of our products without notice.

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