



## 3020M使用说明书

实验室电导率仪



沪制02270148号

# 3020M



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## 概述

感谢您选购3020M。3020M是一台测量电导率、盐度、TDS及温度的精密仪器，内建的微处理器，计算和补偿所有与电导率和温度有关的测量数据。

本仪器拥有防水的外壳，机械式的按键提供高可信任度，高触觉及声响告知等功能，使用单一9V的干电池为电源，校正数据永久储存在EEPROM内存中，下次使用时不需再次校正。

此仪器使用大型的LCD，可显示具有温度补偿的电导率值、盐度、TDS及没有温度补偿的电导率值及相关的指示。即使在校正或测量程序下，也会提供使用者各种提示。

3020M具有50组测量数据的记忆功能，可以通过回叫界面轻松的查询所存储的测量数据。存储的数据也可通过清除界面选择全部删除还是单一删除。

3020M可接四线电导电极(K=0.475)也可接两线电导电极(K=0.1)。3020M还包含自动切换测试量程、自动温度补偿、超长电池寿命以及50/60HZ交流噪声排除能力，此仪器适合在野外和实验室。

## 产品检视

小心地打开包装，检视仪器及配件是否有因运输而损坏，如有发现，请立即通知 JENCO 的代理。

## 防水外壳

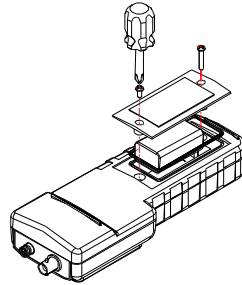
3020M具有防水外壳但不可在水中使用(因电导率电极与仪器连接处不具防水功能)。这个防水特性可避免仪器因为不小心掉入非腐蚀性溶液中而造成的损坏。若仪器不小心掉入溶液中时，请立即做以下步骤处理：

- (1) 用蒸馏水小心的清洗仪器，在清洗及晒干后，须将连接器内的污物清理干净，否则会影响电极的连接。
- (2) 再重新使用之前须确定仪器及电极已晒干。
- (3) 若完成上述步骤仍无法使用，请联络JENCO的代理商。(请参考“质量保证”章节)

## 电池的更换

当LCD上的“BAT”闪烁时，表示电力不足，大概可再使用1小时即需更换新电池，更换电池步骤如下：

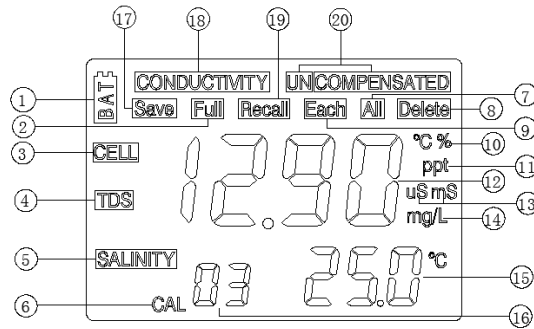
1. 使用螺丝起子取出两颗螺丝，即可取下电池盖。（请参考图一）
2. 取出9V旧电池并装上新电池，更换时，请注意电池极性放置要正确。
3. 放回防水圈和电池盖，并将刚取出的两个螺丝锁紧即可。



图一：电池安装图

## 显示及按键功能



### A. 显示



图二：LCD 显示

1. <b>BAT-</b> 表示需更换电池信号。	11. <b>ppt-</b> 表示盐度单位。
2. <b>Full-</b> 表示存储值已满 50 组，需要删除才能再次存入。	12. <b>MAIN DISPLAY-</b> 显示带温度补偿的电导率值、盐度值、TDS 值和无温度补偿的电导率值。
3. <b>CELL-</b> 表示显示值为电导常数。	13. <b>uS/mS-</b> 表示电导率单位。
4. <b>TDS-</b> 表示在测量总固体溶解量的状态。	14. <b>mg/L-</b> 表示总固体溶解量单位。
5. <b>SALINITY-</b> 表示在测量盐度值的状态。	15. 显示温度及其温度单位。
6. <b>CAL-</b> 表示进入校正模式。	16. 显示存储数据位置。
7. <b>All-</b> 表示选择了全部清除功能，存储数据将一次性全部清除。	17. <b>Save-</b> 表示存储当前的测量值。
8. <b>Delete-</b> 表示进入清除模式，可清除存储的数据记录。	18. <b>CONDUCTIVITY-</b> 表示在测量电导值的状态。
9. <b>Each-</b> 表示选择了单个清除功能，存储数据将单个单个的被清除。	19. <b>Recall-</b> 表示进入回叫模式，可回叫存储的数据记录。
10. <b>°C/%-</b> °C：表示参考温度的单位。 %：表示温度系数单位。	20. <b>UNCOMPENSATED-</b> “COMPENSATED”表示带温度补偿的电导率值。 “UNCOMPENSATED”表示无温度补偿的电导率值。

**B. 按键**

	<b>ON/OFF-</b> 开关键。按住开关键打开或关闭主机。
MODE	<b>MODE-</b> 选择键。 选择仪器的显示模式。连续按此键，显示的顺序为“带温度补偿的电导率”、“盐度”、“总固体溶解量”、“无温度补偿的电导率”、“Recall(回叫)”和“Delete(清除)”六个模式。 在校正模式下，按此键退出校正模式。 在校正“Recall”和“Delete”模式，按此键可以退出此两个模式。
	<b>UP/DOWN-</b> 上键和下键在校正状态下起增加、减少需变动的设置项目值。在测试状态不起作用。 在“Recall”模式，按上键和下键可以翻看存储的数据记录。 在“Delete”模式，按上键和下键可选择删除的方式“Delete Each”或者“Delete All”；在“Delete Each”删除方式中，按此两键可以选择需删除的存储的数据记录。
CAL	<b>CAL-</b> 按此键进入校正状态。
ENTER	<b>ENTER-</b> 在校正状态按此键，把当前的设定值存储到微处理中。 在测量状态下，按此键一次，机器将存储此时界面的显示值并记录相对应的位置号。3020M 可存储 50 组数据。 在“回叫”模式，按此键一次，机器将显示最后一个存储的数据。 在“清除”模式，按此键一次，机器将进入清除方式：“Delete All”和“Delete Each”选择，按上键下键进行选择。在“Delete All”界面，再按此键一次，机器将删除所有存储的数据。在“Delete Each”界面，再按此键一次，机器将进入删除单个存储数据的界面，此时，可以按上键和下键，选择需要删除的数据，按此键确认，机器将删除此位置号的存储数据，同时，由后一存储数据代替此位置号的存储数据。

## 操作步骤

### A. 标准溶液的配制

适宜的标准溶液配制粉剂需使用商业用或研究用等级的粉剂，以下是三种浓度的标准溶液的配制方法，使用者可以用它们来校正3020M的电导电极。

1. 14.94 $\mu$ S标准溶液（25 $^{\circ}$ C）：精确量取100毫升147 $\mu$ S标准溶液，溶解在900毫升的蒸馏水中。
2. 147 $\mu$ S标准溶液（25 $^{\circ}$ C）：精确量取100毫升1413 $\mu$ S标准溶液，溶解在900毫升的蒸馏水中。
3. 1413 $\mu$ S 标准溶液（25 $^{\circ}$ C）：精确地称量0.746 g研究用等级的KCL,使它溶解于1000ml的纯水中。
4. 147 $\mu$ S标准溶液（25 $^{\circ}$ C）：精确量取100毫升1413 $\mu$ S标准溶液，溶解在900毫升的蒸馏水中。
5. 12.90mS标准溶液（25 $^{\circ}$ C）：精确地称量7.4365 g研究用等级的KCL,使它溶解于1000ml的纯水中。
6. 111.9mS标准溶液（25 $^{\circ}$ C）：精确地称量74.264 g研究用等级的KCL,使它溶解于1000ml的纯水中。

[注意：剩余的未经使用过的标准溶液，您可以用密闭的容器在低于4摄氏度的环境下储存一周。如果您对标准溶液准确性产生疑问，请重新配制新的标准溶液。]

### B. 电导率校正

校正步骤包含5个步骤：TDS系数、电导电极常数、温度系数、参考温度以及电导率值的校正。详细步骤如下：

1. 连接电导电极3020P（K=0.475）或者109P（K=0.1）到主机的输入端口。按开关键开机后，主机显示“CELL”和存储在微处理器中的电导电极的电极常数。（出厂值设定为K=0.475）
2. 当温度读值稳定后，按“CAL”键进入校正模式。“CAL”将显示在LCD上。按“MODE”键将继续显示以下参数。

### **TDS**

TDS总固体溶解量是用有温度补偿的电导值乘以TDS因数值取得，出厂设定值为0.65。你可以用上键和下键调节这个TDS因数值，调整范围是0.30~1.00。按“ENTER”键储存新的设定值，或者按“MODE”键退出储存，进入“常数”界面。

### **常数**

用上键和下键选择电极常数：“C0.5”或者“C0.1”，按“ENTER”键储存所选择的常数值，机器将自动进入下一个校正参数；或者按“MODE”键退出储存，上次存储的常数值将被保留，并自动进入“温度系数”校正界面。

### **温度系数**

本仪器是用温度系数计算具有温度补偿的电导率值的，此温度系数默认值为1.91%。你可以用上键和下键调节这个温度系数值，调整范围是0.00~4.00%，按“Enter”键储存新的设定值，或者按“Mode”键退出储存，进入“参考温度”界面。

### **参考温度**

本仪器是用参考温度来计算具有温度补偿的电导率值的，此参考温度默认值为25℃。你可以用上键和下键调节这个参考温度值，调整范围是15~25℃，按“ENTER”键储存新的设定值，或者按“MODE”键退出储存，进入“电导率校正”界面。

### **电导率校正**

- (a) 将电导率电极清洗后，放入已知电导度的标准溶液中，此标准溶液的选择最好基于被测溶液电导值的范围之内。把电极浸入标准溶液中（至少2~3英寸或者5~7cm），并稍作搅动以便消除电极极片上的空气泡。
- (b) 稍等片刻，等待温度稳定。在此期间，主机显示“rAGE”表示主机在自动抓取测量的量程，这是正常的。当温度稳定后，你可以用上键和下键调节这个标准的电导度值（25℃），按“ENTER”键确认。当主机发出哔哔声后，表示校正步骤已成功完成，主机自动退到测量模式。



### **C. 电导率的测量**

1. 电极接上仪表后，开机，把清洗后的电极直接放入被测溶液中（至少浸没2~3英寸或者5~7cm），稍做搅动，赶出电极极片上的空气泡。
2. 按“MODE”键切换到自己需要测量的参数。机器在自动切换量程的时候显示“rAGE”这是正常的。当温度稳定后，就可以读取测量值，此值为被测溶液的测量值。

### **D. 存储、回叫和清除数据**

#### **a. 存储数据。**

1. 在带温度补偿的电导率、盐度、总固体溶解量及无温度补偿的电导率模式，按“CLEAR/ENTER”键一次，机器将存储当前数据值。此时“Save”显示将显示一次，并且有一位置号也同时显示，表示当前界面值已被存储并做了此位置号的记录。
2. 如果界面上显示“Full”，则代表机器的50组数据已存储满了，不能再存储其他数据。使用者只能删除或删除部分数据才能存储新的数据。

#### **b. 回叫存储数据。**

1. 按“MODE”键进入回叫模式，按“CLEAR/ENTER”键，机器将显示最后一组存储数据。
2. 此时按上键或下键选择位置号，找到自己需要读取的存储数据。
3. 读取完存储数据后可按“MODE”键退出回叫模式。

#### **c. 清除存储数据。**

1. 按“MODE”键进入清除模式，按“CLEAR/ENTER”键，机器将进入清除方式的选择，可按上键或下键在“Delete All”和“Delete Each”之间选择。
2. 在“Delete All”界面，按此键一次，机器将删除所有存储的数据，并显示None，表示没有存储数据。
3. 在“Delete Each”界面，按此键一次，机器将进入删除单个存储数据的界面，此时，可以按上键和下键选择需要删除的位置号，按此键确认，机器将删除此位置号的存储数据，同时，此位置号的存储数据将由下一个位置号的存储数据所代替。

例如：01, 400uS, 25℃；  
 02, 5mS, 23.8℃；  
 03, 18mS, 15.6℃；  
 ...

如果清除了02位置号的存储数据，则机器存储数据变为：

01, 400uS, 25℃；  
 02, 18mS, 15.6℃；  
 ...

4. 清除完数据后可按“MODE”键退出清除模式。

### 错误显示及原因

主显示	次显示	可能发生的原因	纠正措施
测试中显示 “over”	/	<ul style="list-style-type: none"> <li>电导率值超出200.0mS。 (K=0.475)</li> <li>电导率值超出200.0uS。 (K=0.1)</li> <li>盐度值超出70.0ppt.</li> </ul>	<ul style="list-style-type: none"> <li>电极必须浸入标准溶液或被测溶液至少2~3英寸或5~7cm。</li> <li>要有足够的时间等待电极读值的稳定。</li> <li>用标准溶液重新校正。</li> </ul>
校正中显示 “over”	/	被测溶液超出电导电极常数测量的范围。	<ul style="list-style-type: none"> <li>更换标准溶液。</li> <li>清洗电导电极。</li> </ul>
测试中显示 “over”	over	温度 > 90.0℃	降低/升高被测液温度
	undr	温度 < -10.0℃	

[注意：如果机器仍然不能正常工作，请联系 Jenco 的服务部门。]

## 规格

显示	测量范围	分辨率	精确度
电导率 K=0.475	0.0 ~ 475.0uS/cm	0.1uS/cm	±1%读值±2uS/cm
	475 ~ 4750uS/cm	1uS/cm	±1%读值±5uS/cm
	4.75 ~ 47.50mS/cm	0.01mS/cm	±1%读值±0.05mS/cm
	47.5 ~ 200.0mS/cm	0.1mS/cm	±2.5%读值±0.5mS/cm
电导率 K=0.1	0.00 ~ 99.99uS/cm	0.01uS/cm	±1%读值
	100.0 ~ 200.0uS/cm	0.1uS/cm	±1%读值
盐度	0.0 ~ 70.0ppt	0.1ppt	±0.2%量程
温度	-10.0 ~ 90.0 °C	0.1 °C	±0.2 °C 或 ±0.4% 量程。

参考温度	15.0 ~ 25.0 °C
温度系数	0.0% ~ 4.0%
电极常数	四线电导电极: K=0.475 两线电导电极: K=0.1
TDS系数	0.30 to 1.00
电源	1节9VDC电池
校正存储	EEPROM
测量数据存储	50组
音效回馈	所有按键
自动关机功能	未做任何操作, 30分钟后自动关机。
显示 (电导率/盐度/TDS : 温度)	12mm : 8mm 字高 LCD
环境温度	0 ~ 50 °C
相对湿度	90%以下
外壳	IP65
尺寸 (长 x 宽 x 高)	70mm x 198mm x 37mm
重量	260g (包含电池)

## 质量保证

仪器保修一年（以购买日为准）。在保修期内如有质量问题，本公司将无偿代为修复；如有人为因素造成故障或损坏，本公司竭诚代为修复，但需酬收工本费（配件如电极头、标准液等消耗品不在保证范围内）。在将本机退回本公司时，请用包装材料妥为包好，以避免运输途中碰伤。无论何种情况，在退回本机前，请先与本公司联系，并得到本公司认可，方可退回本机。

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## GENERAL INTRODUCTION

Thank you for selecting the 3020M meter. The 3020M is a precision tool that measure conductivity, salinity, TDS and temperature. A built-in microprocessor stores, calculates and compensates for all parameters related to conductivity and temperature determinations.

This unit has a waterproof IP65 case. The touch mode keys are highly reliable with tactile and audio feedback. This meter can operate with one 9V battery. Re-calibration is not required when power is restored.

The front of the meter has a large LCD that displays temperature and either temperature compensated or non-temperature compensated conductivity, salinity or TDS simultaneously along with user prompts and mode indicators. The unit prompts the user through calibration and measurement procedures.

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.

The model 3020M is available with a four-wire conductivity cell ( $K=0.475$ ) and a two-wire conductivity cell ( $K=0.1$ ). Other features include automatic conductivity ranging, automatic temperature compensation, long battery life, and 50/60 Hz AC noise rejection. This unit is universal and 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.

## WATER PROOF

Though the 3020M meter is housed in a watertight case, **DO NOT** use it underwater. The watertight case prevents permanent damage to the unit if accidentally dropped into non-corrosive solutions. Follow these steps immediately if the unit is immersed in any solution:

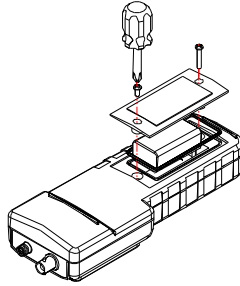
1. Rinse unit carefully with distilled water. After rinsing and drying, inspect and clean connectors to remove all contaminants that

may affect probe connections.

2. Wait for the unit and probe to dry completely before resuming operation.
3. If the unit does not function correctly after steps 1 and 2, call JENCO for possible repair or replacement (see Warranty).

## INSTALLING THE BATTERIES

The 3020M meter is packaged with one 9V battery required for operation. To insert the batteries into the meter, follow the procedure outlined below.



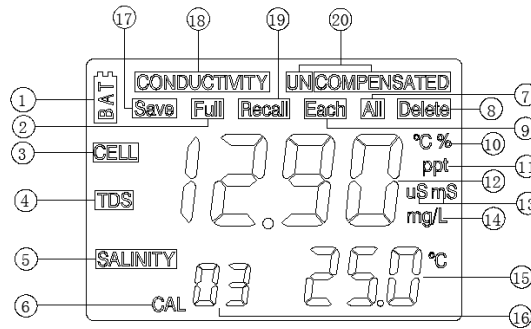
**Figure 1: Battery compartment**

1. Use a screw driver to remove the two screws and battery cover to expose the battery compartment. (Figure 1.)
2. Note the polarity and insert the batteries into the battery compartment correctly.
3. Replace the battery cover and make sure to secure the two screws for the water-tight feature.

**[Note:** Press the "ON/OFF" key to turn the unit on. If the unit is running then you can press the "ON/OFF" key to turn the unit off. The unit will automatically turn off after 30 minutes of no key activity.]

## DISPLAY & KEYS FUNCTIONS

### A. Display







**Figure 2: Active LCD screen**

<p><b>1. BATT-</b> Low battery indicator.</p>	<p><b>8. Delete-</b> To delete stored data.</p>
<p><b>2. Full-</b> This will indicate that all 50 data storage sites are used up.</p>	<p><b>9. Each-</b> To delete a single set of data from the data storage.</p>
<p><b>3. CELL-</b> Indicates conductivity cell constant value.</p>	<p><b>10. °C/%-</b> Displays during calibration: “C”: Indicates temperature reference unit. “%”: Indicates temperature coefficient unit.</p>
<p><b>4. TDS-</b> Displays when measuring total dissolved solids.</p>	<p><b>11. ppt-</b> Parts per thousand for salinity measurement.</p>
<p><b>5. SALINITY-</b> Displays when measuring salinity.</p>	<p><b>12. MAIN DISPLAY-</b> For compensated and uncompensated conductivity, salinity and TDS values.</p>
<p><b>6. CAL-</b> Calibration mode indicator</p>	<p><b>13. uS/mS-</b> microsiemens or millisiemens for conductivity measurement.</p>
<p><b>7. All-</b> To delete all the data in the data storage.</p>	<p><b>14. mg/L-</b> Grams/Liter for TDS measurement.</p>



15. Temperature and unit display	18. <b>CONDUCTIVITY-</b> Displays when measuring conductivity.
16. Data storage site number.	19. <b>Recall-</b> To recall data from the data storage.
17. <b>Save-</b> To save a reading into the data storage.	20. <b>UNCOMPENSATED-</b> Distinguish between temperature compensated and non-temperature compensated reading.

**B. Keys**

	<b>ON/OFF-</b> Powers on and shuts off the meter.
	<b>MODE-</b> Selects display mode. In normal operation, press this key to sequentially display compensated conductivity, salinity, total dissolved solids (TDS), uncompensated conductivity, 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.
	<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.
	<b>CAL-</b> In "Measurement" mode, press this key to enter into "Calibration" mode.

ENTER	<p><b>ENTER-</b></p> <p>In "Calibration" mode, press this key to save the current parameter to memory.</p> <p>In "Measurement" mode, press this key to save reading into the next available data storage site.</p> <p>At the Recall interface, press this key to display the last set of saved data.</p> <p>At the Delete interface, press this key to go into "Delete" mode.</p> <p>In the "Delete All" mode, press this key to delete all saved data.</p> <p>In the "Delete Each" mode, press this key to delete a single set of data.</p>
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## OPERATIONAL PROCEDURES

### **A. Preparing Standard Solutions**

Suitable conductivity standards are available commercially or the user can prepare them using research grade reagents.

Here are some standard solutions the user can prepare to calibrate the probe of the model 3020M.

1. Standard solution of 14.94uS at 25°C: Accurately measure 100mL of the 147uS conductivity standard solution. Dilute with 900ml of distilled water.
2. Standard solution of 147.0uS at 25°C: Accurately measure 100mL of the 1413uS conductivity standard solution. Dilute with 900ml of distilled water.
3. Standard solution of 1413uS at 25°C: Accurately weight out 0.746 grams of research grade dried Potassium Chloride (KCL). Dissolve in 1000ml of distilled water.
4. Standard solution of 12.90mS at 25°C: Accurately weight out 7.4365 grams of research grade dried Potassium Chloride (KCL). Dissolve in 1000ml of distilled water.
5. Standard solution of 111.9mS at 25°C: Accurately weight out 74.264 grams of research grade dried Potassium Chloride (KCL). Dissolve in 1000ml of distilled water.
6. Standard solution of 147uS at 25°C: Accurately measure out 100ml of the 1413uS standard solution as in point 1. Dilute it with 900ml of distilled water.

7. Standard solution of 14.94uS at 25°C: Accurately measure out 100ml of the 147uS standard solution as in point 4. Dilute it with 900ml of distilled water.

**[Note:** The user can store the remaining solution in a plastic container for one week but the air space between the cap and the solution must be kept to an absolute minimum. Storing the excess solution below 4°C can increase the storage life. If you have any doubt of the accuracy of the stored solution, a fresh batch should be prepared.]

## **B. Calibration**

Calibration setup contains five parameters: TDS, Cell, Temperature Coefficient, Temperature reference and Conductivity Calibration. To access these sections:

1. Connect the conductivity probe either the 3020P (K=0.475) or the 109P (K=0.1) to the unit and turn the unit on. The screen will display the "CELL" icon and the cell constant of the previous calibration. (Factory default is set at K=0.475).
2. Allow temperature reading to stabilize, press "CAL" key to enter the calibration mode. The "CAL" icon appears on the LCD. Press "MODE" key to sequentially view previous calibration settings.

### **TDS**

TDS is determined by multiplying conductivity (mS) by a TDS factor. The default factor value is 0.65. To change the TDS factor, use the "UP" and "DOWN" keys to adjust the value between 0.30 and 1.00. Press "ENTER" key to save the new value and the unit will automatically go into the next calibration 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.

### **CELL**

Use "UP" and "DOWN" keys to select cell constant between "C0.5" or "C0.1" on the secondary display. Press "ENTER" key to confirm selection and the unit will then automatically go into the next calibration 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.

### **Temperature Coefficient**

The unit uses the temperature coefficient to calculate temperature compensated conductivity. The default value is 1.91%. To change the temperature coefficient, use the "UP" and "DOWN" keys to adjust the value between 0 and 4.00%. Press "ENTER" key to save the new value and the unit will automatically go into the next calibration 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.

### **Temperature Reference**

The unit uses the temperature reference value to calculate temperature compensated conductivity. The default value is 25°C. To change the temperature coefficient, use the "UP" and "DOWN" keys to adjust the value between 15°C and 25°C. Press "ENTER" key to save the new value and the unit will automatically go into the next calibration 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.

### **Conductivity Calibration**

- (a) Immerse the probe in a standard of known conductivity, preferably a standard in the middle range of the solutions to be measured. Immerse the probe (at least 2" to 3" or 5-7cm from the tip) into standard solution without touching the sides of the calibration container. Shake the probe lightly to remove any air bubbles trapped in the conductivity cell.
- (b) Allow temperature to stabilize. The message "rAGE" (range) may appear briefly on the display indicating auto-ranging; this is normal. After temperature stabilization, use the "UP" and "DOWN" keys to adjust the conductivity value to that of the conductivity standard at 25°C. Press "ENTER" key to calibrate. The unit beeps to indicate a successful calibration. Calibration is now complete and the unit will automatically switch to "Measurement" mode.

## **C. Conductivity Measurements**

1. Turn the unit on. Place the probe in the solution to be measured. Immerse the probe (at least 2" to 3" or 5-7cm from the tip) in the sample solution. Shake the probe lightly to remove any trapped air bubbles in the

conductivity cell.

2. Press "MODE" key to enter into the desired measurement mode. The message "rAGE" (range) may appear briefly on the display indicating auto-ranging; this is normal. Allow temperature to stabilize.

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

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

1. In compensated conductivity, salinity, total dissolved solids (TDS) and uncompensated conductivity modes, 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	Secondary Display	Possible Cause(s)	Corrective Action(s)
"OvEr" during measurements	/	<ul style="list-style-type: none"> <li>• Conductivity is &gt; 200.0mS (K=0.475).</li> <li>• Conductivity is &gt; 200.0uS (K=0.1)</li> <li>• Salinity is &gt; 70.0ppt.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the probe is immersed at least 2"-3" or 5-7cm from the tip, below the surface of the sample/standard solution.</li> <li>• Allow sufficient time for the electrode and Temp probe to stabilize.</li> </ul>
"OvEr " during calibration	/	Cell Constant Calibration is out of range.	<ul style="list-style-type: none"> <li>• Recalibrate with correct value for the conductivity standard.</li> <li>• Replace conductivity standard.</li> <li>• Clean cell.</li> </ul>
"OvEr " during measurements	ovr	Temperature > 90.0 °C	Decrease/Increase the sample temperature.
	udr	Temperature < -10.0 °C	

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

## SPECIFICATIONS

Display	Range	Resolution	Accuracy
Conductivity K=0.475	0.0 to 475.0uS/cm	0.1uS/cm	±1% of reading + 2uS/cm
	475 to 4750uS/cm	1uS/cm	±1% of reading + 5uS/cm
	4.75 to 47.50mS/cm	0.01mS/cm	±1% of reading +0.05mS/cm
	47.5 to 200.0mS/cm	0.1mS/cm	±2.5% of reading + 0.5mS/cm
Conductivity K=0.1	0.00 to 99.99uS/cm	0.01uS/cm	±1% of reading
	100.0 to 200.0uS/cm	0.1uS/cm	±1% of reading
Salinity	0.0 to 70.0ppt	0.1ppt	±0.2% Full Scale
Temperature	-10.0 to 90.0 °C	0.1 °C	±0.2°C or ±0.4% Full Scale, whichever is greater.

<b>Reference Temperature</b>	15.0 to 25.0 °C
<b>Temperature Coefficient</b>	0.0% to 4.0%
<b>Cell Constant</b>	Four-wire cell: K=0.475 and two-wire cell: K=0.1
<b>TDS Constant Range</b>	0.30 to 1.00
<b>Power</b>	9Volt battery
<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>Display(Conductivity/ Salinity /TDS/mV : Temp)</b>	12mm : 8mm high LCD
<b>Ambient Temperature Range</b>	0 to 50 °C
<b>Relative Humidity</b>	At 90% RH
<b>Case</b>	IP65 waterproof
<b>Dimensions (W x D x H)</b>	70mm x 198mm x 37mm
<b>Weight</b>	260 grams (Batteries included)

## 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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