

JENCO®

QUALITY INSTRUMENTS

Operation Manual

MODEL 6308CST

**Conductivity/Salinity/Temperature
Transmitter/Controller**

6308CST

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GENERAL INTRODUCTION

The Jenco model 6308CST (Conductivity, Salinity and Temperature) system is a rugged microprocessor based meter assembled in a watertight ¼ DIN case, designed for use in laboratories and process control applications.

The model 6308CST microprocessor allows the user to easily recalibrate the parameters for the probes. The conductivity system requires only a single calibration. The microprocessor also performs a self-diagnostic routine every time you turn on the unit providing you with basic information about the stability of the meter.

The system simultaneously displays conductivity, salinity, temperature, cell constant, relay status and mA output in one graphic LCD screen. The LCD also includes a backlight for low-lit environments. This system uses a four-wire type probe for the conductivity and a precise thermistor for temperature, providing you with accurate readings for all your measurements.

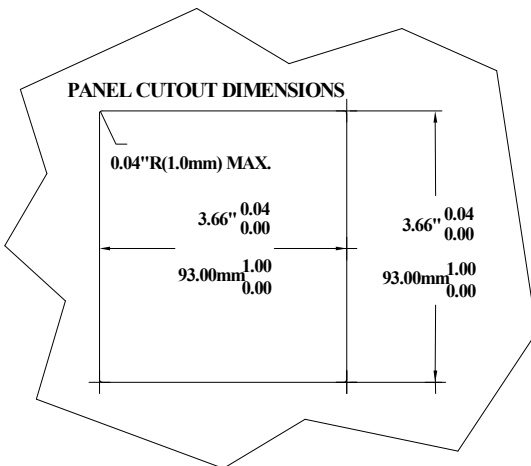
The model 6308CST is equipped with three relays: two programmable high/low control relays for conductivity/Salinity and one programmable high/low control relay for temperature. All relays are hysteresis driven and configurable to EDGE mode. The system also has an isolated 4-20 mA analog output, offset and span configurable for conductivity/salinity display.

The model 6308CST is using the standard RS485 MODBUS RTU protocol, which can easily let the user log all data (from multiple model 6308 or 6309) with an PC.

ASSEMBLY

Carefully unpack the meter 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.

A. MOUNTING PROCEDURE



1. Make a cutout on any panel, with a thickness of 1/16 in. (1.5 mm) to 3/8 in. (9.5mm).
2. Remove the mounting assembly from the controller and insert the controller into the cutout.
3. Replace the mounting bracket assembly onto the controller and secure the controller to the mounting panel.

Warning: If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

B. Cleaning The Meter

1. Be sure to remove the power before attempting to clean the meter.
2. Use a lint free cloth and clean water or neutral detergent.
3. Wipe the outer surface of the meter only.
4. Wipe-dry the meter before powering again.

DISPLAY & KEY FUNCTIONS

A. Display

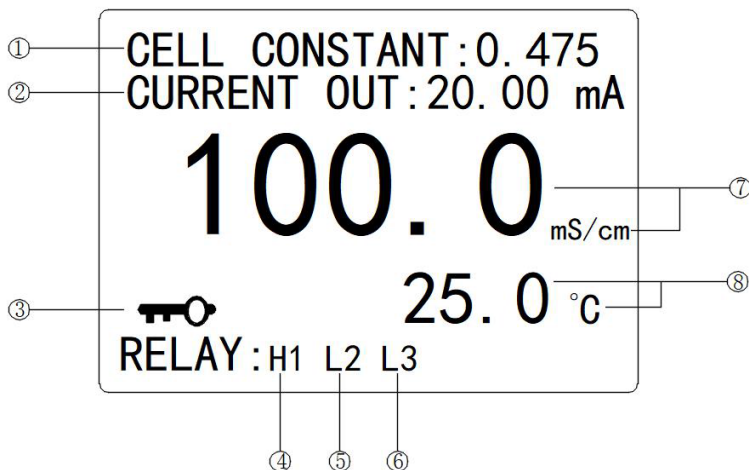


Figure 1

1. CELL CONSTANT- Actual cell constant of the probe computed from the last cell constant calibration.	2. CURRENT OUT- This will display the actual output of the isolated 4-20 mA output.
3. Key This will be displayed if Calibration/Setting pages are password locked meaning the user can't change the values unless the correct 4 digit number has been entered.	4. H1 or L1- This is the status of conductivity/salinity RELAY 1 , if this is displayed then the relay is ON. (H stands for high action control and L stands for low action control).
5. H2 or L2- This is the status of conductivity/salinity RELAY 2 , if this is displayed then the relay is ON.	6. H3 or L3- This is the status of the temperature RELAY 3 , if this is displayed then the relay is ON.
7. Conductivity or Salinity display.	8. Temperature display.

B. Operational Keys Description

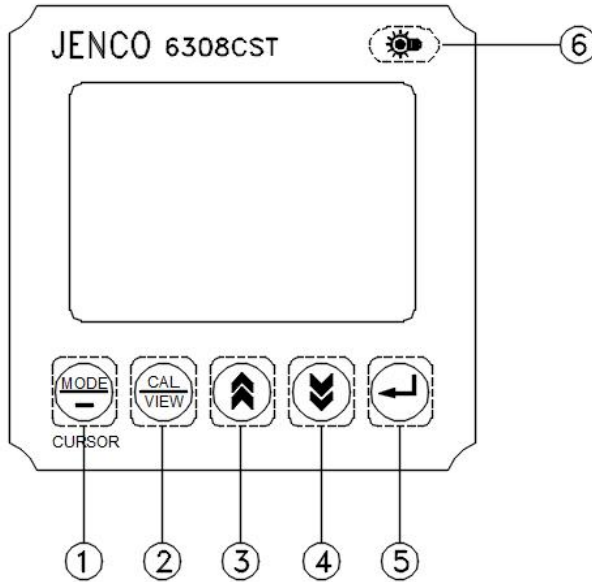








Figure 2

NO.	Key	Description
1		MODE- In the measure mode, pressing this key will change the display to conductivity or salinity. In the Calibration/Setting mode, pressing this key will move to the next digit of the current active parameter. In the Calibration/Setting mode, pressing this key for two seconds will move the user back to the previous parameter.
2		CAL/VIEW- Pressing this key for about two seconds, during normal display mode will switch to Calibration/Setting mode. During Calibration/Setting mode, pressing this key will switch to the next available Calibration/Setting page. Pressing this key at the last User/Calibration page will return the user to the normal display mode.
3		UP- During Calibration/Setting mode, pressing this key will increment the current blinking digit of the active parameter.
4		DOWN- During Calibration/Setting mode, pressing this key will decrement the current blinking digit of the active parameter.
5		ENTER- During Calibration/Setting mode, pressing this key will save the current modified parameter and move to the next parameter.

6		<p>LIGHT- Pressing this key will turn on or turn off the backlight of the LCD. The backlight will automatically turn off if there is no key activity within two minutes.</p>
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REAR CONNECTORS

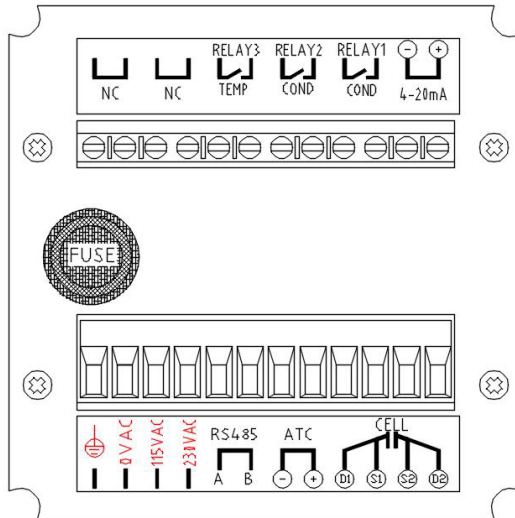


Figure 3

For wiring the probes, relays, analog output, RS485 and power cord, please see proper wiring instructions indicated below. Be sure the AC plug is not plugged-in. Remember that the unit is ON once the user plugs in the power cord to an AC power supply.

1. Connect the AC line to the rear of the meter. The model 6308CST can be used with 115 or 230 VAC 50/60 Hz. Power consumption is 6 watts. **Make sure the EARTH connector is connected to the earth lead of the AC power line.**
2. Connect the proper load to the output relays. **Make sure that the load does not exceed the relay rating, 5 Amp at 115 VAC and 2.5 Amp at 230 VAC.**
3. Set the proper load to the 4-20 mA-output connector. **Make sure that the load impedance is less than 500 Ohms.**

[Note: MAKE SURE YOU CONNECT THE AC POWER CORD TO THE CORRECT AC TERMINALS. CONNECTING INCORRECTLY MAY DAMAGE THE UNIT PERMANENTLY.]

TURNING ON/OFF THE METER

```
MODEL E6308CST

SELF DIAGNOSTICS
EEPROM :OK
ROM :OK
RAM :OK

VERSION : 1.00
```


By just plugging the unit to a correct AC voltage, the unit will be ready for use. There is no Power key so unplugging and plugging the unit will turn OFF or turn ON the unit respectively. After the unit is turned on, it will perform some basic self-diagnostics and will display "OK" or "BAD". If you received any "BAD" messages turn OFF the unit and turn it ON again. (See **ERROR DISPLAYS AND TROUBLESHOOTING**).

If the message persists then you might need to call your Jenco distributor. (See **WARRANTY**)

After the self-diagnostic is completed, the temperature reading will be shown on the lowest part of the screen and the user is ready to make conductivity or salinity measurements.

MODEL 6308CST MODES

A. Measure Mode

```
CELL CONSTANT:0.475
CURRENT OUT:20.00 mA
100.0 mS/cm
 25.0 °C
RELAY:H1 L2 L3
```

Turning ON the unit will always display in the conductivity measure mode.

This meter is designed to provide 3 distinct measurements:

1. Temperature

Current temperature of the solution, which is always displayed.

2. Compensated Conductivity

A conductivity reading adjusted to a calculated value which would have been read if the sample had been at the user reference temperature.

The conductivity of solutions of ionic species is highly dependent on temperature, varying as much as 3% for each change of 1°C (Temperature Coefficient (TC) = 3%/°C). In addition, the temperature coefficient itself varies with the nature of the ionic species present.

Because the exact composition of a natural media is usually not known, it is best to report a conductivity at a particular temperature, e.g. 10.2 mS/cm at 15 °C. However in many cases, it is also useful to compensate for the temperature dependence in order to determine the measurement at a glance if gross changes are occurring in the ionic content of the medium over time. For this reason, the model 6308CST allows the user to output conductivity in either raw or compensated form. If the user Temperature Coefficient (TC) is set to 0.00% then an **uncompensated conductivity** is output to the screen. If the TC is not zero then the model 6308CST uses the temperature, TC, raw conductivity and the reference temperature to display the **compensated conductivity**.

The calculation is carried out as in the equation below:

$$\text{Compensated conductivity} = \text{conductivity} / (1 + \text{TC} * (\text{T} - \text{RT}))$$

Where: TC = Temperature Coefficient
T = Solution temperature
RT = Reference Temperature

3. Salinity

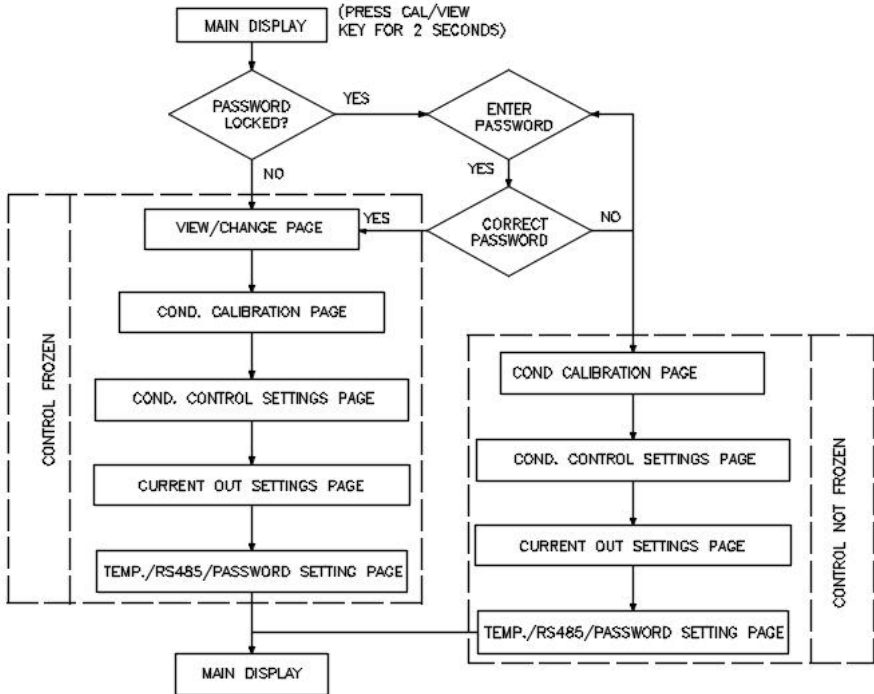
Salinity is the ratio of the mass of dissolved matter to the mass of solution. This is expressed in ppt (parts per thousand).

Temperature and conductivity (or salinity) are always simultaneously displayed in the graphic LCD screen in measure mode. The user can select conductivity or salinity reading by pressing the “**MODE**” key in measure mode.

B. Calibration/Setting Mode

Pressing the “CAL/VIEW” key for about two seconds during the measure mode will bring-up the first page of six pages of the Calibration/Setting mode. Pressing “CAL/VIEW” key will switch to the next page. At the last page, press “CAL/VIEW” key again will return the user to measure mode.

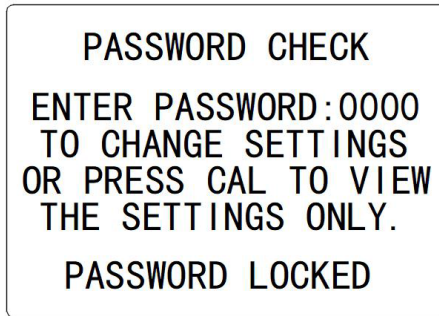
Below is a simple flowchart showing the path of the “CAL/VIEW” key:



The user can change any blinking words or digit by pressing the “UP” or “DOWN” keys. For options in digit format, the user needs to press the “MODE” key to move to the next digit. If the user is satisfied with the selection made, press the “ENTER” key to save the changes and move to the next option. If the user does not need to change the current blinking option just press the “ENTER” key to move to the next selection.

1. Password check page

a. Screen illustration



The user will only see this page if the unit is password locked.

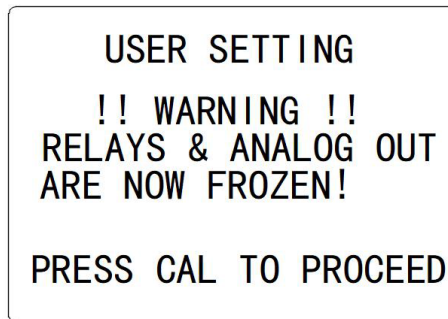
To change any settings or calibration, the user needs to unlock the system to remove the “**PASSWORD LOCKED**” message by entering the correct 4-digit password.

The user can still view all the pages of **Calibration/Setting mode** if the system is password locked by just pressing the “**CAL/VIEW**” key on this page. If the unit is “**PASSWORD LOCKED**”, going to **Calibration/Setting mode** will not affect the function of the relays.

[**Note:** If the unit is **not locked** then every time the user enters the **Calibration/Setting mode** the relays and analog out will be **frozen**.]

2. User setting page

a. Screen illustration

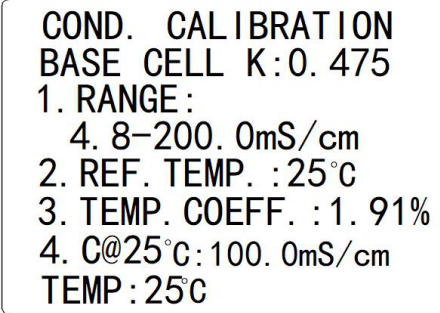


The user will only see this page if the unit is not password locked. This page is just a warning, telling the user that all relays are frozen and that the user can calibrate and change the settings.

[NOTE: **FROZEN** means all the relays and the analog out will maintain their last status until the user returns to normal display mode.]

3. Conductivity calibration page

a. Screen illustration



COND. CALIBRATION
BASE CELL K:0.475
1. RANGE :
4. 8–200.0mS/cm
2. REF. TEMP. :25°C
3. TEMP. COEFF. :1.91%
4. C@25°C:100.0mS/cm
TEMP :25°C

- 1) **BASE CELL K : 0.475**- This is the basic probe cell constant.
- 2) **RANGE**- The user can choose 3 different ranges for conductivity, and an additional 3 ranges if he/she wants the relay controls to be in salinity. Whichever the user chooses, he/she can still view the reading in salinity or conductivity but the relay control & current out will always be what the user chooses here. Choosing mS/cm or uS/cm range will let the conductivity readings affect the relays set point and the current out. Choosing ppt will let the salinity readings affect the relays and the current out. Conductivity and salinity have the same range limit except for the units displayed.
- 3) **REF. TEMP.**- If the Temperature Coefficient (TC) is not zero then the model 6308CST will use the value here to calculate and display the compensated conductivity or salinity. The displayed value will be the value as if the temperature is the Reference Temperature. The normal reference temperature is between 15 to 25 °C but the user can actually select between 10 to 29 °C in this option.
- 4) **TEMP. COEFF.**- This will be used in the conductivity mode if the user wants the displayed value to be compensated. Setting this option to 0.00% will disable compensation. The user can select between 0.00% to 4.99%.
- 5) **C@ 25 °C**- If the user is calibrating the Cell Constant, the user must enter the conductivity value of the standard solution at 25 °C.

b. Before calibration remember to do the following:

- 1) Use properly stored standard solutions and a clean calibration container.
- 2) Rinse the probe with de-ionized or distilled water (wipe dry) before immersing into standard solutions.
- 3) After immersing into the solution, let the reading stabilize for about 1 minute and shake

the probe lightly to remove any air bubbles.

- 4) To minimize errors, perform the calibration as close as possible to the selected reference temperature.

c. Conductivity calibration

- 1) Clean the probe thoroughly.
- 2) Wait for about 30 minutes after the user turned on the meter to stabilize the circuitry before calibrating the probe.
- 3) Choose a calibration solution closest in ion concentration to the sample being measured.
- 4) Select the correct Range for the standard solution.
- 5) Input the temperature coefficient of the standard solution. Most standard salt calibration solution has a TC between 1.91% to 2.00%. If the TC is not available use the default of 1.91%.
- 6) During calibration the user reference temperature is disregarded. The reference temperature is fixed at 25 °C since this temperature is the most popular reference temperature for all if not most standard solutions.
- 7) Immerse the probe into the solution. Shake the probe lightly to remove air bubbles from the probe. Do not let the probe touch any part of the container and allow at least 1 minute so the conductivity and temperature reading will stabilize.
- 8) Press the **"ENTER"** key to capture the stable reading and freeze the reading. The model 6308CST will blink the first digit to tell the user can now input the standard solution value.
- 9) Input the standard solution value by using the **"UP"** and **"DOWN"** keys (to increment/decrement the blinking digit), the **"MODE"** key (to select another digit). Press the **"ENTER"** key to calculate and save the new cell constant.
- 10) The model 6308CST is now ready for conductivity/salinity measurements.

d. Conductivity, salinity measurements

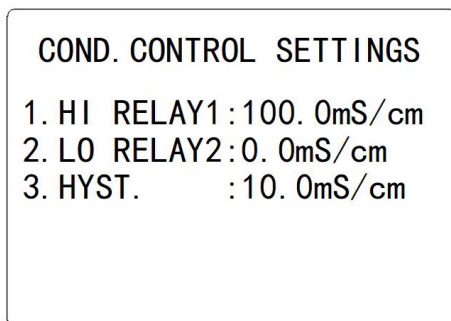
- 1) Clean the probe thoroughly.
- 2) Move to Conductivity calibration page.
- 3) Set the range to the approximate range of the solution.
- 4) If the user wants a compensated reading, input the closest Temperature Coefficient of the sample or use the default of 1.91%. Set the Temperature Coefficient to 0.00% if the user wants just the raw uncompensated conductivity.
- 5) If the Temperature Coefficient is not 0.00%, the user needs to select a reference

temperature or sets it to the default of 25 °C.

- 6) Move the display to the measure mode.
- 7) Immerse the probe into the solution. Shake the probe lightly to remove air bubbles from the probe. Do not let the probe touch any part of the container and allow at least 1 minute so the temperature reading will stabilize.
- 8) Read the display. Press the "**MODE**" key to toggle between conductivity and salinity reading.

4. Conductivity (or salinity) control settings page

a. Screen illustration



- 1) **HI RELAY 1**- The control type for this relay is changeable. The user can choose "**HI**"-type or "**LO**"-type. In HI-type, **RELAY 1** will turn **ON** if the conductivity or salinity is greater than the **RELAY 1** setting. In LO-type, **RELAY 1** will turn **ON** if the conductivity or salinity is less than the **RELAY 1** setting which is modified by the hysteresis value.

Use "**UP**" and "**DOWN**" to change the **RELAY 1** type then press "**ENTER**" key to save. After selecting the **RELAY 1** type, the user can now select the **RELAY 1** setting.

Use "**UP**" and "**DOWN**" keys to change the blinking digit. Use the "**MODE**" key to select another digit and the "**ENTER**" key to save the new setting.

- 2) **LO RELAY 2**- The control type for this relay is changeable. The user can choose "**HI**"-type or "**LO**"-type control. In HI-type, **RELAY 2** will turn **ON** if the conductivity or salinity is greater than the **RELAY 2** Setting. In LO-type, **RELAY 2** will turn **ON** if the conductivity or salinity is less than the **RELAY 2** setting which is modified by the hysteresis value.

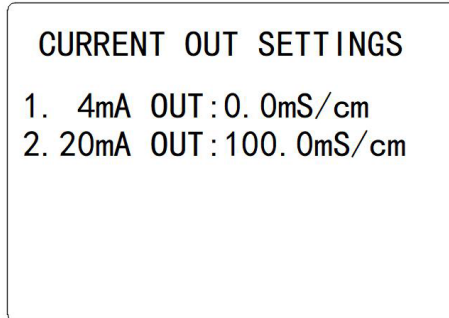
Use "**UP**" and "**DOWN**" to change the **RELAY 2** type then press "**ENTER**" key to save. After selecting the **RELAY 2** type, the user can now select the **RELAY 2** setting.

Use “**UP**” and “**DOWN**” keys to change the blinking digit. Use the “**MODE**” key to select another digit and the “**ENTER**” key to save the new setting.

3) **HYS.**- This is the actual value of the hysteresis.

5. Current out settings page

a. Screen illustration

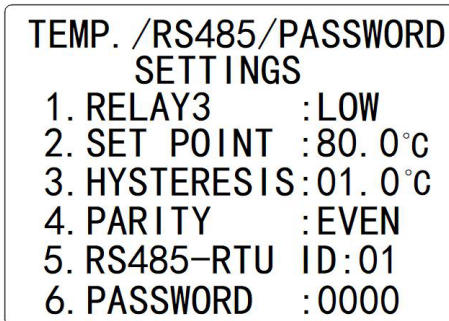


1) **4 mA OUT**- This value will be used in conjunction with 20 mA to plot the current output. (See section 4 - **20 mA OUTPUT.**)

2) **20 mA OUT**- This value will be used in conjunction with the 4 mA value to plot the output. (See section 4 - **20 mA OUTPUT.**)

6. Temp./RS485/password settings page

a. Screen illustration



1) **RELAY 3**- The temperature has only one relay to control. The user needs to set what control type it will use, **HIGH** or **LOW** type. In **HIGH**-type, **RELAY 3** will turn **ON** if the temperature is greater than the **RELAY 3** setting. In **LOW**-type, the **RELAY 3** will turn **ON** if the temperature is less than the **RELAY 3** setting which is modified by the hysteresis value.

- 2) **SET POINT**- This is the **RELAY 3** control set point.
- 3) **HYSTERESIS**- This is the actual value of the hysteresis. The user can change this value from 0.1 to 19.9 °C.
- 4) **PARITY**- This option would let the user choose if the current RS-485 type is **“EVEN”**, **“NONE”** or **“ODD”**.
- 5) **RS485-RTU ID**- This is the unique ID/Address for the unit. If the user is connecting multiple model 6308CST or other Jenco models for logging purposes then this ID/Address must be unique for each connected unit. This ID/Address is the same address that must be used by the PC program to communicate with this unit.
- 6) **PASSWORD**- The meter allows the user to set a four digit password. At the Temp./RS485/password settings page, press **"MODE"** key. The number starts to blink. Use **"UP"** or **"DOWN"** key to select the desired digit. Press **"ENTER"** key to save password.

[Important note: The password must be entered at password check page to change settings.

The user is responsible for remembering the password number, otherwise the user would not be able to calibrate or change all the settings.]

CONTROLLING THE RELAYS

A. Isolation Voltage

The maximum isolation voltage of the relay output contacts is 1500 VDC. The voltage differential between the relay output contacts and the load should not exceed 1500 VDC.

B. Output Load

The current through the relay output contacts should not exceed 5 Amp at 115 VAC and 2.5 Amp at 230 VAC in order not to cause permanent damage to the relay contacts. This rating is specified for **resistive** loads only.

C. Relay Action, Relay Setpoint & Hysteresis Value

If the relay control type is set to HI, the relay will turn **ON** at (RELAY SETPOINT), and will turn **OFF** at [(RELAY SETPOINT) - (hysteresis value)].

If the relay type is set to LO, the relay will turn **OFF** at [(RELAY SETPOINT) + (hysteresis value)], and will turn **ON** at (RELAY SETPOINT).

Relay Action	Effective RELAY-ON Set point	Effective RELAY-OFF Set point
HIGH	S.P.	S.P. - H.V.
LOW	S.P.	S.P.+ H.V.

H.V. = Hysteresis value (Dead Band)

S.P. = Relay Set point

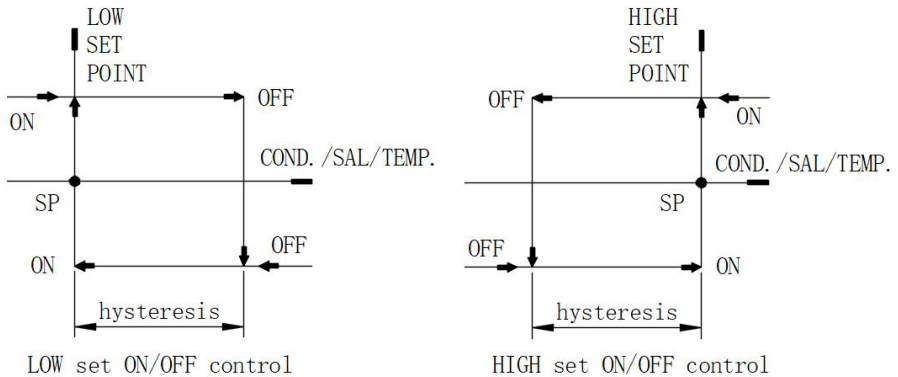


Figure 4

[**Note** : Setting any hysteresis value to zero may cause jitter and possibly damage the relay(s).]

D. Conductivity/Salinity Relays

There are two independent relay channels for conductivity or salinity display which have **independent** set point and HIGH or LOW control type (see Figure 4.). The hysteresis value will be used by **both** conductivity/salinity relays.

The action of the conductivity/salinity relays is dependent on set point, relay control type (HIGH or LOW), hysteresis value and the current conductivity or salinity display (See figure 4.)

E. Temperature Relay

One relay channel is available for temperature display which has independent set point and HIGH or LOW action (see figure 4) setting and hysteresis value.

The action of the temperature relay is dependent on set point, relay action type (HIGH or LOW), hysteresis value and the current temperature display.

[**Note**: The user can set the SET POINT from 0.0 to 199.9 °C, **but be reminded that the range of the temperature is -10.0 to 120 °C.**]

4 - 20 mA OUTPUT

A. Isolation Voltage

The maximum isolation voltage of the 4-20 mA output is 500 VDC. The voltage differential between the 4-20 mA output and the load should not exceed 500 VDC.

B. Output Load

The maximum load is 500 Ω . Output current inaccuracies may occur for load impedance in excess 500 Ω .

C. Conductivity/Salinity Linear Output

The analog output will produce a linear analog output if the user selects this option (see figure 5). The analog output will be dependent on the conductivity/salinity_4 mA setting, conductivity/salinity_20 mA setting and the current conductivity/salinity display.

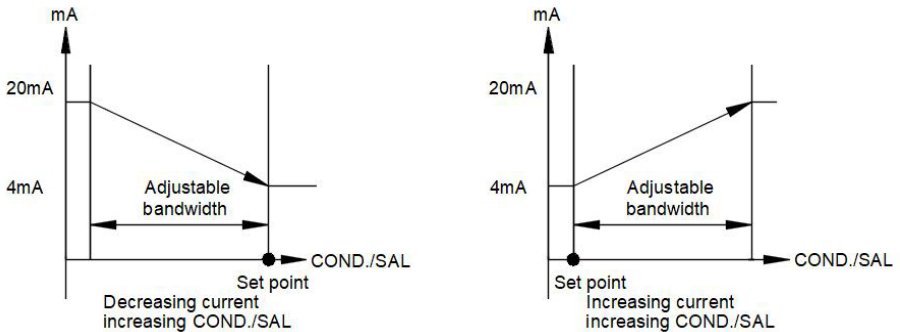


Figure 5 Conductivity/salinity linear output

The conductivity/salinity linear analog output is based on the following equation:

Where :

$mA_{(c)}$ = analog output

$D_{(c)}$ = current conductivity or salinity display

$C(4)$ = conductivity or salinity user setting for 4 mA

$C(20)$ = conductivity or salinity user setting for 20 mA.

[**Note:** The absolute difference of the 4mA and 20mA settings must be greater or equal to 10 LSD (Least Significant Digit) of the user range.]

If the absolute difference is smaller than 10 LSD the current output will display "ERROR".]

RS485 INTERFACE OPERATION

A. Introduction

This meter is using the standard RS485 MODBUS RTU protocol. Please read the "protocol.doc" in the accompanying disk to help programming an application that will communicate with the meter. There is also a simple demo program in the disk that the user can install to see the protocol in action.

B. Preparing The Meter

The meter's RS485 MODBUS RTU interface requires 2 ordinary (preferably awg 24) unshielded twisted pair wires connected in a daisy-chain configuration.

PROBE HANDLING AND MAINTENANCE

A. Handling The Probe

To ensure accurate and repeatable results:

1. The probe must be clean before making any measurements. If measuring low conductivity solutions, extra ordinary cleanliness may be necessary.
2. The cell plates of the probe must totally submerged in the solution. The probe chamber must be free of trapped air or particulates. The user may need to tap the probe gently to dislodge any air bubbles.
3. Ideally, when immersed into a sample, the probe should be at least 1/4 inch or 1 cm away from any object, including the sides and bottom of the container.
4. Stirring may be necessary for high accuracy readings.
5. If possible, isolate the solution container from ground potentials.
6. Electrical fields and stray currents caused by stirrer motors, heaters, etc., can interfere with the measurements. The user should determine the effects of these and make the necessary corrections either by shielding or by disconnecting those units that cause trouble.
7. Always rinse the probe carefully before using it in another solution.
8. Never store a dirty or contaminated probe.

B. Storing The Probe

1. Always rinse the probe thoroughly with de-ionized or clean tap water to remove contaminants before storing it.
2. For short-term storage, it is recommended to immerse the probe into deionized water to keep the plates wet. For long-term storage, after rinsing the probe thoroughly, the exterior body should be wiped dry before storing it.

ERROR DISPLAYS AND TROUBLESHOOTING

LCD display	ATC display	Mode	Possible cause(s) [Action(s)]
"TER.R"	"OVE.R"	Conductivity Calibration	a. Temperature > 120.0 °C. [Bring solution to a lower temperature.] [Replace temperature probe.] b. No temperature sensor. [Use a temperature probe.]
"TER.R"	"UND.R"	Conductivity Calibration	Temperature < -10.0 °C. [Bring solution to a higher temperature.]
"OVE.R"	-10.0 to 120.0 °C	Conductivity Calibration	Reading over user specified range. [Change range to higher level]
"LER.R"	-10.0 to 120.0 °C	Conductivity Calibration	Compensated Calibration exceeds temperature limit. [Increase or decrease the solution temperature]
EEPROM : BAD		Power-on	Unit has failed its EEPROM test. [Turn meter OFF and back to ON again.] [Return for service. (see Warranty)]
ROM: BAD		Power-on	Unit has failed its ROM test. [Turn meter OFF and back to ON again.] [Return for service. (see Warranty)]
RAM: BAD		Power-on	Unit has failed its RAM test. [Turn meter OFF and back to ON again.] [Return for service. (see Warranty)]

SPECIFICATIONS

Conductivity

Range	Basic Cell K	Resolution	Accuracy
0 to 4750 uS/cm	0.475	1 uS/cm	0.5% ± 1 LSD
0.48 to 47.50 mS/cm	0.475	0.01 mS/cm	0.5% ± 1 LSD
4.8 to 200.0 mS/cm	0.475	0.1 mS/cm	0.5% ± 1 LSD

Salinity

Range	Basic Cell K	Resolution	Accuracy
0.0 to 2.5 ppt	0.475	0.1 ppt	0.5% ± 1 LSD
0.2 to 30.9 ppt	0.475	0.1 ppt	0.5% ± 1 LSD
2.6 to 70.0 ppt	0.475	0.1 ppt	0.5% ± 1 LSD

Temperature

Range	Resolution	Accuracy
-10.0 to 120.0 °C	0.1 °C	±0.3 °C

Conductivity

Reference Temperature	10 °C to 29 °C (user selectable)
Temperature Coefficient	0.00 to 4.99% (user selectable)
Temperature Compensation	Automatic

Temperature

Temperature sensor	Thermistor, 10 k Ω at 25 °C
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4 - 20 mA Output

Current output range	4 - 20 mA (isolated)
Current output scale	user programmable
Maximum load	500 Ω
Accuracy	± 0.1 mA
Isolation voltage	500 VDC

Controller

Relays	3 (high or low) programmable relays
Control type	ON/OFF control
Relay output	5 A at 115 VAC or 2.5 A at 220 VAC

GENERAL

Keys	Audio feedback in all keys
Security protect	4-digit password
Communication	RS485 (modbus)
Power:	115 VAC or 230 VAC 50/60 Hz
Power consumption	6 watts
Ambient temperature range	0.0 to 50.0 °C
Display:	128 x 64 graphic LCD w/backlight
Case	IP65 ¼ DIN case, depth 148 mm
Weight	950 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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