INFCT

INFINITY® C Programmable Digital Thermocouple Meter

Operator's Manual

Made in the USA

Y2K
Year 2000
Compliant

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If the unit should malfunction, it must be returned to the factory for evaluation. NEWPORT's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by NEWPORT, if the unit is found to be defective it will be repaired or replaced at no charge. NEWPORT's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of NEWPORT's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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3. Repair instructions and/or specific problems relative to the product.

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User's Guide

DP25-TC

Programmable Digital

Thermocouple Meter

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA Of Course!

TEMPERATURE
- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN AND FORCE
- Transducers & Strain Gauges
- Load Cells & Pressure Gauges
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL
- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY
- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION
- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS
- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL
- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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OMEGA is constantly pursuing certification of its products to the European New Approach Directives.
OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct but OMEGA Engineering, Inc. accepts no liability for
any errors it contains, and reserves the right to alter specifications without notice.
WARNING: These products are not designed for use in, and should not be used for, patient connected applications.

⚠ This device is marked with the international hazard symbol.   It is important to read the Setup Guide before
installing or commissioning this device as it contains important information relating to safety and EMC.

Addendum to the Manual of "INFCT"

INFINITY C Programmable Digital Thermocouple Controller

micro controller software enhancements.

Menu items for analog output or dual relay options will not be displayed if the option(s) are not installed in the meter.

I.   5.1   FRONT OF THE METER (**CONTINUED**)

(Add to the end of the **SETPTS BUTTON** - section)
NOTE: If the dual relay option is not installed, pressing the setpts button will display **"V.-03"** which is the meter's software version.

II.   AUTOMATIC DECIMAL POINT ADJUST:

If you select 0.1 degree resolution, decimal point automatically adjust itself to 1 degree if the temperature reading is larger than 999.9 or less than -199.9.

III.   SECTION 17. MANUAL RESET (**"M.RST"**):

Always choose the value of **"M.RST"** less than **"P.BND/2"**. Meter will not accept larger values and displays with flashing **"ER 4"**.

IV   SECTION 20. TUNING PROPORTIONAL CONTROLLER **("TUNE"):**

Please allow enough time for the meter to settle before proceeding with **"TUNE"** procedure. If any error happens during this procedure, meter will flash **"ER 4"** and abort the tuning. You have to restart the procedure.

V   SECTION 19. LOCKOUT CONFIGURATION **("LK.CF")**

19.3   TO ENABLE DISPLAYS PROGRAM VERSION:

1.   Press the ▶/DEV button. The meter shows one of the following:

* "L.3=0" "**SETPTS"** button will display setpoint values.

* "L.3=1" "**SETPTS"** button will display **"V.-03"** which is the meter's current software version.

(TURN PAGE)

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2.   Press the ▲/**MAX** button to toggle between the choices above.

3.   Press the **MENU** button to store the changes.

NOTE: If your meter does not have the relay option, setpoint menu items above will not be available and **SETPTS** button will always display the meter's software version. These units will have **+OL** (overload) or **+OPEN** memory indicated by Alarm 1 & 2 LED displays. LEDs can be reset by pressing **MENU** then **RESET** button or by power **OFF** then **ON**. These units can not use analog output proportional to error from setpoint 1. under menu OT.CF, 0.3=P.

VI.   SECTION 18A. COLD JUNCTION OFFSET CALIBRATION **("CJ.OF")**

A new procedure is used. this will replace section 19 of the manual.
The cold junction offset equals the actual temperature minus the reading temperature. You may compensate for any error due to cold junction on the **TC** input. You may perform this compensation in any temperature from 0℃ to 40℃ (or 32℉ to 104℉), however we recommend you perform this compensation at 0℃ (32℉) for best result. To do this, immerse the thermocouple hot junctions into a mixture of ice and water.

TO PERFORM THIS COMPENSATION, FOLLOW THESE STEPS:

1.   Connect the thermocouple wire to the $\pm$S input.

2.   Press the **MENU** button until meter displays **"CJ.OF"**.

3.   Press the **DEV** button. The meter displays the previous offset value with flashing 4th digit.

4.   Press the **DEV** button again. Reading temperature will be displayed (with no digit flashing).

5.A.   If the value is okay, then press the **MENU** button. Display will show **"STRD"** and 0 value will be entered at the offset.

   B.   If the value is not okay, then enter the actual temperature using the **DEV** and **MAX** buttons. Once you enter the accurate temperature, press the **MENU** button. The meter displays **"STRD"** and stores the offset value.

NOTE: 1.   Temperature unit is either celcius or fahrenheit and will always be displayed at 0.1 degree resolution. The meter flashes corresponding LED.

2.   MAX/MIN offset value will be $\pm$25.0 ℃ or 45.0 ℉. If offset the limit, the meter will flash **"ER 3"** *and previous offset will not be changed.*

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SECTION 1. INTRODUCTION

1.1 DESCRIPTION

The Programmable Thermocouple Meter is a value packed indicator/ controller. Four full digits allow for an accurate display of your temperature. Your meter may be a basic indicator or it may include analog output or dual relay output. Analog output is fully scalable and may be configured as a proportional controller, or to follow your display. Dual 5 amp, form C relays control critical processes. Front panel peak detection and memory is also standard. A mechanical lockout has been included to guard against unauthorized changes.

1.2 STANDARD FEATURES

The following is a list of features:

* 4-digit red 14 segment LED display
* ±0.5 °C accuracy
* J, K, DIN J or TC thermocouple types
* Peak detection and memory
* Non-volatile memory-no battery backup
* 115 or 230 V ac 50/60 Hz power supply

1.3 OPTIONAL FEATURES

* Dual 5 amp, form C relay outputs
* Scalable analog output
* Proportional control
* Front-panel deviation correction
* Easy setup for proportional control

SECTION 2. NOTES, WARNINGS and CAUTIONS

Information that is especially important to note is identified by three labels:

- **NOTE**
- **WARNING**
- **CAUTION**
- **IMPORTANT**

NOTE: provides you with information that is important to successfully setup and use the Programmable Digital Meter.

CAUTION or WARNING: tells you about the risk of electric shock.

CAUTION, WARNING or IMPORTANT: tells you of circumstances or practices that can effect the meter's functionality and must refer to accompanying documents.

SECTION 3. UNPACKING

Remove the Packing List and verify that all equipment has been received. If there are any questions about the shipment, use the phone numbers listed on the back cover to contact the Customer Service Department nearest you.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

Note ☞ *The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.*

Verify that you receive the following items in the shipping box:

QTY	DESCRIPTION
1	Programmable indicator / controller with all applicable connectors attached.
1	Owner's Manual
1	Set Mounting brackets

Note: *If you ordered any of the available options (except the "BL" blank Lens option), they will be shipped in a separate container to avoid any damage to your indicator/controller.*

SECTION 4. SAFETY CONSIDERATIONS

This device is marked with the international Caution symbol.   It is important to read this manual before installing or commissioning this device as it contains important information relating to Safety and EMC (Electromagnetic Compatibility).

Unpacking & Inspection

Note ☞ Unpack the instrument and inspect for obvious shipping damage. Do not attempt to operate the unit if damage is found.

This instrument is a panel mount device protected in accordance with Class I of EN 61010 (115/230 AC power connections). Installation of this instrument should be done by Qualified personnel. In order to ensure safe operation, the following instructions should be followed.

This instrument has no power-on switch. An external switch or circuit-breaker shall be included in the building installation as a disconnecting device. It shall be marked to indicate this function, and it shall be in close proximity to the equipment within easy reach of the operator. The switch or circuit-breaker shall not interrupt the Protective Conductor (Earth wire), and it shall meet the relevant requirements of IEC 947–1 and IEC 947-3 (International Electrotechnical Commission). The switch shall not be incorporated in the mains supply cord.

Furthermore, to provide protection against excessive energy being drawn from the mains supply in case of a fault in the equipment, an overcurrent protection device shall be installed.

- The **Protective Conductor** must be connected for safety reasons. Check that the power cable has the proper Earth wire, and it is properly connected. It is not safe to operate this unit without the Protective Conductor Terminal connected.

Note ☞
- Do not exceed voltage rating on the label located on the top of the instrument housing.
- Always disconnect power before changing signal and power connections.
- Do not use this instrument on a work bench without its case for safety reasons.
- Do not operate this instrument in flammable or explosive atmospheres.
- Do not expose this instrument to rain or moisture.

EMC Considerations
- Whenever EMC is an issue, always use shielded cables.
- Never run signal and power wires in the same conduit.
- Use signal wire connections with twisted-pair cables.
- Install Ferrite Bead(s) on signal wires close to the instrument if EMC problems persist.

SECTION 5. PARTS OF THE METER

5.1 FRONT OF THE METER

Figure 5-1 shows each part of the front of the meter. Table 5-1 on the next page gives a brief description of each part.
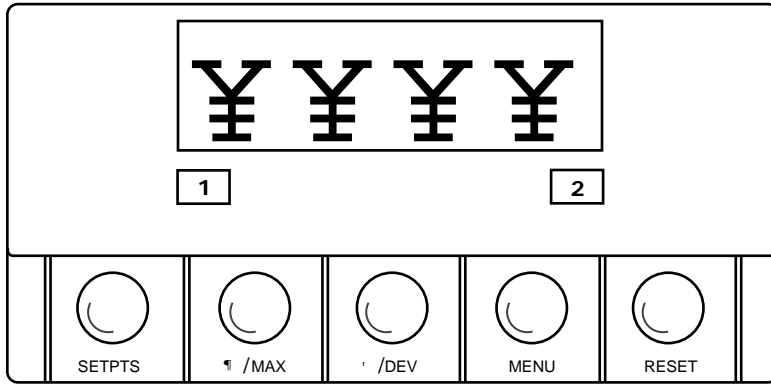

Figure 5-1. Front-Panel Illustration

1 - Setpoint 1 Status
2 - Setpoint 2 Status

Table 5-1. Front-Panel Part Description

ITEM	DESCRIPTION
1	**- 1.9.9.9. or 9.9.9.9.** 4-digit 14 segment, 0.54" high LED display with programmable decimal point.
2	**SETPOINT LED** These LEDs labeled 1 and 2 display the status of setpoints 1 and 2.
3	**SETPTS BUTTON** This button functions only in the run mode. When the meter is in the run mode, press this button to sequentially recall the previous setpoint settings. After using the ▲/**MAX** and ▶/**DEV** buttons to alter these settings as desired, press the **SETPTS** button to store these new values. Unless you press the **SETPTS** button within 20 seconds to store your input, the meter will scroll to setpoint 2 and retain the last value stored. *Note ☞* *If the dual relay option is not installed, pressing the* **SETPTS** *button will display* "**V.-03**" *which is the meter's software version.*
4	**▲/MAX BUTTON** During the run mode, press the ▲/**MAX** button to recall the **PEAK** reading since the last press of the **RESET** button. To return to the current readings without resetting the **PEAK** reading, press the ▲/**MAX** button. To reset the **PEAK** reading, press the **RESET** button. During the configuration mode, use the ▲/**MAX** button to change the values of the flashing digit shown on the display and/or toggle between menu choices, such as "**R.1=F**" or "**R.1=C**". When configuring your setpoint values, press the ▲/**MAX** button to increment the flashing digit from 0 to 9 by 1's.

ITEM	DESCRIPTION
5	**▶/DEV BUTTON** During the run mode press the ▶/**DEV** button to display the deviation from setpoint 1. When configuring your setpoint values, press the ▶/**DEV** button to scroll to the next digit.
6	**MENU BUTTON** In the run mode, press the **MENU** button to terminate the current measuring process and enter you into the configuration mode. (Note: only if you have installed the lockout jumpers on the main board.) In the configuration mode, press the **MENU** button to store changes in the non-volatile memory and then advance you to the next menu item.
7	**RESET BUTTON** If you hard reset (press the **MENU** button followed by the **RESET** button) or power off/on the meter, it shows "**RST**", followed by "**T/C**". In the setpoint mode, press the **RESET** button to reset the setpoints. The meter shows **"SP.RS"** and returns to the run mode. In the configuration mode, press the **RESET** button once to review the previous menu. Press the **RESET** button twice to perform a hard reset and return to the run mode. In the peak mode, press the **RESET** button to reset peak value. The meter shows **"PK.RS"** and return to the run mode.
▼ Note ☞ ▼	*When in setpoint or configuration mode, if the meter shows 9999 or -1999 with all flashing digits, the value has overflowed. Press the ▲/**MAX** button to start a new value.*

7

5.2 REAR OF THE METER

Figure 5-2a and 5-2b shows the connector label mounted at the top of the meter housing. Table 5-2 gives a brief description of each connector at the rear of the meter.
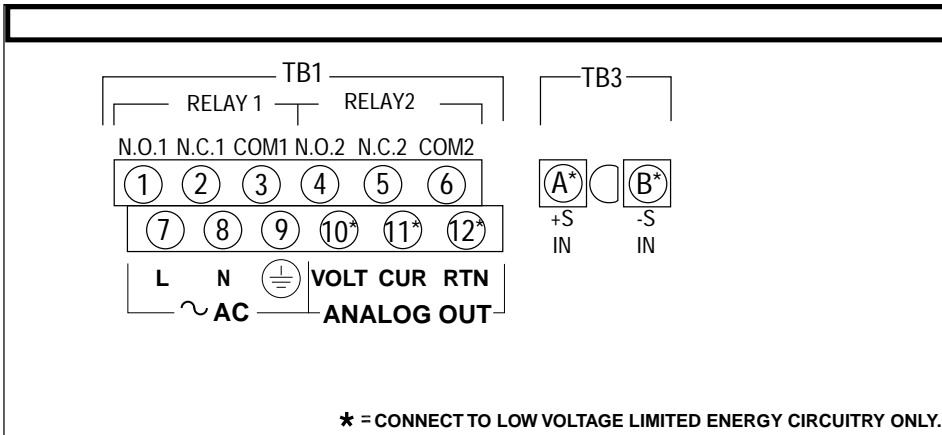
Figure 5-2a. Connector Label (AC Powered)
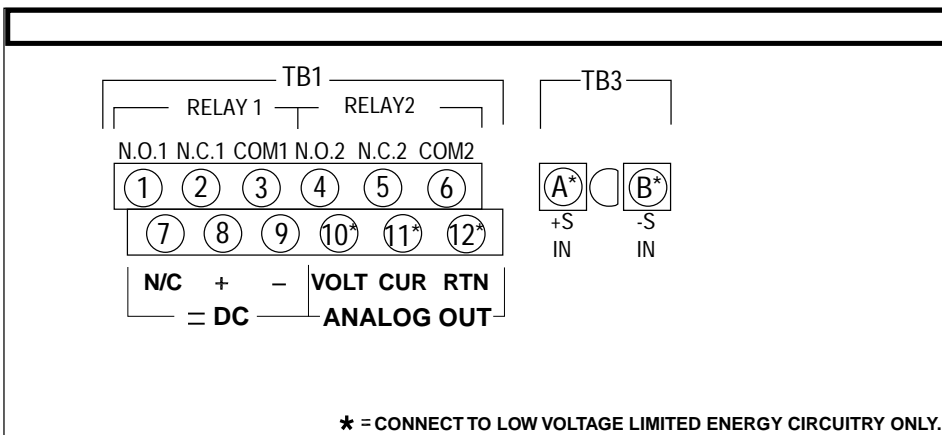
Figure 5-2b. Connector Label (DC Powered)

Table 5-2. Rear Connector Description

CONNECTOR	DESCRIPTION
TB1-1	Setpoint 1: Normally open (N.O.1) connection
TB1-2	Setpoint 1: Normally closed (N.C.1) connection
TB1-3	Setpoint 1: Common (COM1) connection
TB1-4	Setpoint 2: Normally open (N.O.2) connection
TB1-5	Setpoint 2: Normally closed (N.C.2) connection
TB1-6	Setpoint 2: Common (COM2) connection
TB1-7	ac line connection (no connections on dc-powered units)
TB1-8	ac neutral connection (+ Input on dc-powered units)
TB1-9	ac earth ground (dc-power return on dc-powered units)
TB1-10	Analog voltage output
TB1-11	Analog current output
TB1-12	Analog return
TB3-A	+TC: Input
TB3-B	-TC: Input
TB5-1	Isolated Analog Voltage Output
TB5-2	Isolated Analog Current Output
TB5-3	Isolated Analog Output Return
J1 (1-2)	Remote tare connection with a momentary switch.

SECTION 6. SETUP

6.1 CONDITIONS REQUIRING DISASSEMBLY

You may need to open up the meter for one of the following reasons:
- To check or change the 115 or 230 Vac power jumpers.
- To install or remove jumpers on the main board.

6.2 DISASSEMBLY

Note ☞ *Disconnect the power supply before proceeding.*

To remove and access the main board, follow these steps:
- Disconnect the main power from the meter.
- Remove the back case cover.
- Lift the back of the main board upwards and it slide out of the case.

⚠ *Caution:* The meter has no power-on switch, so it will be in operation as soon you apply power.

If you power off/on the meter, or perform a hard reset (press the **RESET** button twice), the meter shows "**RST**", followed by "**PROC**".

6.3 RATING/PRODUCT LABEL

This label is located on top of the meter housing.

6.4 MAIN BOARD POWER JUMPERS (refer to Figures 6-1 and 6-2)

⚠ *Important:* If you want to change the Factory preset jumpers, do the following steps; otherwise go to section 6.5.

Note ☞ *Disconnect the power from the unit before proceeding.*

1. Remove the main board from the case. Refer to Section 6.2.
2. Locate the solder jumpers W1, W2, and W3 (located near the edge of the main board alongside the transformer).
3. If your power requirement is **115 V ac, solder jumpers W1 and W3 should be wired, but jumper W2 should not.** If your power requirement is **230 V ac, solder jumper W2 should be wired, but jumpers W1 and W3 should not.**

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6.4 MAIN BOARD POWER JUMPERS (Continued)

Figure 6-1 shows the W1 through W3 jumpers on the main board.
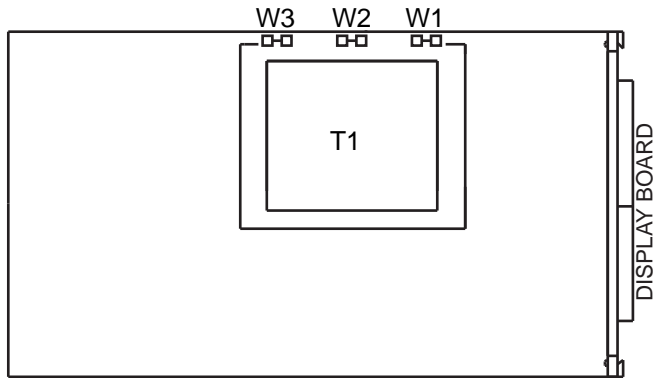
Figure 6-1. Main Board Power Jumpers (W1, W2, W3)

Figure 6-2 shows the main board jumpers.
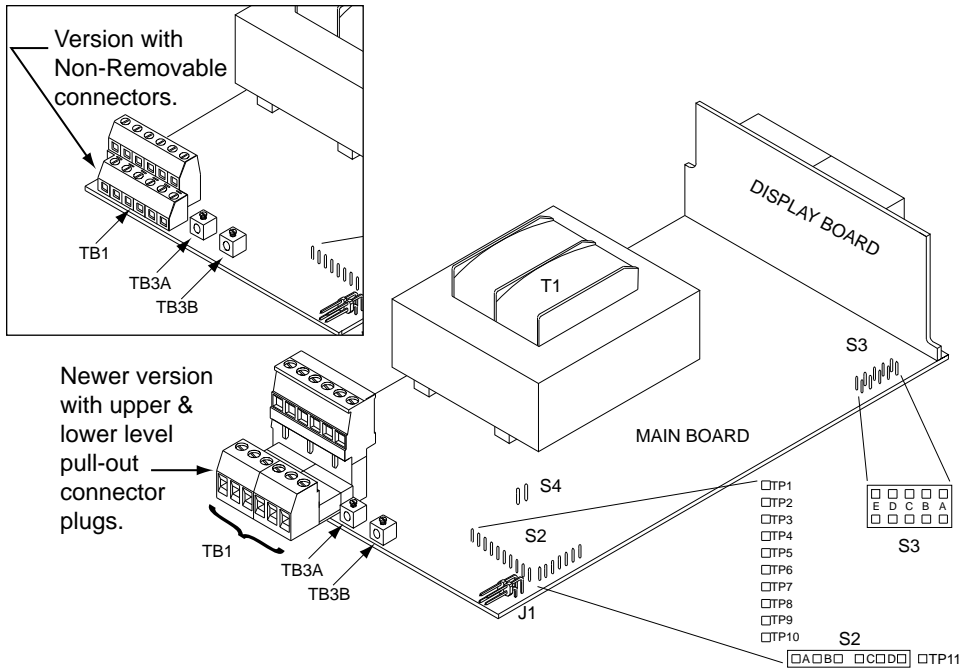
Figure 6-2. Main Board Jumper Positions

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6.4 MAIN BOARD POWER JUMPERS (Continued)

S2 jumpers are used for sensor break indications (refer to Table 6-1).

S3 jumpers are used for the following (refer to Table 6-1):

* To enable or disable the front panel push-buttons
* To allow for an extremely low resistance load for analog output
* To disable the **MENU** button
* To perform calibration procedure

Test pins TP1 - TP11 are for testing purposes. Do not use as reading errors may result.

Table 6-1. Jumper Functions

JUMPER	DESCRIPTION
S2-A	Install for negative sensor break (i.e., refrigeration).
S2-B	Install for positive sensor break (i.e., heating).
S2-C	Removed. Not used.
S2-D	Removed. Not Used.
S3-A	Install to enable front panel push-buttons. Remove to disable all front panel push-buttons
S3-B	Removed. Install for meter calibration.
S3-C	Normally removed. Install for analog voltage output when load has less than 1 KΩ impedance. Care should be taken when installing this jumper.
S3-D	Removed. Not used.
S3-E	If installed without S3-B, the **MENU** button locks out.
S4-A	Removed. Not used.

Notes

6.5 PANEL MOUNTING
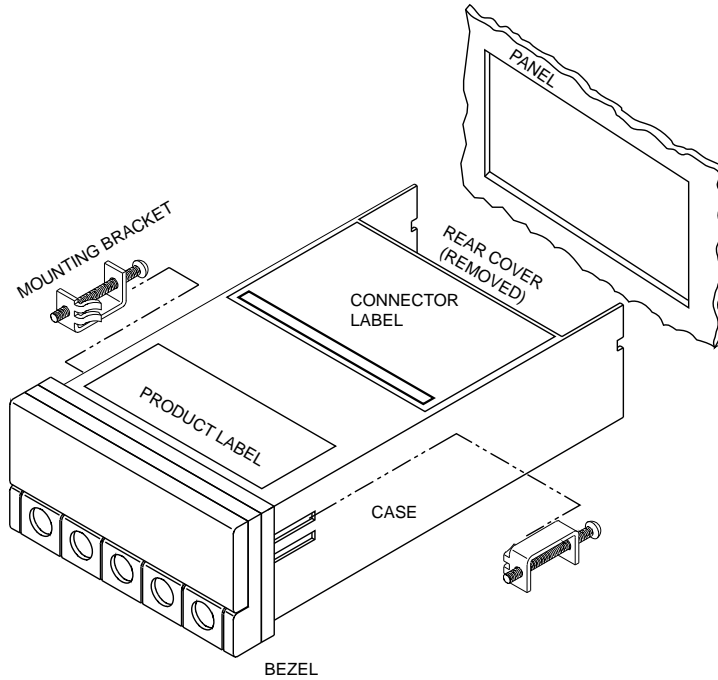
Figure 6-3. Meter - Exploded View

1. Cut a hole in your panel, as shown in Figure 6-3. For specific dimensions refer to Figure 6-4.

2. Insert the meter into the hole. Be sure the front bezel is flush to the panel.

PANEL THICKNESS
6,4 (.25) MAX
0,8 (.03) MIN

R 1,5 (.06) 4 PLCS   45,00 + 0,61/-0,00 (1.772 + .024/–.000)

92,00 + 0,81/–0,00 (3.622 + .032/–.000)
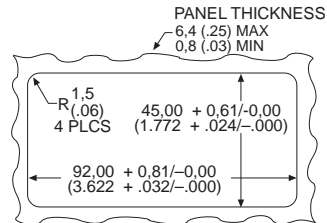
NOTE: Dimensions in Millimeters (Inches)

Figure 6-4 Panel Cutout

3. Proceed to Section 7 to connect your sensor input and main power.

SECTION 7. SENSOR INPUT/ MAIN POWER CONNECTIONS

7.1 SENSOR INPUT CONNECTIONS

Figures 6-1 through 6-3 describe how to connect your sensors.
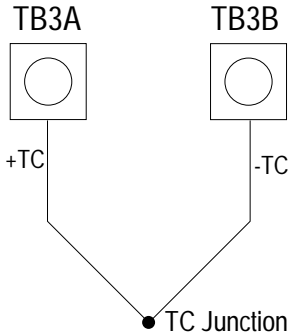
Figure 7-1. Sensor Input Connection

7.2 MAIN POWER CONNECTIONS

Figure 7-2 shows the proper AC power main power connections.

⚠ *WARNING: Do not connect ac power to your meter until you have completed all input and output connections. Failure to do so may result in injury!*
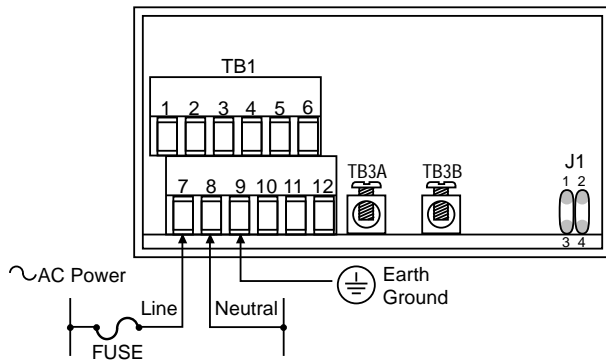
Figure 7-2. Main Power Connections -AC

7.2 MAIN POWER CONNECTIONS (Continued)

Table 7-1 shows the wire color and respective terminal connections for both USA and Europe.

Table 7-1.   ac-Power Connections

| TB1 | AC POWER | WIRE COLORS | |
		EUROPE	USA
7	$\sim$ ac Line	Brown	Black
8	$\sim$ ac Neutral	Blue	White
9	$\sim$ ac Earth	Green/Yellow	Green
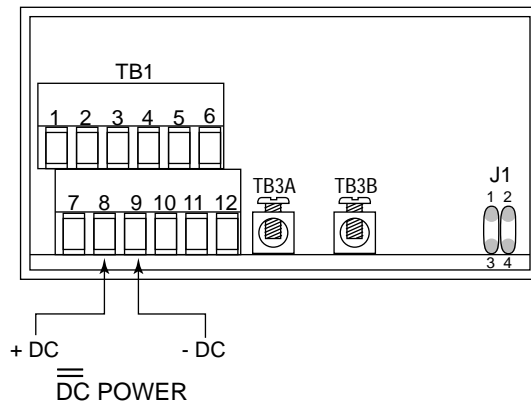
Figure 7-3. Main Power Connections - DC

7.3 ANALOG AND RELAY OUTPUT CONNECTIONS

If you have purchased a meter with analog or dual relay output, refer to the following drawings for output connections.
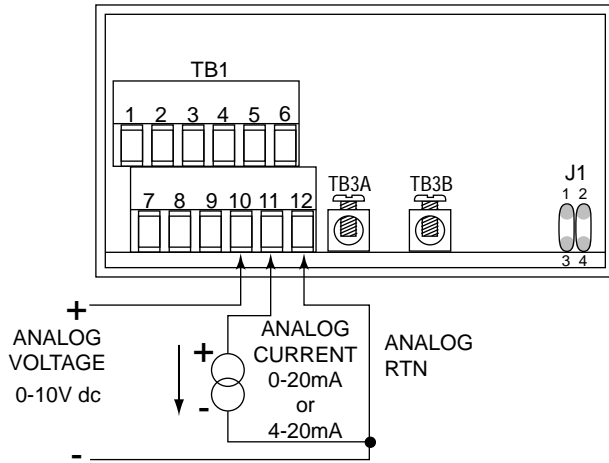
Figure 7-4. Analog Output Connections
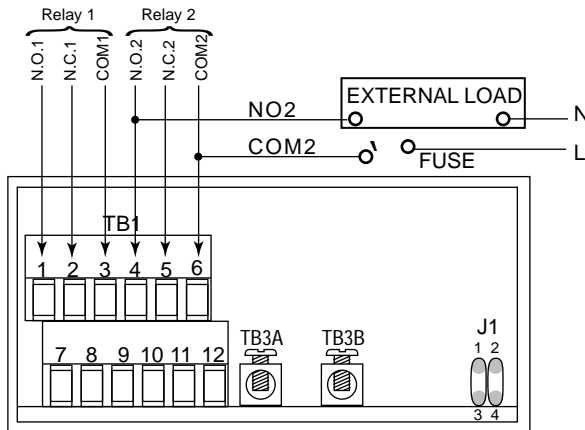
Figure 7-5. Relay Output Connections

7.3   ANALOG AND RELAY OUTPUT CONNECTING (Continued)
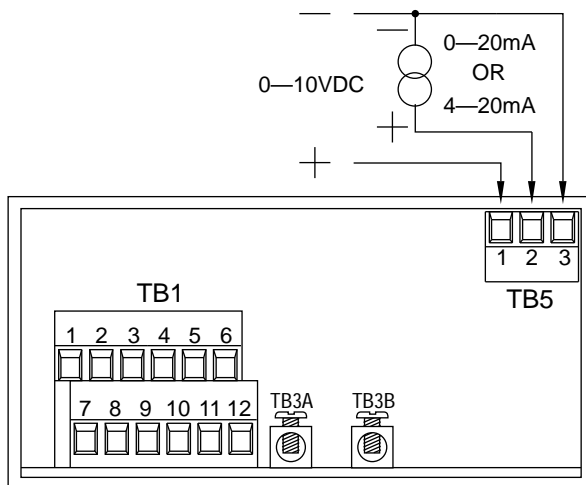
Figure 7-6. Isolated Analog Output Connections.
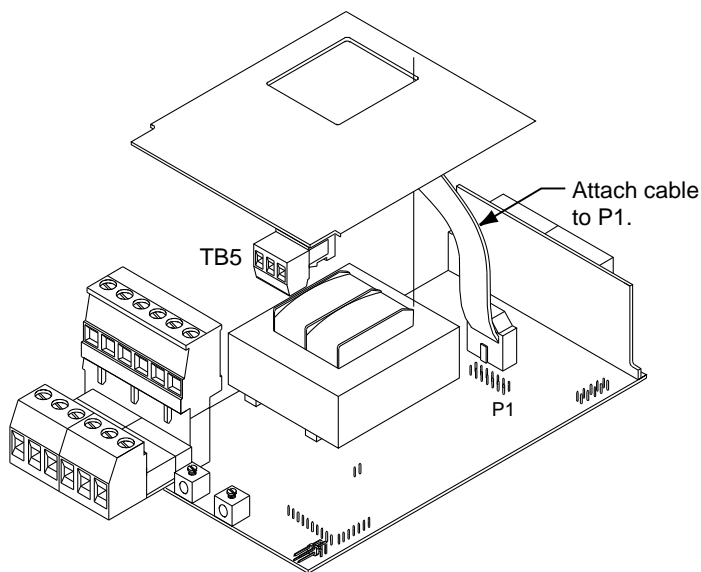
Figure 7-7. Isolated Analog Output Upper Board Installation

SECTION 8. INPUT TYPE (INPT)

To select your appropriate input type signal.

1. Press the **MENU** button until the meter shows "**INPT**" .

2. Press the ▶/**DEV** button. The meter shows one of the following:

    *   **J.TC** - Iron vs. Constantan (NIST)
    *   **K.TC** - Nickel-Chromium vs. Nickel-Aluminum (NIST)
    *   **DJ.TC** - Iron vs. Copper (DIN)
    *   **T.TC** - Copper vs. Copper-Nickel

3. Press the ▲/**MAX** button to scroll through available choices.

4. Press the **MENU** button to store your choices. The meter momentarily shows "**STRD**", followed by "**DEC.P**" (Decimal point).

SECTION 9. DECIMAL POINT POSITION (DEC.P)

Note ☞ Refer to Table 23-1 for a summary list of menu configuration.

To select a decimal point display position.

1. Press the **MENU** button until the meter shows "**DEC.P**".

2. Press the ▶/**DEV** button. The meter shows one of the following:

    *   FFFF.
    *   FFF.F

3. Press the ▲/**MAX** button to scroll between choices.

4. Press the **MENU** button to store your choices. The meter momentarily shows "**STRD**", followed by "**RD.CF**" (Reading Configuration).

Note ☞ *When you change the decimal position the meter adjusts setpoints, deadbands, proportional band, and manual reset values. These adjustments are made according to the new decimal point. If one or more of these values overflow, the meter flashes "ER2" when you store a new decimal point position value.*

AUTOMATIC DECIMAL POINT ADJUST

If you select 0.1 degree resolution the decimal point automatically adjusts itself to 1 degree if the temperature reading is above 999.9 or below -199.9.

SECTION 10. READING CONFIGURATION ("RD.CF")

To determine if your meter shows in °F (Fahrenheit) or °C (Celsius).

1. Press the **MENU** button until the meter shows "**RD.CF**" .

2. Press the ▶/**DEV** button. The meter shows one of the following:

   *   "R.1=F" (°F)
   *   "R.1=C" (°C)

3. Press the ▲/**MAX** button to toggle between choices.

4. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "**S1.CF**" (Setpoint 1 Configuration).

SECTION 11.   SETPOINT 1 CONFIGURATION (S1.CF)

Setpoint 1 is not active unless your meter has dual relay output capabilities. The LED's will display whether the (S1.CF) is active or not. You may use Setpoint 1 Configuration (S1.CF) for the following:

*   To set the setpoint's active band above or below your chosen value

*   To select whether the setpoint operation is latched or unlatched

1. Press the **MENU** button until the meter shows "**S1.CF**".

2. Press the ▶/**DEV** button. The meter shows one of the following:

    *   "S.1=A"   (Active above the setpoint)
    *   "S.1=B"   (Active below the setpoint)

3. Press the ▲/**MAX** button to toggle between choices.

4. Press the ▶/**DEV** button again. The meter shows one of the following:

    *   "S.2=L"   Setpoint 1 to be latched
    *   "S.2=U" Setpoint 1 to be unlatched

5. Press the ▲/**MAX** button to toggle between choices.

6. Press the **MENU** button to store your choices(s). The meter momentarily shows "**STRD**", followed by "**S2.CF**" (Setpoint 2 Configuration).

SECTION 12. SETPOINT 2 CONFIGURATION (S2.CF)

Setpoint 2 is not active unless your meter has dual relay output capabilities. The LED's will display whether the (S2.CF) is active or not. You may use Setpoint 2 Configuration (S2.CF) for the following:

* To set the setpoint's active band above or below your chosen value
* To select whether the setpoint operation is latched or unlatched

1. Press the **MENU** button until the meter shows "**S2.CF**" .

2. Press the ▶/**DEV** button. The meter shows one of the following:
   * "S.1=A" (Active above the setpoint)
   * "S.1=B" (Active below the setpoint)

3. Press the ▲/**MAX** button to toggle between choices.

4. Press the ▶/**DEV** button again. The meter shows one of the following:
   * "S.2=L"   Setpoint 1 to be latched
   * "S.2=U"   Setpoint 1 to be unlatched

5. Press the ▲/**MAX** button to toggle between choices.

6. Press the **MENU** button to store your choices(s). The meter momentarily shows "**STRD**", followed by "**S1.DB**" (Setpoint 1 Deadband).

SECTION 13. SETPOINT 1 DEADBAND (S1.DB)

Setpoint 1 Deadband (**S1.DB**) is not active unless your meter has dual relay output capabilities. The LED's will display whether the (**S1.DB**) is active or not. To set the deadband (hysteresis) of Setpoint 1, follow these steps:

1. Press the **MENU** button until the meter shows "**S1.DB**".

2. Press the ▶/**DEV** button. The meter shows the last previously stored 4-digit number (0000 through 9999) with flashing 4th digit.

3. Press the ▲/**MAX** button to change the value of the flashing digit. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

4. Press the ▶/**DEV** button to scroll to the next digit.

5. Press the **MENU** button to store value. The meter momentarily shows "**STRD**", followed by "**S2.DB**" (Setpoint 2 Deadband)

SECTION 14. SETPOINT 2 DEADBAND (S2.DB)

Setpoint 2 Deadband (**S2.DB**) is not active unless your meter has dual relay output capabilities. The LED's will display whether the (**S2.DB**) is active or not. To set the deadband (hysteresis) of Setpoint 2, follow these steps:

1. Press the **MENU** button until the meter shows "**S2.DB**".

2. Press the ▶/**DEV** button. The meter shows the last previously stored 4-digit number (0000 through 9999) with flashing 4th digit.

3. Press the ▲/**MAX** button to change the value of the flashing digit. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

4. Press the ▶/**DEV** button to scroll to the next digit.

5. Press the **MENU** button to store your selection. "**STRD**" momentarily displays, followed by cold junction offset if you have a standard meter (refer to Section 19) or "**OT.CF**" (Output Configuration) if you have analog output capabilities (refer to Section 15).

SECTION 15. OUTPUT CONFIGURATION (OT.CF)

Output Configuration is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. Use Output Configuration (OT.CF) to select the following:
*   To enable or disable the analog output
*   To determine if the analog output is current or voltage
*   To determine if the analog output is proportional to the display or to the error (the difference between reading and setpoint value)

15.1 To Enable or Disable The Analog Output

1. Press the **MENU** button until the meter shows "**OT.CF**" .

2. Press the ▶/**DEV** button. The meter shows one of the following:
    *   "O.1=D"   (Analog output disabled)
    *   "O.1=E"   (Analog output enabled)

3. Press the ▲/**MAX** button to toggle between choices.

4. Press the ▶/**DEV** button to select analog output as current/voltage **or** press the **MENU** button to store your choice. The meter momentarily shows "**STRD**" , followed by "**OT.S.O**" (Output Scale and Offset - refer to Section 18).

15.2 To Select Analog Output as Current or Voltage

1. Press the ▶/**DEV** button. The meter shows one of the following:
    *   "O.2=V"   (Analog output = voltage)
    *   "O.2=C"   (Analog output = current)

2. Press the ▲/**MAX** button to toggle between choices.

3. Press the ▶/**DEV** button to select analog output/proportional or press the **MENU** button to store your choice. The meter momentarily shows "**STRD**" , followed by "**OT.S.O**" (Output Scale and Offset - refer to Section 18) or "**P.BND**" (Proportional Band - refer to Section 16).

15.3 To Select Analog Output or Proportional Control

To determine if the meter is to transmit an analog signal out (proportional to your display), or serve as a proportional controller (proportional to the error = display - setpoint 1).

1. Press the ▶/**DEV** button. The meter shows one of the following:
   * "O.3=A"   (Analog output is retransmission of temperature)
   * "O.3=P"   (Analog output is proportional)

2. Press the ▲/**MAX** button to toggle between choices.

3a. If you select O.3 to equal A, press the **MENU** button to store your choice. The meter momentarily shows "**STRD**", followed by "**OT.S.O**" (Output Scale and Offset- refer to Section 18).

3b. If you select O.3 to equal P, press the ▶/**DEV** button. The meter shows one of the following:
   * "O.4=D"   (Proportional analog output is DIRECT ACTING)
   * "O.4=R"   (Proportional analog output is REVERSE ACTING).

4. Press the ▲/**MAX** button to toggle between choices.

5. Press the **MENU** button to store your choice. The meter momentarily shows "**STRD**", followed by "**P.BND**" (Proportional Band).

   Additionally, if you select O.2 to equal V (Analog output to be voltage), press the ▶/**DEV** button. The meter shows one of the following:
   * "O.5=F"   (Proportional 0-10 V analog output)
   * "O.5=H"   (Proportional 0-5 V analog output)

6. Press the ▲/**MAX** button to toggle between choices.

7. Press the **MENU** button to store your choice(s). The meter momentarily shows "**STRD**", followed by "**P.BND**" (Proportional Band).

SECTION 16. PROPORTIONAL BAND (P.BND)

16.1 SELECTING PROPORTIONAL BAND (P.BND)

Proportional Band (**P.BND**) is not active unless your meter has analog output and relay capabilities. The menu will display whether analog output is present or not.

- A proportional controller's output is linearly proportional to the change of the error signal, whenever the signal is within 2 prescribed values (Proportional Band).
- There are three (3) points of interest on the proportional controller transfer curve.
- The first is the magnitude of the error signal that drives the controller to "<u>full on</u>" (e.g. 20 mA out for 4-20 mA).
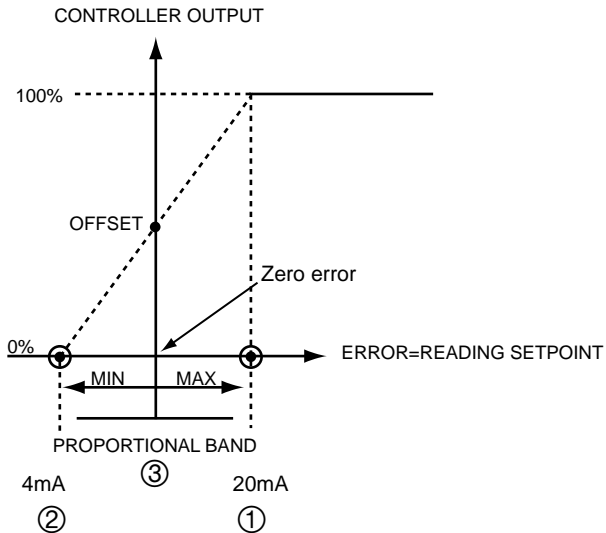
CONTROLLER OUTPUT

Figure 4-2. Controller Output

- The second point of interest is the magnitude of the error signal that drives the controller output to "<u>full off</u>" (e.g. 4 mA out on 4-20 mA). These two (2) points need not be equally spaced on either side of the zero error point.
- The third is the factor "Offset" and it is the output value of the controller which causes zero error.

The above example illustrates the parameters for the 4-20mA analog out, likewise, analog voltage output will have these (3) points of interest.

SECTION 16. PROPORTIONAL BAND (P.BND) (Continued)

If A is the controller gain the,
Proportional Band = <u>Max. out - Min. out</u>
$$\text{A}$$
$$\text{CONTROLLER OUT = A* ERROR + OFFSET}$$

To select the proportional band for your proportional controller, follow these steps:

1. Press the **MENU** button until the meter shows "**P.BND**".

2. Press the ▶/**DEV** button. The meter shows the last previously stored 4- digit number (0000 through 9999) with flashing 4th digit.

3. Press the ▲/**MAX** button to change the value of the flashing digit. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

4. Press the ▶/**DEV** button to scroll to the next digit.

5. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "**M.RST**" (Manual Reset).

Note ☞   *"P.BND" displays only if you select analog output as proportional.*

SECTION 17. MANUAL RESET (M.RST)

Manual Reset (**M.RST**) is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. This feature allows you to offset the error that may occur within your setpoint. In order to determine the amount of error, you must compare your display value to the setpoint 1 value. The difference between these two values is the amount of error that you may want to enter into Manual Reset (**M.RST**).

1. Press the **MENU** button until the meter shows "**M.RST**" .

2. Press the ▶/**DEV** button. The meter shows last previously stored 4-digit number (-1999 through 9999) with flashing 4th digit.

3. Press the ▲/**MAX** button to change the value of the flashing digit. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

4. Press the ▶/**DEV** button to scroll to the next digit.

5. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed also momentarily by "**RST**" (Reset). Then "**CJ.OF**" (Cold Junction Offset) displays (refer to Section 19).

Note ☞ *"M.RST" displays only if you select analog output as proportional. Always choose the value of "M.RST" less than "P.BND/2". Meter will not accept larger values and displays with flashing "ER 4".*

SECTION 18.   OUTPUT SCALE AND OFFSET (OT.S.O)

Output Scale and Offset (**OT.S.O**) is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. Output Scale and Offset (**OT.S.O**) scales your analog output to be equal to the meter's display and/or any engineering units you require. You may scale the output for direct (4-20 mA, 0-10 V, etc) or reverse acting (20-4 mA, 10-0 V, etc).

▼ *Note ☞* *"OT.S.O" only shows if you select analog output as a retransmission of temperature.*

1. Press the **MENU** button until the meter shows "**OT.S.O**" .

2. Press the ▶/**DEV** button. The meter shows "**RD 1**" (Read 1) .

   ▼ *Note ☞ This is your first point of display reading.*

3. Press the ▶/**DEV** button again. The meter shows the last previously stored 4-digit number (-1999 through 9999) with flashing 4th digit.

4. Press the ▲/**MAX** button to change the value of Read 1.

5. Press the ▶/**DEV** button to scroll to the next digit.

6. Press the **MENU** button to store your selection. The meter shows "**OUT.1**" (Output 1).

   ▼ *Note ☞ This starting analog signal corresponds to your Read 1 display.*

7. Press the ▶/**DEV** button. The meter shows selected output.

   ▼ *Note ☞ If you select "O.2=V" for voltage, the maximum signal you may select is 10.00 for an 0-10 V dc signal output. If you select "O.2=C" for current, the maximum signal you may select is 19.99 for a 0-20 or 4-20 mA dc signal output.*

8. Press the ▲/**MAX** button to enter the output 1 signal selection. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

9. Press the ▶/**DEV** button to scroll to the next digit.

10. Press the **MENU** button to store your selection. The display shows "**RD 2**" (Read 2).

    ▼ *Note ☞ This is your second point of display reading.*

11. Press the ▶/**DEV** button. The last previously stored 4-digit number (-1999 through 9999) displays with flashing 4th digit.

12. Press the ▲/**MAX** button to change the value of the flashing digit. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

13. Press the ▶/**DEV** button to scroll to the next digit.

14. Press the **MENU** button to store your selection. "**OUT.2**" (Output 2) displays.

    ▼ *Note ☞ This analog signal should correspond to your Read 2 display.*

15. Press the ▶/**DEV** button. Selected output displays.

    ▼ *Note ☞ If you select "O.2=V" for voltage, the maximum signal you may select is 10.00 for an 0-10 V dc signal output. If you select "O.2=C" for current, the maximum signal you may select is 19.99 for a 0-20 or 4-20 mA dc signal output.*

16. Press the ▲/**MAX** button to change the value of the flashing digit. If you continue to press the ▲/**MAX** button, the flashing digit's value continues to change.

17. Press the ▶/**DEV** button to scroll to the next digit.

18. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed also momentarily by "**RST**" (Hard Reset). "**CJ.OF**" (Cold Junction Offset) then displays.

⚠ *WARNING: If the meter displays all flashing values on any item, the value has overflowed. Press the ▲/**MAX** button to start new values.*

SECTION 19. COLD JUNCTION OFFSET CALIBRATION (C.J.OF)

The cold junction offset equals the actual temperature minus the reading temperature. You may compensate for any error due to cold junction on the TC input. You may perform this compensation in any temperature from 0°C to 40°C (or 32°F to 104°F), however we recommend you perform this compensation at 0°C (32°F) for best result. To do this, immerse the thermocouple hot junctions into a mixture of ice and water. Check the Reading Configuration bit R.1 of the "RD.CF" menu setting for the proper temperature units.

TO PERFORM THIS COMPENSATION, FOLLOW THESE STEPS:

1. Connect the thermocouple wire to the +S and -S input.

2. Press the **MENU** button until meter displays **"CJ.OF"**.

3. Press the ▶/**DEV** button. the meter displays the previous offset value with flashing 4th digit.

4. Press the ▶/**DEV** button again. The reading temperature will be displayed (with no digit flashing).

5A. If the value is okay, then press the **MENU** button. The display will show **"STRD"** and 0 value will be entered at the offset.

B. If the value is not okay, then enter the actual temperature using the ▶/**DEV** and ▲/**MAX** buttons. Once you enter the accurate temperature, press the **MENU** button. The meter displays **"STRD"** and stores the offset value.

> *Note ☞* 1. *Temperature unit is either celsius or fahrenheit and will always be displayed at 0.1 degree resolution. The meter flashes corresponding LED.*

> *Note ☞* 2. *MAX/MIN offset value will be ±25.0 °C or 45.0 °F. If offset the limit, the meter will flash "ER 3" and previous offset will not be changed.*

SECTION 20. LOCK OUT CONFIGURATION (LK.CF)

Use Lock Out Configuration (**LK.CF**) for the following:

* To enable or disable the **RESET** button in the run mode.

* To enable or disable setpoint changes

20.1 To Enable or Disable the RESET button in the Run Mode

1. Press the **MENU** button until the meter shows "**LK.CF**" after ("C.J.OF").

2. Press the ▶/**DEV** button until the meter shows "*RS.=E" (Default)*.

3. Press the ▲/**MAX** button to toggle between:

   "RS.=E" To enable the RESET button in the run mode (Default).

   "RS.=D" To disable the **RESET** button in the run mode.

4. Once desired mode shows, press the **MENU** button to store the change. The meter returns to the run mode.

20.2 To Enable or Disable Setpoint Changes

1. Press the **MENU** button until the meter shows "**LK.CF**" (after "**C.J.OF**").

2. Press the ▶/**DEV** button until the meter shows "*SP.=E"(Default)*.

3. Press the ▲/**MAX** button to toggle between:

   "SP.=E" To enable setpoint changes (Default).

   "SP.=D" To disable setpoint changes

4. Once desired mode shows, press the **MENU** button to store the change.

SECTION 20. LOCK OUT CONFIGURATION (LK.CF) (Continued)

20.3 To Enable Display's Program Version:

1. Press the **MENU** button until the meter shows "**LK.CF**" (after "**C.J.OF**").

2. Press the ▶/**DEV** button until the meter shows one of the following:

    * "L.3=0"   "**SETPTS**" button will display setpoint values.

    * "L.3=1"   "**SETPTS**" button will display "**V.-03**" which is the meter's current software version.

3. Press the ▲/**MAX** button to toggle between the choices above.

4. Press the **MENU** button to store the changes.

▼
| *Note* ☞ |

If your meter does not have the relay option, setpoint menu items above will not be available and **SETPTS** button will always display the meter's software version. These units will have +**OL** (overload) or +**OPEN** memory indicated by Alarm 1 & 2 LED displays. LEDs can be reset by pressing **MENU** then **RESET** button or by power **OFF** then **ON**. These units can not use analog output proportional to error from setpoint 1. under menu OT.CF, 0.3=P.

SECTION 21. TUNING PROPORTIONAL CONTROLLER

The Proportional Controller is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. This function allows you to tune your controller provided you have analog output capabilities. Select proportional on Output Configuration (refer to Section 15-3) prior to tuning your controller. Include the meter in the process loop and turn on the meter. Allow enough time for the system to settle, then do the following.

1. Press the ▶/**DEV** button. The meter momentarily shows "**DEV**" followed by a blinking value. This value is the deviation (error) between Reading and Setpoint 1 values. If there is no error (error is zero), your controller is tuned. If a value other than zero shows, proceed with step 2.

2. Press **RESET** button. The meter shows "**TUNE**", tuning your controller and canceling any error. Once tuned, the meter shows "**RST**" and returns to the run mode.

Note ☞ Allow enough time for process to settle before proceeding with "**TUNE**" procedure. If any error happens during this procedure, meter will flash "**ER 4**" and abort the tuning. You have to restart the procedure.

Note ☞ *"TUNE" will be active if your meter has analog output capabilities.*

3. Press the ▶/**DEV** button. Verify that blinking value is zero. If blinking value is not zero, repeat step 2.

SECTION 22. DISPLAY MESSAGES

Table 22-1. Display Messages

MESSAGE	DESCRIPTION
RST	Hard (power on) Reset
INPT	Input Type
DEC.P	Decimal Point
RD.CF	Reading Configuration
S1.CF	Setpoint 1 Configuration
S2.CF	Setpoint 2 Configuration
S1.DB	Setpoint 1 Deadband
S2.DB	Setpoint 2 Deadband
OT.CF	Output Configuration
P.BND	Proportional Band
M.RST	Manual Reset
OT.S.O	Output Scale and Offset
C.J.OF	Cold Junction Offset
LK.CF	Lock out Configuration
TUNE	Tuning Proportional Controller
OPN	Sensor Breaker or Temperature Outside the Range
9999	Value Overflow in Setpoint/Menu Peak Deviation Routine
-1999	Value Overflow in Setpoint/Menu Peak Deviation Routine
ER1	2 Coordinate Format Programming Error
PEAK	Peak Value
PK.RS	Peak Reset
SP.RS	Reset Setpoints
SP1	Setpoint 1 Value
SP2	Setpoint 2 Value
ER2	One or more the following items have overflowed because of decimal point change: setpoint values, setpoint deadbands, proportional bands or manual reset.

SECTION 23. MENU CONFIGURATION

Not all menu items display on standard meters.

Table 23-1. Configuration Menu

(Defaults in Bold and Italics)

MENU	▶/DEV	▲/MAX
INPT Input Type	Show input choices:	J.TC Iron vs. Constantan (NIST) ***K.TC*** ***Chromel vs. Alumel (NIST)*** DJ.TC Iron vs. Copper (DIN) T.TC Copper vs. Copper-Nickel
DEC.P Decimal Point	Show decimal point position	***FFFF.*** FFF.F
RD.CF Reading Configuration	R.1	C: Celsius ***F: Fahrenheit***
S1.CF Setpoint 1 Configuration	S.1 S.2	***A: Active above*** B: Active below ***U: Unlatched*** L: Latched
S2.CF Setpoint 2 Configuration	S.1 S.2	***A: Active above*** B: Active below ***U: Unlatched*** L: Latched
S1.DB Setpoint 1 Deadband	Scroll right one digit	Change flashing digit's value
S2.DB Setpoint 2 Deadband	Scroll right one digit	Change flashing digit's value

Table 23-1. Configuration Menu (Continued)
(Defaults in Bold and Italics)

MENU	▶/DEV	▲/MAX
OT.CF Output Configuration Analog Output	**0.1**	D: Disabled ***E: Enabled***
	0.2	V: Voltage analog out ***C: Current analog out***
	0.3	***A: Retransmission of*** ***temperature*** P: Proportional to error
	0.4	D: Proportional analog output is direct reading R: Proportional analog output is reverse acting
	0.5	F: 0-10 V proportional H: 0-5 V proportional
Notes:	*If you select 0.2=V, you may select your analog output to be 0-10 V or 0-5V by accessing sub-menu 0.5=F or 0.5=H *If 0.3=P, you may select your proportional output analog to be direct 0.4=D (4-20 mA), (0-5V), (0-10v) or reverse acting 0.4=R (20-4 mA), (5V-0V), (10V-0V) .	
P.BND Proportional Band	Show prior value entered	Change flashing digit's value
M.RST Manual Reset	Show prior value entered	Change flashing digit's value

SECTION 23. MENU CONFIGURATION (Continued)

Table 23-1. Configuration Menu (Continued)
(Defaults in Bold and Italics)

MENU	▶/DEV	▲/MAX
OT.S.O Output Scale & Offset	Show "**RD 1**" & prior value	Change flashing digit's value
Enter new value & show "**OUT1**"	Scroll right one digit Show prior value	Change flashing digit's value
Enter new value & show "**RD 2**"	Scroll right one digit Show prior value	Change flashing digit's value
Enter new value & show "**OUT2**"	Scroll right one digit Show prior value	Change flashing digit's value
C.J.OF Cold Junction Offset	Show actual or prior value	Change flashing digit's value (°C only)
LK.CF Lock Out Configuration	**RS**=	*E* *(Enable RESET button in* *run mode)* D (Disable **RESET** button in run mode)
	SP=	*E* *(Enable setpoint changes)* D (Disable setpoint changes)
	L3=	*0* *(SETPTS button display* *setpoint values)* 1 (**SETPTS** button display software "**v.-03**" version)

SECTION 23. MENU CONFIGURATION (Continued)

Table 23-2. Run Mode Displays

DISPLAY	▶/DEV	▲/MAX	RESET	DESCRIPTION
PEAK Peak Reading		Shows peak reading. Press again to return to the normal operating mode without resetting.	Reset peak reading when in this mode.	Shows highest reading since last reset
DEV	Press to activate		Tare proportional controller or exit deviation mode	Shows deviation value.
SP.RS				**LATCHED RESET** Press **RESET** button to reset your setpoints. **WARNING!** This resets your tare if you are using this mode.

SECTION 24. SETPOINT CONFIGURATION DISPLAYS

Table 24-1. Setpoint Configuration Displays

MENU	▶/DEV	▲/MAX	DESCRIPTION
SP 1 Setpoint 1	Scroll right one digit	Change the flashing digit's value	Select from -1999 through 9999
SP 2 Setpoint 2	Scroll right one digit	Change the flashing digit's value	Select from -1999 through 9999

SECTION 25. SPECIFICATIONS

Thermocouple Types   J - Iron vs. Constantan (NIST)

Temperature Ranges   -210° through 760°C
(-346° through 1400°F)

K - Chromel vs. Alumel (NIST)
-270° through 1372°C
(-454° through 2500°F)

DIN J - Iron vs. Constantan (DIN)
-200° through 900°C
(-328° through 1652°F)

T - Copper vs. Copper-Nickel
-270° through 400°C
(-454° through 752°F)

Isolation   Dielectric strength to 2500V transient per
3mm spacing based on EN 61010 for 260Vrms
or dc working voltage
NMR- 60 dB
CMR- 120 dB

Protection   240 V rms max for voltage input ranges

200 mA for current input ranges

Display   LED 14 segment, 13.8 mm (0.54")

Symbols   8888

ANALOG TO DIGITAL

Technique   Dual slope

Internal Resolution   15 bits

Read Rate   3/sec Polarity Automatic

SECTION 25. SPECIFICATIONS (Continued)

ACCURACY AT 25°C   ±0.5°C

Temperature Stability   0.05°C/°C

Step Response Time   1-2 seconds

Warm Up to Rated Accuracy   30 min

ANALOG OUTPUT (if applicable)

Signal type	Current or voltage
Signal Level Current	10 V max compliance at 20 mA output
Signal Level Voltage	20 mA max for 0-10 V output
Function	May be assigned to a display range or proportional control output with setpoint #1 when used as a control output.
Linearity	0.2%
Step Response Time	2-3 seconds to 99% of the final value

ISOLATED ANALOG OUTPUT (if applicable)

Same as non-isolated analog output except isolated to 1000 Vdc.

Signal type	Current or voltage
Signal Level	
Current:	10 V max compliance at 20 mA output
Voltage:	20 mA max for 0-10 V output
Function	May be assigned to a display range or proportional control output with setpoint #1 when used as a control output.
Linearity	0.2%
Step Response Time	2 - 3 seconds to 99% of the final value

Only one analog output is available on each unit and it must be factory installed.

SECTION 25. SPECIFICATIONS (Continued)

INPUT POWER INFORMATION

Voltage	∿AC	115 V/230 V rms ±15%
	═DC	9.5 to 32 Vdc
Frequency		50-60 Hz
Power		6 watts

ENVIRONMENT

Operating Temperature: 0 to 50°C (115/230 V rms ±15%)

Storage Temperature: -40° to 85°C

Relative Humidity: 90% at 40°C (non-condensing)
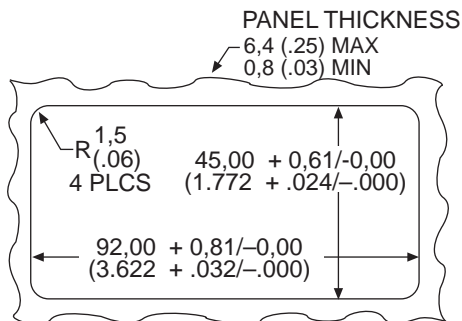
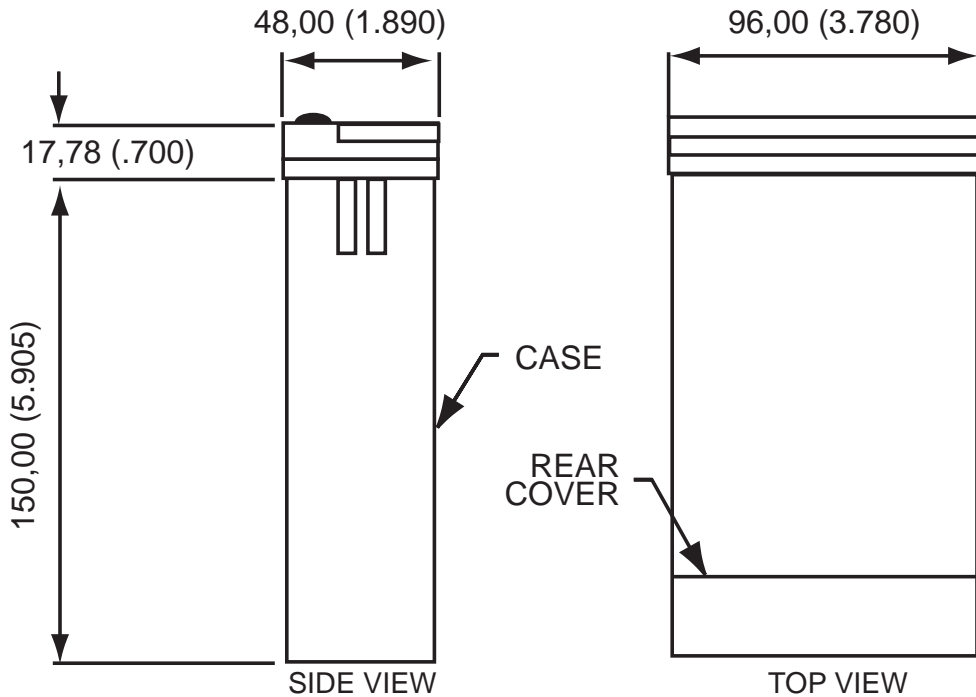**MECHANICAL**

Panel Cutout: 1/8 DIN 3.62 x 1.77" (92 x 45mm)
Weight: 1.27 lb (574 g)

Case Material: Polycarbonate, 94 V-O UL rated

ALARM OUTPUTS (if applicable)

2 Form "C" on/off relays. Configurable for latched and unlatched by software.

Max Current: 5 AMPS
Max Voltage: 250 V ac or 30 V dc

SECTION 25. SPECIFICATIONS (Continued)

48,00 (1.890)

96,00 (3.780)

17,78 (.700)

150,00 (5.905)

CASE

REAR
COVER

SIDE VIEW

TOP VIEW

PANEL THICKNESS
6,4 (.25) MAX
0,8 (.03) MIN

R 1,5
(.06)
4 PLCS

45,00 + 0,61/-0,00
(1.772 + .024/−.000)

92,00 + 0,81/−0,00
(3.622 + .032/−.000)

NOTE: Dimensions in Millimeters (Inches)

Figure 25-1 Meter Dimensions

SECTION 26. FACTORY PRESET VALUES

Table 26-1. Factory Preset Values

MENU ITEM	FACTORY PRESET VALUES
INPT	Input Type: K.TC (Type K T/C)
DEC.P	Decimal Point Position: FFFF.
RD.CF	Reading Configuration: R.1=F (Fahrenheit)
S1.CF	Setpoint 1 Configuration: S.1=A (Setpoint is active above) S.2=U (Setpoint is unlatched)
S2.CF	Setpoint 2 Configuration: S.1=A (Setpoint is active above) S.2=U (Setpoint is unlatched)
S1.DB	Setpoint 1 Deadband: 0003
S2.DB	Setpoint 2 Deadband: 0003
OT.CF	Output Configuration: O.1=E (Analog output is enabled) O.2=C (Analog output is current) O.3=A (Analog output follows the display value)
OT.S.O	Output Scale and Offset: 0-1000 = 4-20 mA dc
LK.CF	Lock Out Configuration RS=E (Enable the **RESET** button in the run mode) SP=E (Enable setpoint changes) L3=0 (**SETPTS** button display setpoint values)
SP1	Setpoint 1 Value: 0000
SP2	Setpoint 2 Value: 0000