INFCS

INFINITY® C Strain Meter/Controller

Operator's Manual

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The information contained in this document is believed to be correct but NEWPORT Electronics, 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.

PATENT NOTICE: The "Meter Case Bezel Design" is a trademark of NEWPORT Electronics, Inc., registered in the U.S. This product is covered by one or more of the following patents: U.S. No. D336,895; 5,274,577/ FRANCE BREVET No. 91 12756/ UK PATENT No. 2,248,954; 2,249,837/ SPAIN 2,039,150; 9,102,259/ ITALY 1,249,456; 1,250,938/ CANADA 2,052,600/ GERMANY DE 4134398C2. OTHER INTERNATIONAL PATENTS PENDING.

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.

PREFACE

MANUAL OBJECTIVES

This manual shows you how to set up and use the programmable meter.

Standard Procedures:

* Checking voltage jumpers, or changing voltage power
* Mounting the panel
* Selecting the input type
* Selecting a decimal point position
* Scaling with known loads
* Scaling without known loads
* Selecting ratiometric/non-ratiometric operation
* Setting the input resolution of the meter
* Showing the filtered/unfiltered input signal
* Setting the setpoint's active band
* Selecting a latched or unlatched operation
* Setting setpoint deadbands
* Assigning setpoints to net/gross reading
* Enabling/disabling setpoint changes
* Enabling/disabling the **RESET** button in the run mode

Optional Procedures:

* Enabling/disabling analog output
* Selecting analog output as current or voltage
* Assigning the output to net/gross reading
* Scaling analog output

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.

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Table of Contents

SECTION 1. INTRODUCTION

1.1 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 Digital Meter 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.*

1.2 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

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.

- 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 2. ABOUT THE METER

2.1 DESCRIPTION

The Strain Meter is a value packed indicator/controller. Four full digits and broad scaling capability allow for display in virtually all engineering units. A wide variety of current and voltage input ranges cover typical process applications. Standard features include sensor excitation and front panel or remote tare. Your meter may be a basic indicator or it may include analog output or dual relay output. Analog or dual relay output must be ordered at time of purchase. 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. A mechanical lockout has been included to guard against unauthorized changes.

2.2 FEATURES

The following is a list of standard features:

*   4-digit, 14-segment LED display
*   ±0.03 % accuracy
*   8 input ranges: 0-100 mV, ±50 mV, 0-5 V, 1-5 V, 0-10 V, ±5 V, 0-20 mA, and 4-20 mA
*   5, 10, 12, or 24 V sensor excitation
*   Peak detection and memory
*   Front panel and remote tare function
*   Non-volatile memory-no battery backup
*   115 or 230 Vac 50/60 Hz power supply
*   9.5 - 32 Vdc optional

The following is a list of optional features:

*   Dual relay output 5 amp, form C relay output
*   Scalable analog output

Notes:

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SECTION 2.3 FRONT OF THE METER

Figure 2-1 shows each part of the front of the meter.
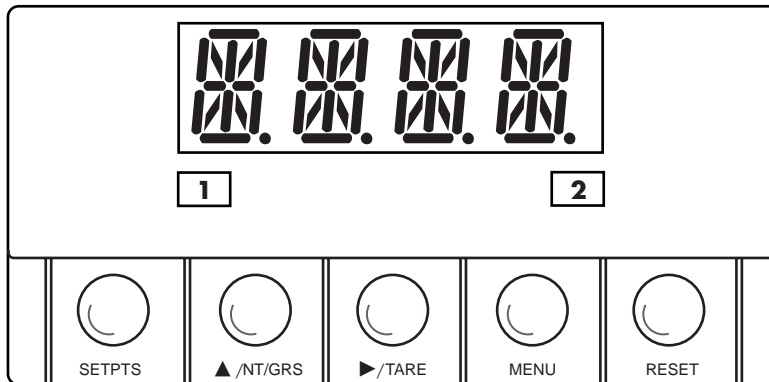
METER DISPLAY:

Digital LED display- -1.9.9.9. or 9.9.9.9. 4-digit 14 segment,
0.54" high LED display with
programmable decimal point.

These meter display windows light when appropriate:

1 - Setpoint 1 Status
2 - Setpoint 2 Status

2.3 FRONT OF THE METER (Continued)

METER BUTTONS

SETPTS BUTTON - In the run mode, this button will sequentially recall the previous setpoint settings. As necessary, use the ▲/**NT**/**GRS** and ▶/**TARE** buttons to alter these settings, then press the SETPTS button to store new values.

Unless you press the **SETPTS,** ▶/**TARE**, or the ▲/**NT**/**GRS** button within 20 seconds, the meter will scroll to setpoint 2 and then to the run mode.

Note ☞ If the dual relay option is not installed, pressing the **SETPTS** button will display "v.-03" which is the meter's software version.

▲/**NT**/**GRS** **BUTTON** - In the run mode, this button will toggle between net/gross readings or peak readings, depending upon your setup.

In the configuration mode, press this button to change the value of the flashing digit shown on the display and/or toggle between menu choices, such as "**R.1=R**" or "**R.1=N**".   When configuring your setpoint values, press the ▲/**NT**/**GRS** button to advance the flashing digit's value from 0 to 9 by 1.

▶/**TARE** **BUTTON** - In the run mode press the ▶/**TARE** button to tare your reading (zeroing).

In the configuration mode, press this button to scroll to the next digit.

2.3 FRONT OF THE METER (Continued)

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 lock out jumpers on the main board).*

In the configuration mode, press the **MENU** button to store changes in the nonvolatile memory and then advance you to the next menu item.

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 "**STRN**".

In the run mode, press the **RESET** button to reset the latched setpoints. The meter shows "**SP.RS**" and returns to the run mode (also reset tare).

In the configuration mode, press the **RESET** button to reset the tare value. The meter shows "**T.RS**".

In the tare mode, press the **RESET** button once to review the previous menu. Press the **RESET** button twice to result in a hard reset 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 ▲/NT/GRS button to start a new value.

2.4 BACK OF THE METER

Figure 2-2 shows the label describing the connectors on the back of the meter. Table 2-2 on the following page gives a brief description of each connector at the back of the meter.
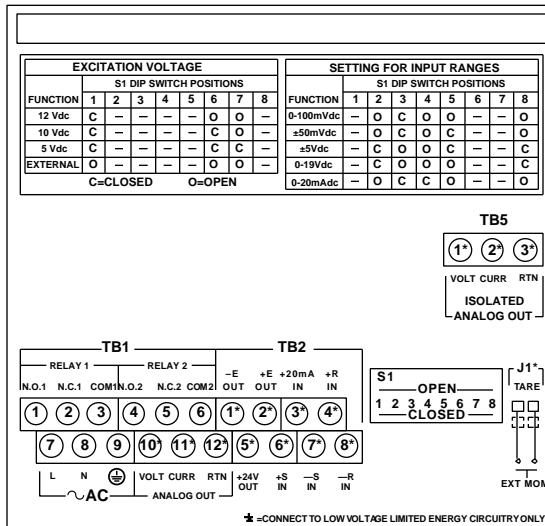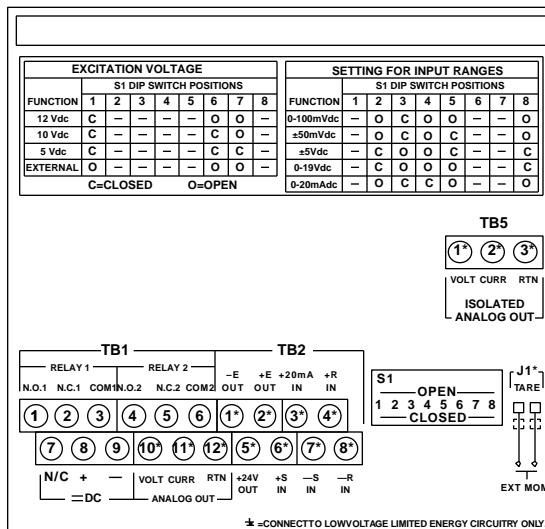
EXCITATION VOLTAGE									SETTING FOR INPUT RANGES								
	S1 DIP SWITCH POSITIONS									S1 DIP SWITCH POSITIONS							
FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
12 Vdc	C	–	–	–	–	O	O	–	0-100mVdc	–	O	C	O	O	–	–	O
10 Vdc	C	–	–	–	–	C	O	–	±50mVdc	–	O	C	O	C	–	–	O
5 Vdc	C	–	–	–	–	C	C	–	±5Vdc	–	C	O	O	C	–	–	C
EXTERNAL	O	–	–	–	–	O	O	–	0-19Vdc	–	C	O	O	O	–	–	C
C=CLOSED				O=OPEN					0-20mAdc	–	O	C	C	O	–	–	O

TB5

(1*) (2*) (3*)

VOLT CURR RTN
ISOLATED
ANALOG OUT

TB1 **TB2**

RELAY 1 — RELAY 2

| N.O.1 | N.C.1 | COM1 | N.O.2 | N.C.2 | COM2 | –E OUT | +E OUT | +20mA IN | +R IN |

S1
OPEN
1 2 3 4 5 6 7 8
CLOSED

J1*
TARE

(1) (2) (3) (4) (5) (6) (1*) (2*) (3*) (4*)

(7) (8) (9) (10) (11) (12) (5*) (6*) (7*) (8*)

L N ⏚   VOLT CURR RTN   +24V OUT +S IN –S IN –R IN
⏦ AC   — ANALOG OUT —

EXT MOM.

★ =CONNECT TO LOW VOLTAGE LIMITED ENERGY CIRCUITRY ONLY.

Figure 2-2. Connector Label (ac-Powered)

EXCITATION VOLTAGE									SETTING FOR INPUT RANGES								
	S1 DIP SWITCH POSITIONS									S1 DIP SWITCH POSITIONS							
FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
12 Vdc	C	–	–	–	–	O	O	–	0-100mVdc	–	O	C	O	O	–	–	O
10 Vdc	C	–	–	–	–	C	O	–	±50mVdc	–	O	C	O	C	–	–	O
5 Vdc	C	–	–	–	–	C	C	–	±5Vdc	–	C	O	O	C	–	–	C
EXTERNAL	O	–	–	–	–	O	O	–	0-19Vdc	–	C	O	O	O	–	–	C
C=CLOSED				O=OPEN					0-20mAdc	–	O	C	C	O	–	–	O

TB5

(1*) (2*) (3*)

VOLT CURR RTN
ISOLATED
ANALOG OUT

TB1 **TB2**

RELAY 1 — RELAY 2

| N.O.1 | N.C.1 | COM1 | N.O.2 | N.C.2 | COM2 | –E OUT | +E OUT | +20mA IN | +R IN |

S1
OPEN
1 2 3 4 5 6 7 8
CLOSED

J1*
TARE

(1) (2) (3) (4) (5) (6) (1*) (2*) (3*) (4*)

(7) (8) (9) (10) (11) (12) (5*) (6*) (7*) (8*)

N/C + –   VOLT CURR RTN   +24V OUT +S IN –S IN –R IN
⎓ DC   — ANALOG OUT —

EXT MOM.

★ =CONNECT TO LOW VOLTAGE LIMITED ENERGY CIRCUITRY ONLY.

Figure 2-3. Connector Label (dc-Powered)

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Table 2-2. 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 1 (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 2 (COM2) connection
TB1-7	AC Line connection (no connection on DC powered units)
TB1-8	AC Neutral connection (+ Input on DC powered units)
TB1-9	AC ground (-DC power return on DC powered units)
TB1-10	Analog 1 voltage output
TB1-11	Analog 2 current output
TB1-12	Analog 3 Return
TB2-1	-E Negative excitation connection to/from meter (5, 10, 12 V)
TB2-2	+E Positive excitation connection to/from meter (5, 10, 12 V)
TB2-3	+20 mA connection for analog input
TB2-4	+R Reserved for future use
TB2-5	+24 V output connection
TB2-6	+S Positive signal input
TB2-7	-S Negative signal input & ground +24 V & external current return
TB2-8	-R Reserved for future use
TB5-1	Isolated Analog Voltage Output
TB5-2	Isolated Analog Current Output
TB5-3	Isolated Analog Output Return
J1	Remote tare connection with a momentary switch

2.4 BACK OF THE METER (Continued)

The DIP switches are located at the S1 position at the back of the meter (Refer to Figure 2-2). Use a small instrument such as a paper clip to change the switches from open to closed. Table 2-3 lists DIP switch settings at the S1 position required to complete the setup of your meter.

Table 2-3. S1 DIP Switch Positions/Input Range Settings

FUNCTION	S1 DIP SWITCH POSITIONS							
C= Closed O= Open	1	2	3	4	5	6	7	8
Internal 5/10/12 excitation	C	-	-	-	-	-	-	-
External 5/10/12 excitation	O	-	-	-	-	-	-	-
Internal 12 V excitation	C	-	-	-	-	O	O	-
Internal 10 V excitation	C	-	-	-	-	C	O	-
Internal 5 V excitation	C	-	-	-	-	C	C	-
SETTINGS FOR INPUT RANGES								
0-100 mV dc	-	O	C	O	O	-	-	O
±50 mV dc	-	O	C	O	C	-	-	O
±5 V dc	-	C	O	O	C	-	-	C
0-10 V dc	-	C	O	O	O	-	-	C
0-20 mA dc	-	O	C	C	O	-	-	O

Note ☞ The display must also be configured to the selected input type after setting the DIP switches (see Section 4.1, Selecting the Input Type)

2.5   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.

Note ☞ *Disconnect the power supply before proceeding.*

To remove and access the main board, follow these steps:

1. Disconnect main power from the meter.

2. Remove the rear case cover.

3. Lift the back of the main board upwards and slide it out of the case.

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SECTION 3. GETTING STARTED

⚠ *CAUTION : The meter has no power-on switch, so it will be in operation as soon as 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 "**STRN**".

3.1   RATING/PRODUCT LABEL

This label is located on top of the meter housing.

3.2   CHECKING OR CHANGING MAIN BOARD POWER JUMPERS (Factory Set)

⚠ **IMPORTANT***: If you want to change the factory preset jumpers, do the following steps, otherwise go to Section 3.3.*

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

1. Remove the main board from the case. Refer to Section 2.6.
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.**

Figure 3-1 shows the location of solder jumpers W1 through W3.
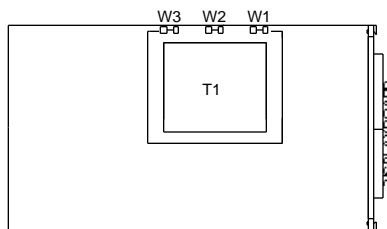
Figure 3-1. W1 - W3 Power Jumper Detail

3.2 CHECKING OR CHANGING MAIN BOARD POWER JUMPERS (Continued)

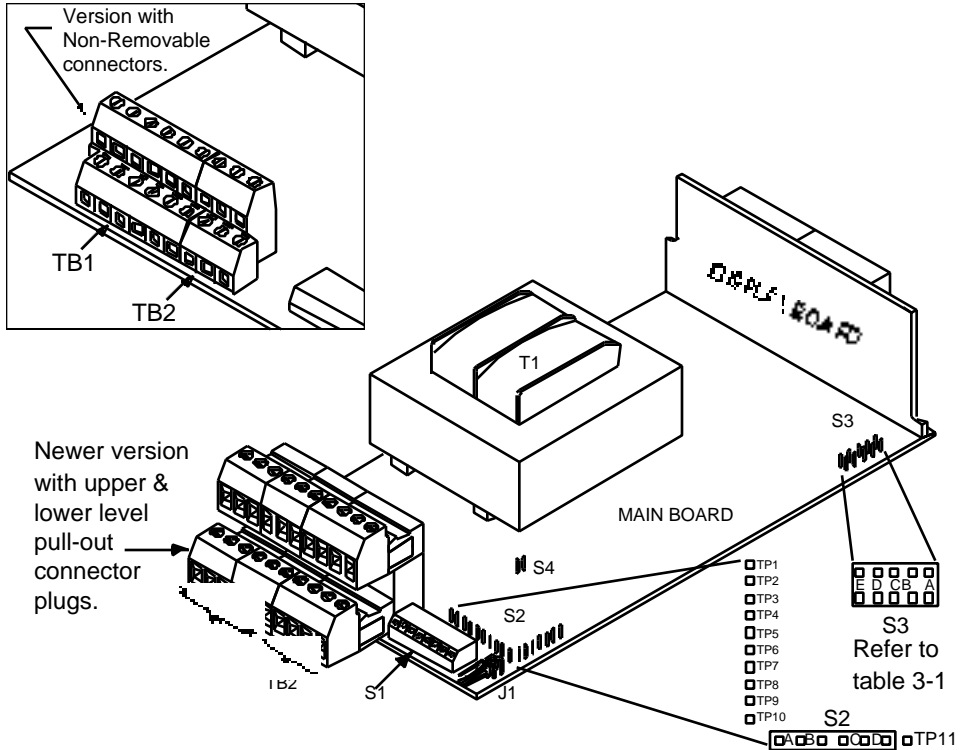Figure 3-2 shows the location of jumper positions on the main board.

Figure 3-2. Main Board Jumper Positions

3.2   CHECKING OR CHANGING MAIN BOARD POWER JUMPERS (Continued)

S2 jumpers are for testing purposes. Do not use as reading errors may result.

S3 jumpers are used for the following (refer to Table 3-1):

- *   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.

S4 jumper is not used.

Table 3-1. S3 Jumper Functions

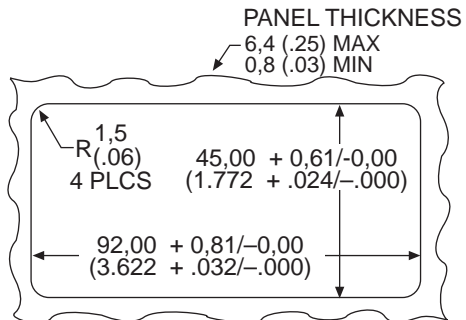| JUMPER	DESCRIPTION
S3-A	Default: Installed. Remove to disable all front panel push-buttons
S3-B	Default: Removed. Install for meter calibration.
S3-C	Default: Removed. Install for analog output when load is less than 1 K impedance. Care should be taken when installing this jumper.
S3-D	Default: Installed.
S3-E	Default: Removed. If installed without S3-B, **MENU** locks out. (Pressing the **MENU** button while in the **RUN** mode results in the display showing **LOCK** and returns to the run mode).

3.3 PANEL MOUNTING
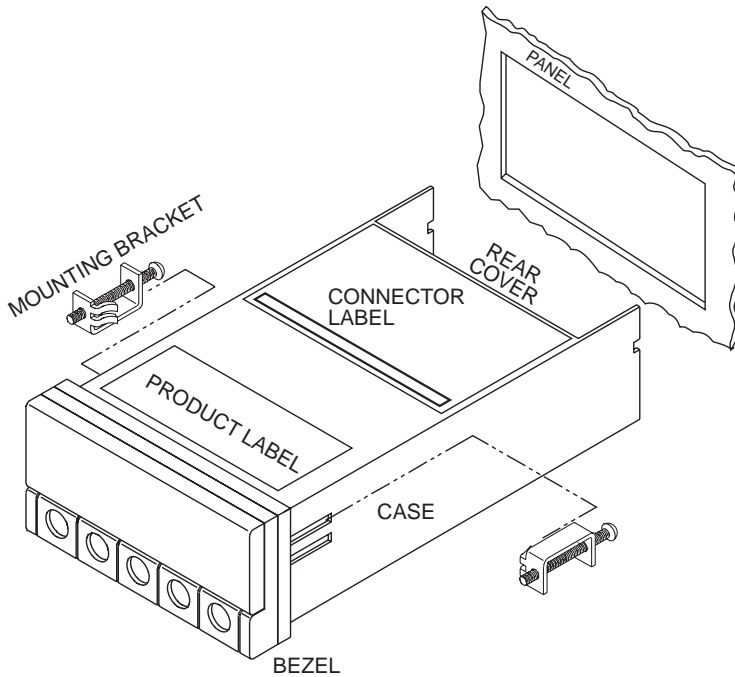
Figure 3-3. Meter - Exploded View

1. Cut a hole in your panel, as shown in Figure 3-4.

2. Insert the meter into the hole. Be sure the front bezel is flush to the panel when tightening mounting brackets.

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 3-4. Panel Cut-Out

3. Proceed to Section 3.4 to connect your sensor input and main power.

3.4 CONNECTING SENSOR INPUT

Figures 3-5 shows excitation supplied from the meter's internal supply (50mA maximum). Select 5, 10, or 12 volt excitation at DIP switch.
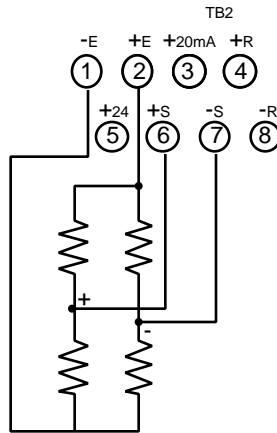
Figure 3-5. Meter-powered Bridge Input

Figure 3-6 shows the connections required for an externally-powered bridge input: the external supply is brought to the meter's buffer circuits to permit ratiometric readings. Set S1 DIP switch for external excitation for Figures 3-6 and 3-7.
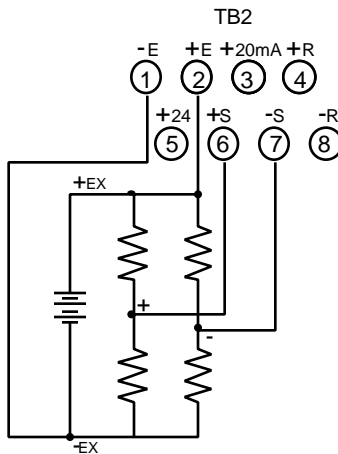

Figure 3-6. Externally-powered Bridge Input
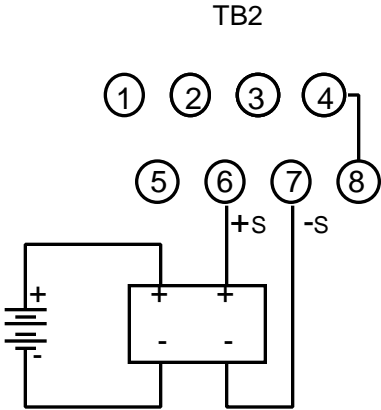
3.4 CONNECTING SENSOR INPUT (Continued)

TB2

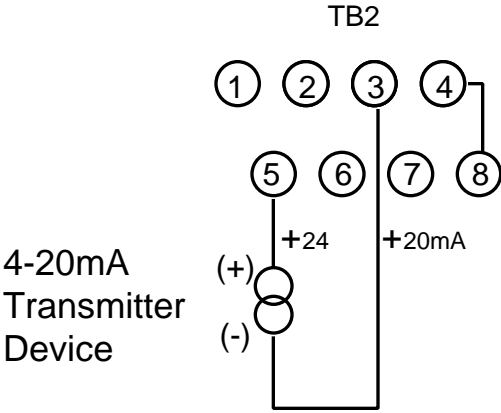**Figure 3-7. 4-Wire Voltage Input Connections with External Excitation**

TB2

Figure 3-8. Current Input Connections with Internal Excitation
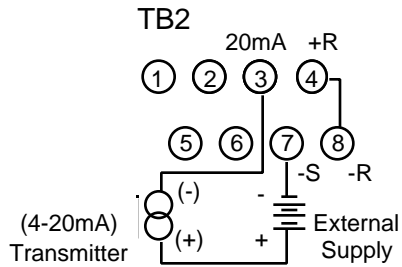
3.4 CONNECTING SENSOR INPUT (Continued)

Figure 3-9. Current Input Connections with External Excitation

3.5   CONNECTING MAIN POWER

⚠ **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!**

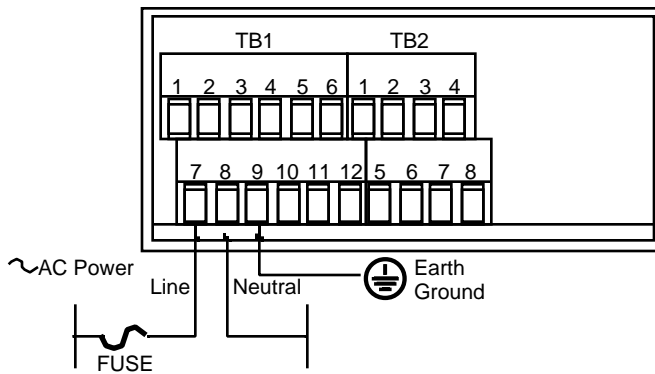Connect the ac main power as shown in Figure 3-10.

Figure 3-10. Main Power Connections - AC

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3.5   CONNECTING MAIN POWER (Continued)

Table 3-1 shows the wire color and respective terminal connections for both Europe and USA.

AC POWER	WIRE COLORS	
	EUROPE	USA
∿ AC Line	Brown	Black
∿ AC Neutral	Blue	White
∿ AC Earth Ground	Green/Yellow	Green

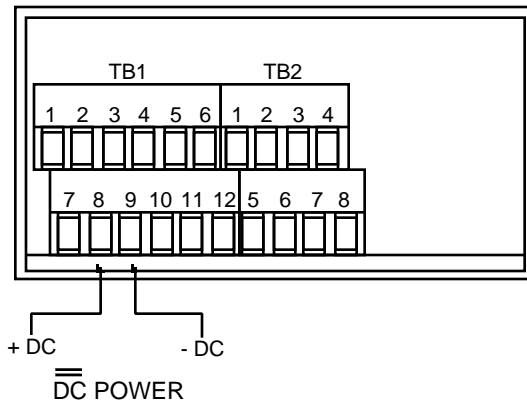Connect the dc main power connections as shown in Figure 3-11.

Figure 3-11. Main Power Connections - DC

3.6 CONNECTING ANALOG AND RELAY OUTPUT

If you have purchased a meter with analog or dual relay output, refer to the following drawings for output connections.
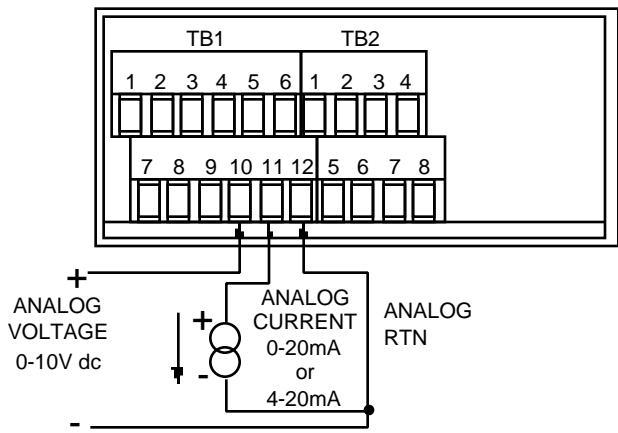

Figure 3-12. Analog Output Connections
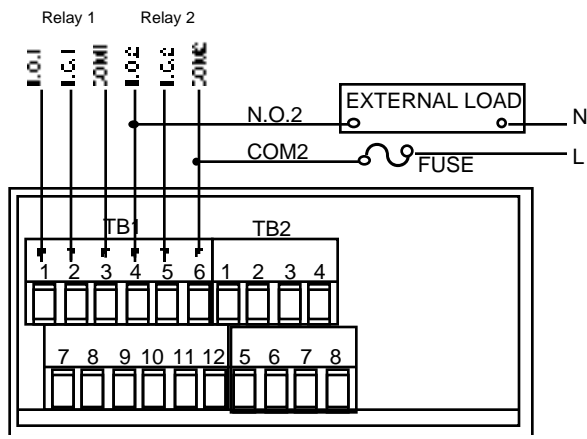

Figure 3-13. Relay Output Connections

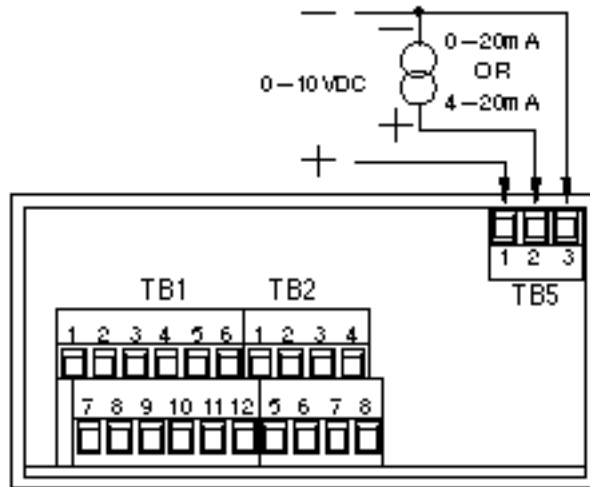## 3.6   CONNECTING ANALOG AND RELAY OUTPUT (Continued)

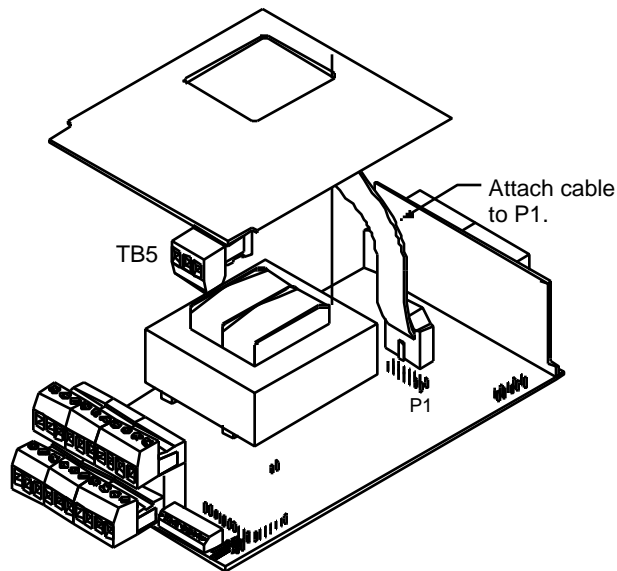**Figure 3-14. Isolated Analog Output Connections.**

Figure 3-15. Isolated Analog Output Upper Board Installation

SECTION 4. CONFIGURING THE METER

Refer to Table 6-1 for a summary list of menu configurations.

4.1 SELECTING THE INPUT TYPE ("INPT")

To select your appropriate input type signal.

Note ☞ *Set the input DIP switch settings at the rear of your meter before proceeding. (Refer to Section 6- Table 6-1).*

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

2. Press the ▶/**TARE** button. The meter flashes one of the following:

    *   ***100m (for 0-100 mV dc)*** (default)
    *   ±50m (for ±50 mV dc)
    *   10 V (for 0-10 V dc)
    *   ±5 V (for ±5 V dc)
    *   0-20 (for 0-20 mA dc).

3. Press the ▲/**NT/GRS** button to scroll through available selections.

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

4.2 SELECTING A DECIMAL POINT POSITION ("DEC.P")

To select a decimal point display position.

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

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

    *   *FFFF.* (default)
    *   FFF.F
    *   FF.FF
    *   F.FFF

3. Press the ▲/**NT/GRS** button to scroll through available selections.

4. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "**RD.S.O**" (Reading Scale and Offset).

4.3 USING READING SCALE AND OFFSET ("RD.S.O")

There are two methods to scale this meter to display readings in engineering units. The first method is to scale with known loads. Do this by applying known loads to a transducer connected to a meter, or by simulating the output of the transducer with a voltage or current simulator. The second method is to scale without known inputs. Do this by calculating input values based on the transducer specifications and manually entering them through the keyboard.

4.3.1 Scaling with Known Loads (On-Line Calibration)

For maximum resolution, find the maximum signal that will be applied to the meter input.

* For regular voltage input, refer to the main body of Table 4-1 on the following page.

* For millivolt or milliamp input, refer to the main body of Table 4-2 on the following page.

Set the DIP switch positions as indicated at the top of either Table 4-1 or 4-2. The numbers 1 through 8 in the top row of either table represent DIP switches 1 through 8 and the O, C or X directly below the number indicates the correct position of each switch.

* "O" switch should be open or up.

* "C" switch should be closed or down.

* "X" switch is used to control excitation (refer to Table 2-3 to determine correct position of these switches)

Once DIP switches have been positioned correctly, apply power. Proceed to the "**RD.CF**" (Reading Configuration) and set R2 equal to the value in the right hand column of the card.

4.3.1 Scaling with Known Loads (On-Line Calibration) (Continued)

Table 4-1. Range Selection Dip Switch Positions For Regular Voltage Input

12345678 XCOOOXXC	12345678 XCOOCXXC	RD.CF* R2=
0 - 10 V	±5 V	4
0 - 5 V	±5 V	3
0 - 3 V	±3 V	2
0 - 2 V	±2 V	1
0 - 1 V	±1 V	0

Table 4-2. Range Selection Dip Switch Positions For Millivolt and Milliamp Input

12345678 XOCOOXXO	12345678 XOCOCXXO	12345678 XOCCOXXO	RD.CF* R2=
0 - 100 mV	±50 mV	0 - 20 mA	4
0 - 50 mV	±50 mV	0 - 10 mA	3
0 - 30 mV	±30 mV	0 - 6 mA	2
0 - 20 mV	±20 mV	0 - 4 mA	1
0 - 10 mV	±10 mV	0 - 2 mA	0

4.3.1 Scaling with Known Loads (On-Line Calibration) (Continued)

To scale with known inputs: apply known loads to a transducer connected to a meter, or simulate the transducer output with a voltage or current simulator. To scale with known inputs, follow these steps:

1. Apply a known load equal to approximately 0% of the transducer range.

2. Press the **MENU** button until the meter shows "**RD.S.O**".

3. Press the ▶/**TARE** button. The meter shows "**IN 1**" (Input 1).

   Note ☞ *"IN 1" (Input 1) is the unscaled display reading at minimum input.*

4. Press the ▶/**TARE** button again. The meter shows the last stored value for Input 1.

5. Press the ▶/**TARE** button once more. The meter shows the actual signal being received.

6. Press the **MENU** button to store this value as "**IN 1**". The meter shows "**RD 1**" (Read 1).

7. Press the ▶/**TARE** button. The meter shows the last stored value for Read 1.

8. Press the ▲/**NT/GRS** button to change the value of your digits.

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

4.3.1 Scaling with Known Loads (On-Line Calibration) (Continued)

10. Press the **MENU** button to store this value as "**RD 1**" (Read 1). The meter shows "**IN 2**" (Input 2).

    > **Note ☞** *"IN 2" (Input 2) is the unscaled display reading at maximum input.*

11. Apply a known load equal to approximately 100% of the transducer range.

12. Press the ▶/**TARE** button. The meter shows the last stored value for Input 2.

13. Press the ▶/**TARE** button once more. The meter shows the actual signal being received.

14. Press the **MENU** button to store Input 2 value. The meter shows "**RD 2**" (Read 2).

    > **Note ☞** *"RD 2" (Read 2) is the desired display reading at Input 2.*

15. Press the ▶/**TARE** button. The meter shows the last stored value for "**RD 2**" (Read 2).

16. Press the ▲/**NT/GRS** button to change the value of your digits.

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

18. Press the **MENU** button to store this value as "**RD 2**" (Read 2). The meter momentarily shows "**STRD**", followed by "**RD.CF**". Meter scaling is now complete.

4.3.2 Scaling without Known Loads

To scale without known inputs, calculate input values based on   transducer specifications and manually enter them on the via the front-panel push-buttons. The following example assumes load cells with these specifications:

Maximum Load:	to 100.0 lbs
Output:	3.1 mV/V
Sensor Excitation:	10 V dc
Output:	31 mV (3.1 mV/V) x (10 V)

1. Determine the correct values for "**IN 1**" and "**IN 2**", based on the load cell specifications. In most cases, "**RD 1 & 2**" are equal to the minimum and maximum of the transducer output span. The example assumes "**RD 1 & 2**" are equal to the range of the load ("**RD 1**" = 0 and "**RD 2**" = 100.0). Calculate "**IN 1**" and "**IN 2**" using the load cell output span and the following equation:

"IN" = (Sensor Output) x (Natural Gain) x (Multiplier).

Table 4-3. Natural Gain

Input Range	Span Units	Natural Gain
0 to 100 mV	Millivolts	100 cts/mV
+/- 50 mV	Millivolts	40 cts/mV
0 to 10 V	Volts	1000 cts/V
+/- 5 V	Volts	400 cts/V
0 to 20 mA	Milliamps	500 cts/mA

4.3.2 Scaling without Known Loads (continued)

2. Determine the multiplier by the Input Resolution setting ("**R.2**" in the "**RD.CF**" menu) and the input range selected. Typically "**R.2=4**" is suitable for most applications.

Table 4-4. Input Resolution Multiplier

Input Range	R.2=4	R.2=3	R.2=2	R.2=1	R.2=0
0 to 100 mV	1.000	2.000	3.333	5.000	10.00
0 to 10 V	1.000	2.000	3.333	5.000	10.00
0 to 20 mA	1.000	2.000	3.333	5.000	10.00
+/- 50 mV	1.000	1.000	1.667	2.500	5.000
+/- 5 V	1.000	1.000	1.667	2.500	5.000

3. Determine "**IN 1 & 2**" input range and resolution. The example selects the 0 to 100 mV range and 10 uV resolution ("**R.2=4**").

Example: "**IN 1**" = (0 mV) x (1000 cts/mV) x (1.000) = 0
                     "**IN 2**" = (31 mV) x (1000 cts/mV) x (1.000) = 3100
                     "**RD 1**" = 0000
                     "**RD 2**" = 100.0

4. Press **MENU** button until the meter shows "**RD.S.O**".

5. Press the ►/**TARE** button. The meter shows "**IN 1**" (Input 1).

6. Press the ►/**TARE** button again. The meter shows the last Input 1 value, with the fourth digit flashing.

7   Press the ▲/**NT/GRS** button to change the value of your digits (ignore decimal point position).

4.3.2 Scaling without Known Loads (continued)

8. Press the ▶/**TARE** button to scroll horizontally to the next digit.

9. Press the **MENU** button to store this value. The meter shows "**RD 1**" .

    Note ☞   *"RD 1" (Read 1) is the desired display reading at Input 1.*

10. Press the ▶/**TARE** button. The meter shows the last value for "**RD 1**"
    (Read 1).

11. Press the ▲/**NT/GRS** button to change the value of your digits.

12. Press the ▶/**TARE** button to scroll horizontally to the next digit.

13. Press the **MENU** button to store this value as "**RD 1**" (Read 1). The
    meter shows "**IN 2**" (Input 2).

    Note ☞   *"IN 2" (Input 2) is the unscaled display reading at maximum input.
    Ignore decimal point position.*

14. Press the ▶/**TARE** button. The meter shows the last known value for
    "**IN 2**" (Input 2).

15. Press the ▲/**NT/GRS** button change the value of your digits.

16. Press the ▶/**TARE** button to scroll horizontally to the next digit.

17. Press the **MENU** button to store this value. The meter shows "**RD 2**"
    (Read 2).

    Note ☞   *"RD 2" (Read 2) is the desired display reading at Input 2.*

4.3.2 Scaling without Known Loads (continued)

18. Press the ▶/**TARE** button. The meter shows the last stored value for "**RD 2**" (Read 2).

19. Press the ▲/**NT/GRS** button change the value of your digits.

20. Press the ▶/**TARE** button to scroll horizontally to the next digit.

21. Press the **MENU** button to store this value as "**RD 2**" (Read 2). The meter momentarily shows "**STRD**", followed by "**RD.CF**". Meter scaling is now complete.

4.4 USING READING CONFIGURATION ("RD.CF")

You may use Reading Configuration ("**RD.CF**") to configure your meter for the following:

* *   To select ratiometric or non-ratiometric operation
* *   To set the input resolution of your meter
* *   To display the filtered/unfiltered signal input value
* *   To select gross/net vs. peak reading

4.4.1 Selecting Ratiometric/Non-Ratiometric Operation

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

2. Press the ▶/**TARE** button. The meter flashes one of the following:

    * *   *"R.1=R"*   (*Ratiometric reading)* (default - for strain meters)
    * *   "R.1=N"   (Non-ratiometric reading - typically for voltage & current transducers)

4.4.1 Selecting Ratiometric/Non-Ratiometric Operation (Continued)

3. Press the **▲/NT/GRS** button to view the last stored selection and to toggle between available choices.

4. Press the **▶/TARE** button to select input resolution or press the **MENU** button to store your selection and enter "**S1.CF**" (Setpoint 1 Configuration).

4.4.2 Setting the Input Resolution of Your Meter

To set the input resolution of your meter.

1. Press the **▶/TARE** button. The meter shows one of the following (default is "**R.2=4**"):

    *   "R.2=0"   1 μV for Unipolar inputs. 5 μV for Bipolar inputs.
    *   "R.2=1"   2 μV for Unipolar inputs. 10 μV for Bipolar inputs.
    *   "R.2=2"   3 μV for Unipolar inputs. 15 μV for Bipolar inputs.
    *   "R.2=3"   5 μV for Unipolar inputs. 25 μV for Bipolar inputs.
    *   "*R.2=4*"   *10 μV for Unipolar inputs. 25 μV for Bipolar inputs.*

Example: 3 μV resolution means that if you input 0-30 mV, at 30 mV the meter shows 9999.

2. Press the **▲/NT/GRS** button to scroll through available selections.

3. Press the **▶/TARE** button to show the filtered/unfiltered value **or** press the **MENU** button to store your selection and enter "**S1.CF**" (Setpoint 1 Configuration).

4.4.3 Displaying the Filtered/Unfiltered Input Signal

To display the filtered/unfiltered signal input.

1. Press the ▶/**TARE** button. The meter flashes one of the following:

   * "***R.3=F***" (***Filtered value***) (default)
   * "R.3=U" (Unfiltered value)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

3. Press the ▶/**TARE** button to select gross/net or peak display **or** press the **MENU** button to store your selection and enter "**S1.CF**" (Setpoint 1 Configuration).

4.4.4 Selecting Gross/Net or Peak Display

To select gross/net or peak display.

1. Press the ▶/**TARE** button. The meter flashes one of the following:

   * "***R.4=G***" (***Gross/Net Display***) (default)
   * "R.4=P" (Peak Display)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

3. Press the **MENU** button to store your selection and enter "**S1.CF**" (Setpoint 1 Configuration).

4.5 USING SETPOINT 1 CONFIGURATION ("S1.CF")

Setpoint 1 Configuration (**S1.CF**) 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:

* Setting setpoint's active band above or below your chosen value
* Selecting whether the setpoint operation is latched or unlatched
* Assigning setpoint values to the net or gross reading

4.5.1 Setting Setpoint 1's Active Band

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

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

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

3. Press the ▲/**NT/GRS** button to toggle between available choices.

4. Press the ▶/**TARE** button to select if Setpoint 1 is latched or unlatched or press the **MENU** button to store your selection and enter "**S2.CF**" (Setpoint 2 Configuration)

4.5.2 Selecting if Setpoint 1 is Latched or Unlatched

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

   * "*S.2=L*" *(setpoint 1 to be latched)* (default)
   * "S.2=U" (setpoint 1 to be unlatched)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

4.5.2 Selecting if Setpoint 1 is Latched or Unlatched (continued)

3. Press the ▶/**TARE** button to assign Setpoint 1 values to net or gross reading or press the **MENU** button to enter "**S2.CF**" (Setpoint 2 Configuration).

4.5.3 Assigning Setpoint 1 Values to Net or Gross Readings

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

    *   "*S.3=N*" *setpoint 1 assigned to net reading* (default)
    *   "S.3=G"   setpoint 1 assigned to gross reading

2. Press the ▲/**NT/GRS** button to toggle between available choices.

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

4.6 USING SETPOINT 2 CONFIGURATION ("S2.CF")

Setpoint 2 Configuration ("**S2.CF**") 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 setpoint's active band above or below your chosen value
    *   To select whether the setpoint operation is latched or unlatched
    *   To assign setpoint values to the net or gross reading

4.6.1 Setting Setpoint 2's Active Band

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

4.6.1 Setting Setpoint 2's Active Band (continued)

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

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

3. Press the ▲/**NT/GRS** button to toggle between available choices.

4. Press the ▶/**TARE** button to select if Setpoint 1 is latched or unlatched or press the **MENU** button to store your selection and enter "**S1.DB**" (Setpoint 1 Deadband)

4.6.2 Selecting if Setpoint 2 is Latched or Unlatched

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

    * "*S.2=L*" *(setpoint 1 to be latched)* (default)
    * "S.2=U" (setpoint 1 to be unlatched)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

3. Press the ▶/**TARE** button to assign Setpoint 2 values to net or gross reading or press the **MENU** button to enter "**S1.DB**" (Setpoint 1 Deadband).

4.6.3 Assigning Setpoint 2 Values to Net or Gross Readings

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

    * "*S.3=N*" *(setpoint 2 assigned to net reading)* (default)
    * "S.3=G" (setpoint 2 assigned to gross reading)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

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

4.7 SETTING THE 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. The Setpoint 1 default deadband is 0003. To change the deadband (hysteresis) of setpoint 1, follow these steps:

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

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

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

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

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

4.8 SETTING THE 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. The Setpoint 2 default deadband is 0003. To change the deadband (hysteresis) of setpoint 2, follow these steps:

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

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

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

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

5. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "OT.CF" (Output Configuration).

4.9 USING OUTPUT CONFIGURATION ("OT.CF")

Output Configuration ("**OT.CF**") 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**") for the following:

* To enable or disable the analog output
* To determine if the analog output is current or voltage
* To assign the output to the net or gross reading

4.9.1 Enabling or Disabling the Analog Output

To enable or disable the analog output.

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

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

    *   "O.1=D" (Analog output disabled)
    *   "*O.1=E*" *(Analog output enabled)* (default)

3. Press the ▲/**NT/GRS** button to toggle between available choices.

4. Press the ▶/**TARE** button to select analog output as current / voltage or press the **MENU** button to store your selection and enter "**OT.S.O**" (Output Scale and Offset).

4.9.2 Selecting Analog Output as Current or Voltage

To select your analog signal output as current or voltage.

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

    *   "O.2=V" (Analog output = voltage)
    *   "*O.2=C*" *(Analog output = current)* (default)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

3. Press the ▶/**TARE** button to select gross / net display or press the **MENU** button to store your selection and enter "**OT.S.O**" (Output Scale and Offset).

4.9.3 Assigning the Output to Net or Gross Reading

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

   * "*O.3=N*" *(Net Reading)* (default)
   * "O.3=G" (Gross Reading)

2. Press the ▲/**NT/GRS** button to toggle between available choices.

3. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**" , followed by "**OT.S.O**" (Output Scale and Offset).

4.10 USING 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).

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

   ▼ **Note** ☞ *This display reading corresponds to your starting analog output signal.*

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

4.10 USING OUTPUT SCALE AND OFFSET (OT.S.O) (Continued)

3. Press the ▲/**NT**/**GRS** button to change the value of Read 1. If you continue to press the ▲/**NT**/**GRS** button, the flashing digit's value continues to change.

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

5. 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.*

6. Press the ▶/**TARE** button. The meter shows the 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 signal output. If you select "**O.2=C**" for current, the maximum signal you may select is 20.00.*

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

8. Press the ▶/**TARE** button to scroll horizontally to the next digit.

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

4.10 USING OUTPUT SCALE AND OFFSET (OT.S.O) (Continued)

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

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

11. Press the ▲/**NT/GRS** button to change the value of the flashing digit. If you continue to press the ▲/**NT/GRS** button, the flashing digit's value continues to increment by one.

12. Press the ▶/**TARE** button to scroll horizontally to the next digit.

13. Press the **MENU** button to store your selection. The meter shows "**OUT.2**" (Output 2).

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

14. Press the ▶/**TARE** button. The meter shows the 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 signal output. If you select "**O.2=C**" for current, the maximum signal you may select is 20.00 for a 0-20 or 4-20 mA signal output.*

15. Press the ▲/**NT/GRS** button to change the value of the flashing digit. If you continue to press the ▲/**NT/GRS** button, the flashing digit's value continues to increment by one.

4.10 USING OUTPUT SCALE AND OFFSET (OT.S.O) (Continued)

16. Press the ▶/**TARE** button to scroll horizontally to the next digit.

17. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**" , followed by "**LK.CF**" (Lock Out Configuration). Meter then returns to the operating mode.

⚠️ **WARNING:** If the meter shows flashing values on RD 1 or RD 2, the value has overflowed. Press the ▲/**NT/GRS** button to start new values.

4.10.1 Example for Output Scale and Offset

Example: You want to send 4-20 mA output for 0 to 450.0 °F. The meter has 0.1 degree resolution. Complete the following steps:

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

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

3. Press the ▶/**TARE** button to show the existing value.

4. Change the value of Read 1 to 000.0 by pressing the ▲/**NT/GRS** and ▶/**TARE** buttons.

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

6. Press the ▶/**TARE** button to show the existing value.

7. Change the value of Output 1 to 04.00 by pressing the ▲/**NT/GRS** and ▶/**TARE** buttons.

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

4.10.1 Example for Output Scale and Offset (continued)

9. Press the ▶/**TARE** button to show the existing value.

10. Change the value of Read 2 to 450.0 by pressing the ▲/**NT/GRS** and ▶/**TARE** buttons.

11. Press the **MENU** button to store your selection. The meter shows **"OUT.2"** (Output 2).

12. Press the ▶/**TARE** button to show the existing value.

13. Change the value of Output 2 to 20.0 by pressing the ▲/**NT/GRS** and ▶/**TARE** buttons.

14. Press the **MENU** button to store your selection. The meter shows **"LK.CF"** (Lock Out Configuration).

4.11 Using 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.

4.11.1 Enabling or Disabling the RESET Button in the run mode.

1. Press the **MENU** button until the meter shows "**LK.CF**" (after "**OT.S.O**", if you are entering the Lock Out Configuration Menu).

2. Press the ▶/**TARE** button. The meter shows one of the following (default is "**RS.=E**"):

   * *"RS.=E" (To enable the RESET button in the run mode)*
   * "RS.=D"   (To disable the **RESET** button in the run mode)

3. Press the ▲/**NT/GRS** button to toggle between available choices.

4.11.1 Enabling or Disabling Setpoint Changes (Continued)

4. Once desired mode shows, press the **MENU** button to store the change. The meter shows "**RST**" (hard reset) and returns to the run mode.

4.11.2 Enabling or Disabling the Setpoint changes.

1. Press the **MENU** button until the meter shows "**LK.CF**" (after "**OT.S.O**", if you are entering the Lock Out Configuration Menu).

2. Press the ▶/**TARE** button twice. The meter shows one of the following (default is "**SP.=E**"):

   * *"SP.=E" (To enable the setpoint changes)*
   * "SP.=D" (To disable the setpoint changes)

3. Press the ▲/**NT/GRS** button to toggle between available choices.

4. Once desired mode shows, press the ▶/**TARE** button to enable or disable the **RESET** button in the run mode or press the **MENU** button to store the change, hard reset the meter and return to the run mode.

4.11.3 Enabling or Disabling SETPOINT Menu:

1. Press the ▶/**TARE** button three times. 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 software version.

2. Press the ▲/**NT/GRS** 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**.

SECTION 5. DISPLAY MESSAGES

Table 5-1. Display Messages

Message	Description
STRN	Strain Meter
RST	Hard (Power On) Reset
INPT	Input Type: K.TC (Type K T/C)
DEC.P	Decimal Point Position: FFFF.
RD.S.O	Reading Scale and Offset
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
OT.S.O	Output Scale and Offset
LK.CF	Lock Out Configuration
±OL	±Overload Signal
RS.OF	Resolution Overflow
R.OV.S	Large Scale and Offset
9999	Value Overflow in Setpoint/Menu Routines
-1999	Value Overflow in Setpoint/Menu Routines
NT.OF	Net Value Overflow
GT.OF	Gross Value Overflow
ER1	2 Coordinate Format Programming Error
T.RS	Tare Reset
SP.RS	Reset Setpoints
NET	Net Value
GROS	Gross Value
SP1	Setpoint 1 Value: 0000
SP2	Setpoint 2 Value: 0000

SECTION 6. MENU CONFIGURATION DISPLAYS

Not all menu items display on standard meters.

Table 6-1. Menu Configuration Displays

(Defaults in Bold and Italics)

MENU	▶/TARE	▲/NT/GRS	
INPT Input Type	Show input choices:	***100m*** ±50m 10 V ±5 V 0-20	***100mVdc*** 50mVdc 10Vdc 5Vdc 0-20mAdc
DEC.P Decimal Point	Show current decimal point position		***FFFF.*** FFF.F FF.FF F.FFF
RD.S.O (Reading Scale & Offset)	Show **IN 1** and prior value entered.		
Enter new value and show "**RD 1**"	Scroll to the next digit to the right	Change the value of the flashing digit.	
Enter new value and show "**IN 2**"	Show prior value entered.		
	Scroll to the next digit to the right.	Change the value of the flashing digit.	
	Show **RD 2** and prior value entered.		
	Scroll to the next digit to the right.	Change the value of the flashing digit.	

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/NT/GRS
RD.CF (Reading Configuration)	**R.1=**	**R (Ratiometric Reading)** N (Non-ratiometric reading)
	R.2=	0 (1µV resolution for unipolar & 5µV resolution for bipolar)
		1 (2µV resolution for unipolar & 10µV resolution for bipolar)
		2 (3µV resolution for unipolar & 15µV resolution for bipolar)
		3 (5µV resolution for unipolar & 25µV resolution for bipolar)
		4 (10µV resolution for unipolar & 25µV resolution for bipolar)
		Note: *3 µV resolution means if your input is 0-30mV, at 30mV the display shows 9999.*
	R.3=	**F (Filtered value)** **U (Unfiltered value)**
	R.4=	G (Gross/Net Display) P (Peak Display)
S1.CF Setpoint 1 Configuration	**S.1=**	**A (Active above)** B (Active below)
	S.2=	**U (Unlatched)** L (Latched)
	S.3=	**N (Net Reading)** G (Gross Reading)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/NT/GRS
S2.CF SETPOINT 2 CONFIGURATION	**S.1=**	*A (ACTIVE ABOVE)* B (ACTIVE BELOW)
	S.2=	*U (UNLATCHED)* L (LATCHED)
	S.3=	*N (NET READING)* G (GROSS READING)
S1.DB Setpoint 1 Deadband	Press to scroll to the next digit to the right	Press to change the value of the flashing digit
S2.DB Setpoint 2 Deadband	Press to scroll to the next digit to the right	Press to change the value of the flashing digit
OT.CF* Output Configuration	**0.1=**	*E (Analog output is enabled)* D (Analog output is disabled)
	0.2=	*C (Analog output is current)* V (Analog output is voltage)
	0.3=	*N (Net Reading)* G (Gross Reading)
Notes:	1) if 0.2 = V, then you may select your analog output to be 0-10 V or 0-5 V by accessing submenu **0.5**	

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/NT/GRS
OT.S.O Output Scale & Offset		
Enter new value and show "**OUT1**"	Show **RD1** and prior value entered	
	Scroll to the next digit to the right	Change the value of the flashing digit
Enter new value and show "**RD 2**"	Show prior value entered.	
	Scroll to the next digit to the right	Change the value of the flashing digit
	Show prior value entered.	
Enter new value and show "**OUT2**"	Scroll to the next digit to the right	Change the value of the flashing digit
LK.CF Lock Out Configuration	RS=	**_E (Enable RESET button in the run mode)_** D (Disable **RESET** button in the 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)

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SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-2. Run Mode Displays

Display	►/TARE	▲/NT/GRS	RESET	Description
NET/GROS	Press to activate	Displays "NET or GROSS" reading.Once reading shows, respective value shows.		**Peak Reading** Toggles between Net and Gross values.
T.RST			Will reset your tare when viewing this function	**Tare Reset**
SP.RS				**Reset Latched Alarms** Pressing the **RESET** button resets your latched alarm **WARNING! Tare resets if Tare is activated.**

Notes:
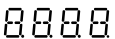
SECTION 7. SETPOINT CONFIGURATION DISPLAYS

Table 7-1. Setpoint Configuration Displays

MENU	▶/TARE	▲/NT/GRS	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

Notes:

SECTION 8. SPECIFICATIONS

SIGNAL INPUT

Input Ranges:	0-100 mV, ± 50 mV, 0-10 V, 0-5 V, 0-20 mA, 4-20 mA
Isolation:	Dielectric strength to 2500V transient per 3mm spacing based on EN 61010 for 260Vrms or dc working voltage
Noise Rejection:	Normal Mode Rejection (NMR) = 60dB Common Mode Rejection (CMR) = 120dB
Input Protection:	Voltage Input = 120Vrms max Current Input = 200mA max
Resistance:	100 Meg ohms for 100 mV or ±50 mV input range 1 Meg ohm for 10 V or +5 V input range 5 ohms for 20 mA current input range
Display:	LED 14-segment, 13.8 mm (0.54")
Symbol:	8.8.8.8.

ANALOG TO DIGITAL

Technique:	Dual slope
Internal resolution:	15 bits
Read Rate:	3/sec Polarity Automatic

ACCURACY AT 25°C

Max Error Strain/Process:	±0.03% of reading, ± 1 count	
Span Tempco:	50 ppm/°C	
Step Response:	1 sec	
Warm Up to Rated Accuracy:	30 min	
Excitation Voltage:	AC power units 24 V @ 25 mA, 12 V @ 50 mA, 10 V @ 120 mA, 5 V @ 60 mA	DC power units 24 V @ 25 mA, 12 V @ 50 mA, 10 V @ 60 mA, 5 V @ 60 mA
Load Regulation:	1.1%	
Line Regulation:	0.02% per Vac	

ALARM OUTPUTS (if applicable)

> 2 Form "C" on/off relays. Configurable for
> latched and unlatched by software.
> Max current: 5 AMPS, resistive load
> Max voltage: 250 Vac or 30 Vd

ANALOG OUTPUT (if applicable)

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

ISOLATED ANALOG OUTPUT (TB5, 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 8. SPECIFICATIONS (Continued)

INPUT POWER INFORMATION

Voltage -   ac   115/230 Vrms ±10%
                dc   9.5 at 950mA dc to 32 V dc at 250mA dc

Frequency: 50-60 Hz

Power: 9.5 watts max.

External Fuse Protection Recommended:
         ac   115V   IEC 127-2/III, 125mA, 250V (T Type)
                           or UL Slow-Blow, 175mA, 250V

         ac   230V   IEC 127-2/III, 63mA, 250V (T Type)
                           or UL Slow-Blow, 80mA, 250V

ENVIRONMENT

Operating
temperature: 0° to 50°C (32° to 122°F)

Storage
temperature: -40° to 85°C (-40° to 185° F)

Relative
humidity: 90% at 40°C (non-condensing)

MECHANICAL

Panel cutout: 1/8 DIN 3.62 x 1.78" (45 x 92mm)

Weight: 1.27 lb (575 g)

Case material: Polycarbonate, 94 V-O UL rated

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 8-1 Meter Dimensions

SECTION 9. FACTORY PRESET VALUES

Table 9-1. FACTORY PRESET VALUES

Menu Item	Factory Preset Values
INPT	Input Type: 0-100 (0-100 mV input)
DEC.P	Decimal Point Position: FFFF.
RD.S.O	Reading Scale and Offset: 0-100 mV =0-1000
RD.CF	Reading Configuration: R.1=F (Fahrenheit) R.2=4 (10µV resolution) R.3=F (Meter shows filtered value) R.4=G (Meter shows gross/net value)
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 S2.DB	Setpoint 1 Deadband: 0003 Setpoint 2 Deadband: 0003
OT.CF	Output Configuration: O.1=E (Analog output is enabled) O.2=C (Analog output is current) O.3=N (Analog output follows the NET value)
OT.S.O	Output Scale and Offset: 0-1000 = 4-20 mA dc
LK.CF	Lock Out Configuration **SP=E** (Enable setpoint changes) **RS=E** (Enable the **RESET** button in the run mode)
SP1 SP2	Setpoint 1 Value: 0000 Setpoint 2 Value: 0000
Sensor Excitation: 10Vdc	

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Notes:

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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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Direct all warranty and repair requests/inquiries to the NEWPORT Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO NEWPORT, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM NEWPORT'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

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1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
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