

Getting Started

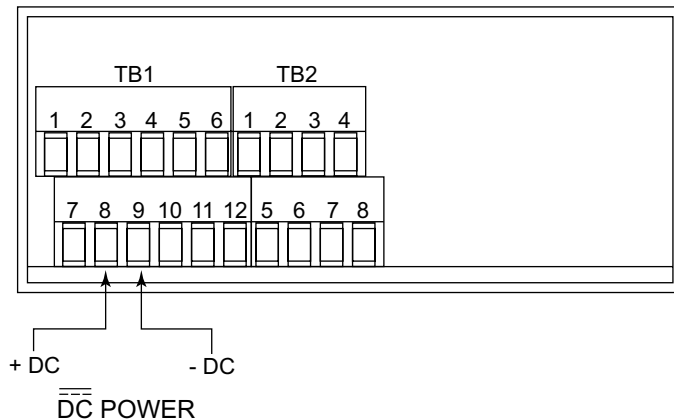
3.5 CONNECTING MAIN POWER (Continued)

Table 3-2 shows the wire color and respective terminal connections for both USA and Europe.

Table 3-2. AC-Power Connections

TB1	AC POWER	WIRE COLORS	
		EUROPE	USA
7	~ AC Line	Brown	Black
8	~ AC Neutral	Blue	White
9	~ AC Earth	Green/Yellow	Green

Connect the DC main power connections as shown in **Figure 3-12**.



When using DC power, refer to the **Table 8-1** Color Chart in the Specifications Section for Display Color, Intensity, Excitation Voltage and Current, and Analog Output Isolated Option. Failure to use proper ratings may result in damaging the unit.

Figure 3-12. Main Power Connections - DC

3.6 CONNECTING EXTERNAL TARE SWITCH

Connect external tare connections as shown in **Figure 3-13**.

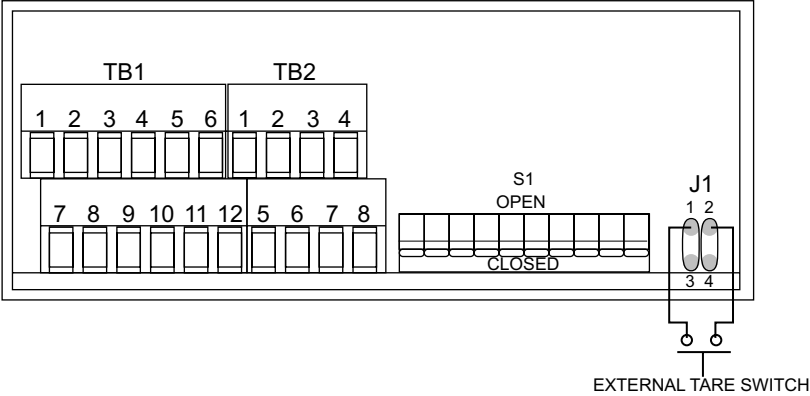


Figure 3-13. External Tare Connections

3.7 CONNECTING ANALOG AND RELAY OUTPUTS

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

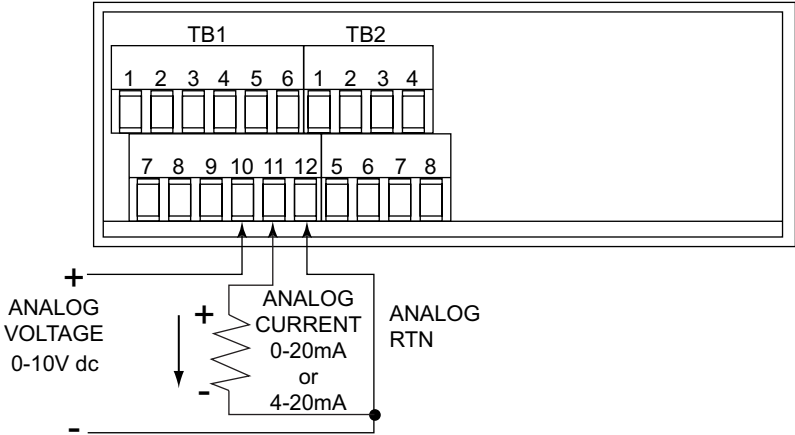


Figure 3-14. Analog Output Connections

3.7 CONNECTING ANALOG AND RELAY OUTPUTS (Continued)

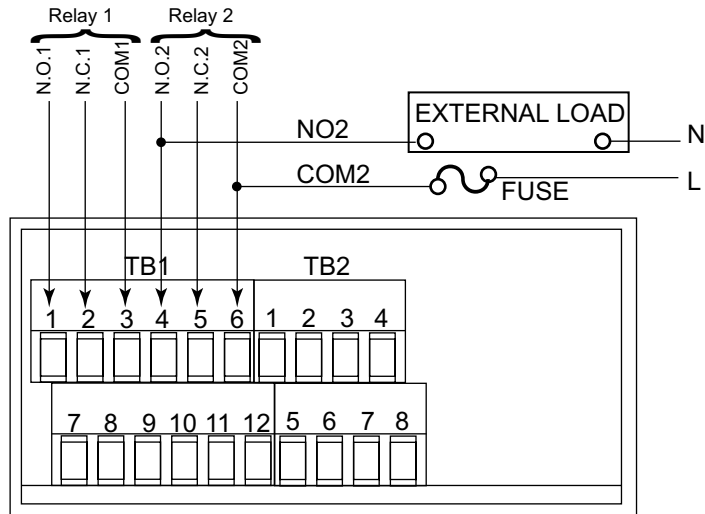


Figure 3-15. Relay Output Connections.

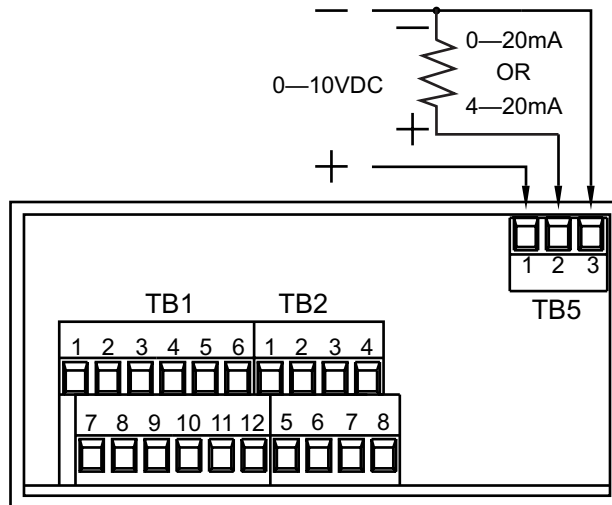


Figure 3-16. Isolated Analog Output Connections.

SECTION 4. CONFIGURING THE METER

Note

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

Tip

For first-time users: Refer to the QuickStart Manual for basic operation and set-up instructions.

4.1 SELECTING THE INPUT TYPE **INPE**

Note

To select your appropriate input type signal, follow these steps:

Before proceeding, set the input DIP switch settings at the back of your meter. (Refer to **Table 2-3**).

1. Press the **MENU** button. The meter shows **INPE**.
2. Press the **▶/TARE** button. The meter flashes one of the following:
 - **100M** (for 0-100 mV dc) (Default)
 - **±50M** (for ±50 mV dc)
 - **10V** (for 0-10 Vdc)
 - **±5V** (for ±5 Vdc)
 - **0-20** (for 0-20 mA dc)
3. Press the **▲/NT/GRS** button to scroll through available choices.
4. Press the **MENU** button to store your choice. The meter momentarily shows **SEPD**, followed by **DEC.P** (Decimal Point).

Configuring The Meter

4.2 SELECTING A DECIMAL POINT POSITION **DEC.P**

Note 

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

To select a decimal point display position, follow these steps:

1. Press the **MENU** button until the meter shows **DEC.P**.
2. Press the **▶/TARE** button. The meter shows one of the following:
 - **FFF.F**
 - **FF.FF**
 - **F.FFF**
 - **FFFF** (Default)
3. Press the **▲/NT/GRS** button to scroll between available choices.
4. Press the **MENU** button to store your choice. The meter momentarily shows **StRd**, followed by the next menu **Rd.S.0** (Reading Scale and Offset). Or you can press the **RESET** button to abort and go back to the **DEC.P** menu.

4.3 SELECTING READING SCALE AND OFFSET **Rd.S.0**

Note 

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

To scale the meter to show readings in engineering units. There are two methods. One method is to scale with known inputs. Another method is to scale without known inputs: you calculate input values based on the transducer specifications and manually enter them through the keyboard.

Configuring The Meter

4.3.1 Scaling with Known Loads (On-Line Calibration)

Note

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

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 chart.

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

12345678 XC000XXC	12345678 XC00CXXC	RD.CF* R.2=
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/ Milliamp Input

12345678 X0C00XX0	12345678 X0C0CXX0	12345678 X0C00XX0	RD.CF* R.2=
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

* Reading Configuration

Configuring The Meter

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 **R d . 5 . 0**.
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 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** (Input 1). The meter shows **R d 1** (Read 1).

Note

R d 1 (Read 1) is the desired display reading at Input 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.
10. Press the **MENU** button to store value as **R d 1**. The meter shows **IN 2** (Input 2).

Note

IN 2 (Input 2) is the unscaled display reading at maximum input.

Configuring The Meter

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

11. Apply a known load equal to approximately 100% of the transducer range.
12. Press the ►/TARE button again. 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 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 value as **RD 2** (Read 2). The meter momentarily shows **SE RD**, followed by **RD.CF**. Meter scaling is now complete.

Configuring The Meter

4.3.2 Scaling Without Known Loads

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

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

- Determine the correct values for **IN 1** and **IN 2** based on the load cell specifications. In most cases, **Rd 1** and **Rd 2** are equal to the minimum and maximum of the transducer output span. The example assumes **Rd 1** and **Rd 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 loadcell output span and the following equation:

$$\mathbf{IN} = (\text{Sensor Output}) \times (\text{Natural Gain}) \times (\text{Multiplier}).$$

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

- 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

Configuring The Meter

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

Example: **IN 1** = (0 mV) x (100 cts/mV) x (1.000) = 0

IN 2 = (31 mV) x (100 cts/mV) x (1.000) = 3100

Rd 1 = 0000

Rd 2 = 100.0

- Press **MENU** button until the meter shows **Rd 5.0**.
- Press the **▶/TARE** button. The meter shows **IN 1**.
- Press the **▶/TARE** button again, the meter shows the last Input 1 value, with the fourth digit flashing.
- Press the **▲/NT/GRS** button to change the value of your digits.
- Press the **▶/TARE** button to scroll horizontally to the next digit.
- Press the **MENU** button to store this value. The meter shows **Rd 1**.
- Press the **▶/TARE** button. The meter shows the last value for Read 1.

Repeat steps 7, 8 and 9 until **Rd 1**, **IN 2** and **Rd 2** have been displayed, verified, changed (if necessary) and stored.

4.4 USING READING CONFIGURATION **Rd.CF**

Note

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

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

Configuring The Meter

4.4.1 Selecting Ratiometric/Non-Ratiometric Operation

1. Press the **MENU** button until **Rd.CF** displays.
2. Press the **▶/TARE** button. The meter shows one of the following:
 - **R.1=R** (*Ratiometric reading*) (Default - for strain meters)
 - **R.1=N** (Non-ratiometric reading - typically for voltage & current transducers)
3. Press the **▲/NT/GRS** button to view last stored selection. Press the **▲/NT/GRS** button to toggle between selections.
4. Press the **▶/TARE** button to select input resolution or press the **MENU** button to store your selection and shows **COLR** menu.

4.4.2 Setting Input Resolution

To set the input resolution of your meter, follow these steps:

1. Press the **MENU** button until **Rd.CF** displays, then press the **▶/TARE** button twice.
or
Press the **▶/TARE** button from **R.1**.

One of the following displays (default is **R.2=4**):

R.2=4 = 10 μ V for Unipolar inputs. 25 μ V for Bipolar inputs

R.2=0 = 1 μ V for Unipolar inputs. 5 μ V for Bipolar inputs.

R.2=1 = 2 μ V for Unipolar inputs. 10 μ V for Bipolar inputs

R.2=2 = 3 μ V for Unipolar inputs. 15 μ V for Bipolar inputs.

R.2=3 = 5 μ V for Unipolar inputs. 25 μ V for Bipolar inputs

Example: 3 μ V resolution means that if you input 0-30 mV, at 30 mV the display shows **9999.**

2. Press the **▲/NT/GRS** button to scroll through available selections.
3. Press the **▶/TARE** button to display the filtered/unfiltered signal input or press the **MENU** button to store your selection and shows **COLR** menu.

4.4.3 Displaying the Filtered/Unfiltered Input Signal

To display the filtered/unfiltered signal input, follow these steps:

1. Press the **MENU** button until **Rd.CF** displays, then press the **►/TARE** button three times.
or
Press the **►/TARE** button from **R.2**.
One of the following displays:
 - **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 **MENU** button to store your selections. **SetRd** momentarily displays, followed by **COLR** Menu.

4.4.4 Selecting Gross/Net or Peak Display

To select gross/net or peak display:

1. Press the **MENU** button until **Rd.CF** displays, then press the **►/TARE** button three times.
or
Press the **►/TARE** button from **R.3**.
One of the following displays:
 - **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 selections. **SetRd** momentarily displays, followed by **COLR** Menu.

Configuring The Meter

4.5 SELECTING A DISPLAY COLOR **COLR**

Note 

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

Selecting Display Color is not active unless your meter is a Version “B”.

To select a display color, follow these steps:

1. Press the **MENU** button until the meter shows **COLR**.
2. Press the **▶/TARE** button. The meter shows one of the following:
 - **GRN**
 - **RED**
 - **AMBR**
3. Press the **▲/NT/GRS** button to scroll between available choices.
4. Press the **MENU** button to store your choice. The meter momentarily shows **SEtPd**, followed by the next menu **S1.CF** (Setpoint 1 Configuration). Or you can press the **RESET** button to abort and go back to the **Rd.CF** menu.

4.6 USING SETPOINT 1 CONFIGURATION **S1.CF**

Note 

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

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:

- To set the setpoint's active band above or below your chosen value
- To select whether the setpoint operation is latched or unlatched
- Assigning setpoint values to the net or gross reading

4.6.1 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:
 - **S1=a** (*Active above the setpoint*) (Default)
 - **S1=b** (Active below the setpoint)
3. Press the **▲/NT/GRS** button to toggle between available choices.
4. Press the **▶/TARE** button to select if Setpoint 1 is latched/unlatched **or** press the **MENU** button to store your selection. The unit shows **S2.CF**.

4.6.2 Selecting if Setpoint 1 is Latched or Unlatched

1. Press the **MENU** button until **S1.CF** displays, then press the **▶/TARE** button twice.
or
Press the **▶/TARE** button from **S1**.
The meter shows one of the following:
 - **S2=U** *Setpoint 1 to be unlatched* (Default)
 - **S2=L** Setpoint 1 to be latched
2. Press the **▲/NT/GRS** button to toggle between available choices.
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).

Configuring The Meter

4.6.3 Assigning Setpoint 1 Values to Net or Gross Readings

1. Press the **MENU** button until **S1.CF** displays, then press the **▶/TARE** button twice.
or
Press the **▶/TARE** button from **S.2**.

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 **S.t.R.d**, followed by **S2.CF** (Setpoint 2 Configuration).

4.7 USING SETPOINT 2 CONFIGURATION **S2.CF**

Note

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

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 the 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

4.7.1 Setting Setpoint 2's Active Band

1. Press the **MENU** button until the meter shows **S2.CF**.
or
2. Press the **▶/TARE** button. The meter shows one of the following:
 - **S.1=A** (*Active above the setpoint*) (Default)
 - **S.1=B** (Active below the setpoint)
3. Press the **▲/NT/GRS** button to toggle between available choices.
4. Press the **▶/TARE** button to select if Setpoint 2 is latched/unlatched **or** press the **MENU** button to store your selection. The meter shows **S1.d.b**.

Configuring The Meter

4.7.2 Selecting if Setpoint 2 is Latched or Unlatched

1. Press the **MENU** button until **S2.CF** displays, then press the **►/TARE** button twice.
or
Press the **►/TARE** button from **S.1**.

The meter shows one of the following:

- **S.2=U** *Setpoint 2 to be unlatched* (Default)
- **S.2=L** Setpoint 2 to be latched

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 **SEtRd**, followed by **S.1.db** (Setpoint 1 Deadband).

4.7.3 Assigning Setpoint 2 Values to Net or Gross Readings

1. Press the **MENU** button until **S2.CF** displays, then press the **►/TARE** button twice.
or
Press the **►/TARE** button from **S.2**.

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 **SEtRd**, followed by **S.1.db** (Setpoint 1 Deadband).

4.8 SETTING THE SETPOINT 1 DEADBAND **S1.db**

Note

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

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 to the next digit.
5. Press the **MENU** button to store your selection. The meter momentarily shows **SEtRd**, followed by **S2.db** (Setpoint 2 Deadband).

4.9 SETTING THE SETPOINT 2 DEADBAND **S2.db**

Note

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

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 to the next digit.
5. Press the **MENU** button to store your selection. The meter momentarily shows **SEtP**, followed by **DE.CF** (Output Configuration) if you have analog output capabilities.

4

Configuring The Meter

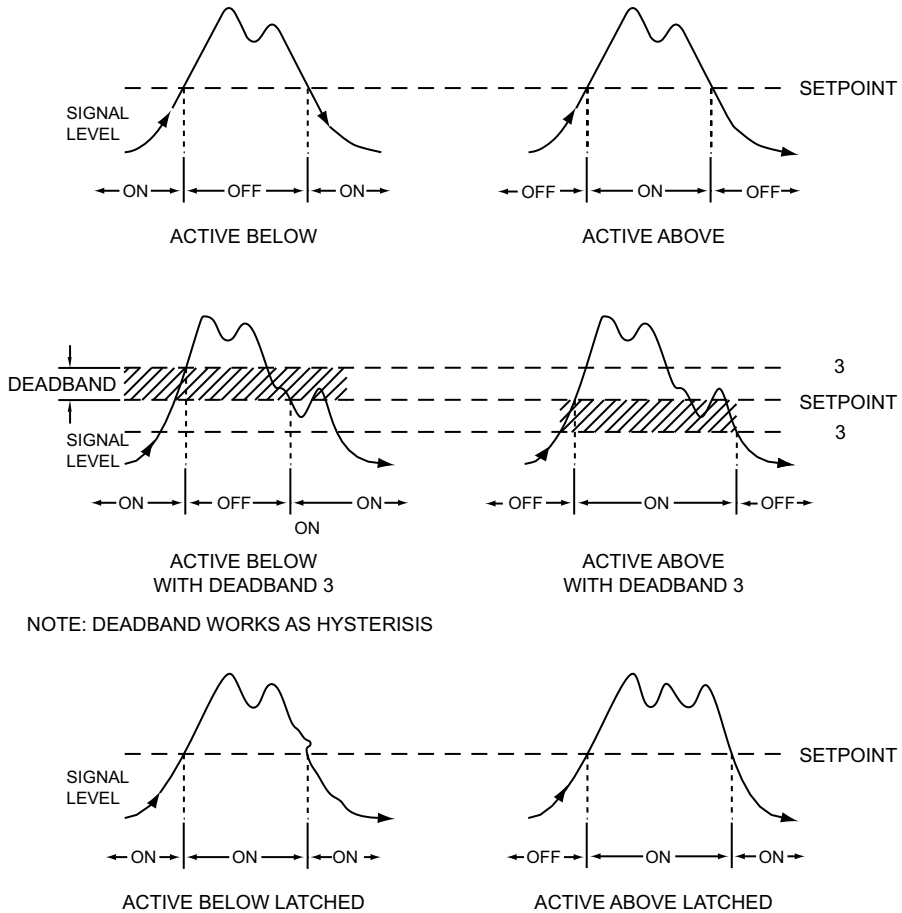


Figure 4-1. Alarm Example

Note E-32

To reset latched alarms you must:

1. Input a signal **OUT** of the alarm zone
2. Then press **SETPTS** and then, **RESET** button

4.10 USING OUTPUT CONFIGURATION **0E.CF**

Note

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

Output Configuration **0E.CF** is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. Analog output must be ordered at the time of purchase.

Use Output Configuration **0E.CF** to select the following:

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

4.10.1 Enabling or Disabling the Analog Output

To enable or disable the analog output, follow these steps:

1. Press the **MENU** button until the meter shows **0E.CF**.
2. Press the **▶/TARE** button. The meter shows one of the following:
 - **0.1=E** (*Analog output enabled*) (Default)
 - **0.1=d** (Analog output disabled)
3. Press the **▲/NT/GRS** button to toggle between available choices.
4. Press the **▶/TARE** button to select analog output as current or voltage or press the **MENU** button to store your selection and enter **0E.S.0** (Output Scale and Offset).

Configuring The Meter

4.10.2 Selecting Analog Output as Current or Voltage

1. Press the **MENU** button until it shows **0E.CF**, then press the **►/TARE** button twice.
or
Press the **►/TARE** button from **0.1**.

The meter shows one of the following:

- **0.2=0** (*Analog output = current*) (Default)
- **0.2=V** (Analog output = voltage)

2. Press the **▲/NT/GRS** button to toggle between available choices.
3. Press the **►/TARE** button to select analog output or proportional control or press the **MENU** button to store your selection and enter **0E.5.0** (Output Scale and Offset).

4.10.3 Selecting Analog Output or Proportional Control

1. Press the **MENU** button until it shows **0E.CF**, then press the **►/TARE** button twice.
or
Press the **►/TARE** button from **0.2**.

The meter shows one of the following:

- **0.3=N** (*Net Reading*) (Default)
- **0.3=0** (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 **SEEd**, followed by **0E.5.0** (Output Scale and Offset).

4.11 USING OUTPUT SCALE AND OFFSET **0t.5.0**

Note Refer to **Table 6-1** for a summary list of menu configuration.

Output Scale and Offset **0t.5.0** 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 **0t.5.0** 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 **MENU** button until **0t.5.0** displays.
2. Press the **▶/TARE** button. **Rd 1** (Read 1) displays.

Note This is your first point of display reading.

3. Press the **▶/TARE** button again. The meter shows the last previously stored 4-digit number (-1999 through 9999) with flashing 4th digit.
4. Press the **▲/NT/GRS** button to change the digits.
5. Press the **▶/TARE** button to scroll to the next digit.
6. Press the **MENU** button to store your selection. **0Ut.1** (Output 1) displays.

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

7. Press the **▶/TARE** button. Selected output displays.

Note If you select **0.2=V** for voltage, the maximum signal you may select is 10.00 for an 0-10 Vdc signal output. If you select **0.2=A** for current, the maximum signal you may select is 20.00.

8. 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.
9. Press the **▶/TARE** button to scroll to the next digit.
10. Press the **MENU** button to store your selection. **Rd 2** (Read 2) displays.

Note This is your second point of display reading.

Configuring The Meter

4.11 USING OUTPUT SCALE AND OFFSET **0E.5.0** (Continued)

11. Press the **▶/TARE** button. The meter shows last previously stored 4-digit number (-1999 through 9999) displays with flashing 4th digit.
12. 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.
13. Press the **▶/TARE** button to scroll to the next digit.
14. Press the **MENU** button to store your selection. The meter shows **0UE.2** (Output 2).

Note ⓘ

This analog signal should correspond to your Read 2 display.

15. Press the **▶/TARE** button. The meter shows selected output.

Note ⓘ

If you select **0.2=V** for voltage, the maximum signal you may select is 10.00 for an 0-10 Vdc signal output. If you select **0.2=C** for current, the maximum signal you may select is 20.00 for a 0-20 or 4-20 mA DC signal output.

16. 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.
17. Press the **▶/TARE** button to scroll to the next digit.
18. Press the **MENU** button to store your selection. The meter momentarily shows **SEEd**, followed by **LK.CF** (Lockout Configuration).



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

Configuring The Meter

4.11.1 Examples for Output Scale and Offset

Example: You want to send 4-20 mA output for 0 to 100.0. The meter has 0.1 degree resolution. Complete the following steps:

1. Press the **MENU** button until the meter shows **0t.5.0**.
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 **00t.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).
9. Press the **▶/TARE** button to show the existing value.
10. Change the value of Read 2 to 100.0 by pressing the **▲/NT/GRS** and **▶/TARE** buttons.
11. Press the **MENU** button to store your selection. The meter shows **00t.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).

Configuring The Meter

4.12 USING LOCK OUT CONFIGURATION **LK.CF**

Note

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

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

- To enable or disable setpoint changes
- To enable or disable the **RESET** button in the Run Mode
- To enable or diable displaying meter firmware version

4.12.1 Enabling or Disabling the RESET button in the Run Mode

1. Press the **MENU** button until the meter shows **LK.CF** (after **0E.S.0**).
2. Press the **▶/TARE** button. The meter shows one of the following:
 - **RS.=E** *To enable the RESET button in the Run Mode* (Default)
 - **RS.=d** To disable the **RESET** button in the Run Mode
4. Press the **▲/NT/GRS** button to toggle between available choices.
5. Press the **MENU** button to store the changes. The meter shows **SE.Rd** if the new value is different otherwise the meter shows **SR.=E** and returns to the Run Mode.

4.12.2 Enabling or Disabling SETPOINT Changes

1. Press the **MENU** button until the meter shows **LK.CF** (after **0E.S.0**).
2. Press the **▶/TARE** button twice. The meter shows one of the following:
 - **SP.=E** *To enable setpoint changes* (Default)
 - **SP.=d** To disable setpoint changes
3. Press the **▲/NT/GRS** button to toggle between available choices.
4. Press the **MENU** button to store the changes. The meter shows **SE.Rd** if the new value is different otherwise the meter shows **SR.=E** and returns to the Run Mode.

Configuring The Meter

4.12.3 SETPOINT Display Function: Firmware version or Setpoint value

1. Press the **MENU** button until the meter shows **LRCF** (after **0E5.0**).
2. Press the **▶/TARE** button three times. The meter shows one of the following:
 - **L3=0** **SETPTS** button will display setpoint values.
 - **L3=1** **SETPTS** button will display the meter's firmware version.
3. Press the **▲/NT/GRS** button to toggle between the choices above.
4. Press the **MENU** button to store the changes. The meter shows **SErD** if the new value is different otherwise the meter shows **bRtE** and returns to the Run Mode.

Note ESC

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 firmware version. These units will have **FOL** (overload) or **FOPN** memory indicated by Alarm 1 & 2 LED displays. LEDs can be reset by pressing **MENU** then **RESET** button or by Power **OFF** then **ON**.

4.13 USING DISPLAY BRIGHTNESS CONFIGURATION



4.13.1 Changing Brightness Level

Changing Display Brightness is not active unless your meter is a **Version "B"**.

1. Press the **MENU** button until the meter shows **bRtE** (after **LRCF**).
2. Press the **▶/TARE** button from **bRtE**. The meter shows one of the following:
 - **M.brt** Medium Brightness
 - **L.brt** Low Brightness
 - **H.brt** **High Brightness** (Default)
3. Press the **▲/NT/GRS** button to toggle between available choices.
4. Press the **MENU** button to store your selection. The meter momentarily shows **SErD** followed by **SErD**, **RSE**, **SErN**, then measured value.

Table 5-1. Display Messages

MESSAGE	DESCRIPTION
SEEN	Strain Meter
RSE	Hard (power on) Reset
INPE	Input Type
DEC.P	Decimal Point Position
Rd.S.O	Reading Scale and Offset
Rd.CF	Reading Configuration
COLR	Display Color <small>NEW</small>
S1.CF	Setpoint 1 Configuration
S2.CF	Setpoint 2 Configuration
S1.db	Setpoint 1 Deadband
S2.db	Setpoint 2 Deadband
OE.CF	Output Configuration
OE.S.O	Output Scale and Offset
LK.CF	Lock Out Configuration
bR.te	Display Brightness <small>NEW</small>
+OL	+ Overload Signal
-OL	- Overload Signal
RS.OF	Resolution Overflow
+999	Value Overflow in Setpoint/Menu Routines
-999	Value Overflow in Setpoint/Menu Routines
NE.OF	Net Value Overflow
GE.OF	Gross Value Overflow
ERI	2 Coordinate Format Programming Error
PEAK	Peak Value
PK.RS	Peak Reset
T.RS	Tare Reset
SP.RS	Setpoint Reset
NET	Net Value
GROS	Gross Value
SP1	Setpoint 1 Value
SP2	Setpoint 2 Value
R.OV.S	Resolution Over Scale
V.-8.8	Firmware Version (where 8 is 0 ~ 9)
RUN	Operating Mode

Menu Configuration Displays

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	Show input choices:	1000 (Default) ±500 104 ±54 0-20
DEC.P	Show current decimal point position	FFFF (Default) F.FFF FF.FF FFF.F
(Reading Scale & Offset) Rd.5.0	<p>1 Shows 1N1 Shows prior value entered and flashing digit. Scrolls to the next digit.</p> <ul style="list-style-type: none"> If ►/TARE is pressed, actual input is shown and can not be changed with ▲/NT/GRS. If ▲/NT/GRS is pressed, unit can scroll through digits with ►/TARE. <p>3 Shows prior value entered and flashing digit. Scrolls to the next digit.</p> <p>5 Shows prior value entered and flashing digit. Scrolls to the next digit.</p> <ul style="list-style-type: none"> If ►/TARE is pressed, actual input is shown and can not be changed with ▲/NT/GRS. If ▲/NT/GRS is pressed, unit can scroll through digits with ►/TARE. <p>7 Shows prior value entered and flashing digit. Scrolls to the next digit.</p>	<p>Changes the value of the flashing digit</p> <p>Changes the value of the flashing digit</p> <p>Changes the value of the flashing digit</p> <p>Changes the value of the flashing digit</p>
2 Enter new value and show Rd.1		
4 Enter new value and show 1N2		
6 Enter new value and show Rd.2		

Menu Configuration Displays

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/NT/GRS
Reading Configuration Rd.CF	R.1= R.2= R.3= R.4=	R.1=R (<i>Ratiometric Reading</i>) R.1=N (Non-ratiometric reading) R.2=0 (1 μ V resolution for unipolar & 5 μ V resolution for bipolar) R.2=1 (2 μ V resolution for unipolar & 10 μ V resolution for bipolar) R.2=2 (3 μ V resolution for unipolar & 15 μ V resolution for bipolar) R.2=3 (5 μ V resolution for unipolar & 25 μ V resolution for bipolar) R.2=4 (10 μV resolution for unipolar & 25 μV resolution for bipolar) <i>Note: 3 μV resolution means if your input is 0-30 mV, at 30 mV the display shows 9999.</i> R.3=F (<i>Filtered value</i>) R.3=U (Unfiltered value) R.4=G (<i>Gross/Net Display</i>) R.4=P (Peak Display)
Display Color Selection COLR	Show input choices:	GRN (Green) RED (Red) AMBR (Amber)
Setpoint 1 Configuration S1.CF	S.1= S.2= S.3=	S.1=A (<i>Active above</i>) S.1=b (Active below) S.2=U (<i>Unlatched</i>) S.2=L (Latched) S.3=N (<i>Net Reading</i>) S.3=G (Gross Reading)
Setpoint 2 Configuration S2.CF	S.1= S.2= S.3=	S.1=A (<i>Active above</i>) S.1=b (Active below) S.2=U (<i>Unlatched</i>) S.2=L (Latched) S.3=N (<i>Net Reading</i>) S.3=G (Gross Reading)



Menu Configuration Displays

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/NT/GRS
Setpoint 1 Deadband 51.db	Press to scroll to the next digit to the right	Press to change the value of the flashing digit
Setpoint 2 Deadband 52.db	Press to scroll to the next digit to the right	Press to change the value of the flashing digit
Output Configuration 0t.CF	<p>0.1 =</p> <p>0.2 =</p> <p>0.3 =</p>	<p>0.1 = E (<i>Analog output is enabled</i>)</p> <p>0.1 = d (Analog output is disabled)</p> <p>0.2 = C (<i>Analog output is current</i>)</p> <p>0.2 = V (Analog output is voltage)</p> <p>0.3 = N (<i>Net reading</i>)</p> <p>0.3 = G (Gross Reading)</p>
Output Scale & Offset 0t.5.0 (Shown if 0.3 = N in Output Configuration Menu 0t.CF)	<p>1 Shows Rd1 Shows prior value entered and flashing digit. Scrolls to the next digit.</p> <p>3 Shows prior value entered and flashing digit. Scrolls to the next digit.</p> <p>5 Shows prior value entered and flashing digit. Scrolls to the next digit.</p> <p>7 Shows prior value entered and flashing digit. Scrolls to the next digit.</p>	<p>Changes the value of the flashing digit</p> <p>Changes the value of the flashing digit</p> <p>Changes the value of the flashing digit</p> <p>Changes the value of the flashing digit</p>
<p>2 Enter new value and show 00t.1</p> <p>4 Enter new value and show Rd2</p> <p>6 Enter new value and show 00t.2</p>		

Menu Configuration Displays

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)






MENU	►/TARE	▲/NT/GRS
Lock Out Configuration 	RS= SP= L3=	RS= E (<i>Enable RESET button in the Run Mode</i>) RS= d (<i>Disable RESET button in the Run Mode</i>) SP= E (<i>Enable setpoint changes</i>) SP= d (<i>Disable setpoint changes</i>) L3= 0 (<i>SETPTS button display setpoint values</i>) L3= 1 (<i>SETPTS button display firmware version N.-B.B</i> where B is 0 ~ 9)
Brightness Configuration 	Shows input choices	M.b-r-E (<i>Medium Brightness</i>) L.b-r-E (<i>Low Brightness</i>) H.b-r-E (<i>High Brightness</i>)



Table 6-2. Run Mode Displays

Display	►/TARE	▲/NT/GRS	RESET	Description
		Displays NET or GROSS reading. Once reading shows, respective value shows.		Peak Reading Toggle between Net and Gross values.
	Press to activate.		Will reset your tare when viewing this function.	Tare Reset
				Reset Latched Alarms Pressing the RESET button resets your latched alarms.

Setpoint Configuration Displays

SECTION 7. SETPOINT CONFIGURATION DISPLAYS

Table 7-1. Setpoint Configuration Displays

MENU	▶/TARE	▲/NT/GRS	Description
	Press to scroll to the next digit to the right	Press to change the value of the flashing digit	SETPOINT 1 Select from -1999 through 9999
	Press to scroll to the next digit to the right	Press to change the value of the flashing digit	SETPOINT 2 Select from -1999 through 9999

SECTION 8. SPECIFICATIONS

SIGNAL INPUT

Input Ranges:	0-100 mV, ± 50 mV, 0-10 V, ± 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) = 60 dB Common Mode Rejection (CMR) = 120 dB
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



"Big" Display:	4-digit, three color programmable 9-segment, LED 21 mm (0.83")
Symbol:	0000 (-1.9.9.9 ~ 9.9.9.9)
Standard Display:	4-digit, 14-segment LED, 13.8 mm (0.54")
Symbol:	0000 (-1.9.9.9 ~ 9.9.9.9.)

ANALOG TO DIGITAL

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

ACCURACY AT 25°C

Max Error Strain:	$\pm 0.03\%$ of reading, ± 1 count	
Span Tempco:	50 ppm/ $^{\circ}$ C	
Step Response:	1 sec	
Warm Up to Rated Accuracy:	30 min	
Excitation Voltage:	<u>AC power units</u> 24 V @ 25 mA, 12 V @ 50 mA, 10 V @ 120 mA, 5 V @ 60 mA	<u>DC power units</u> Refer to Table 8-1 Color chart for DC Output Excitation
Load Regulation:	1.1%	
Line Regulation:	0.02% per Vac	

SECTION 8. SPECIFICATIONS (Continued)

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 Vdc

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.

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

Isolation 130 Vrms working voltage, 1000 V/60sec Dielectric test



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

SECTION 8. SPECIFICATIONS (Continued)**INPUT POWER INFORMATION**

AC units	115/230 V~(AC) \pm 10%, 50/60 Hz 9.5 W max, power consumption (Non-Isolated Analog Out) 11.0 W max, power consumption (Isolated Analog Out)
DC units	12-32 Vdc 8 W Do not use a combination of dc power and internal excitation or Isolated Analog Out, unless using dc power of 20-32 Vdc. Refer to Table 8-1 below.
External Fuse Required:	

IEC 127-2/III	
Power	Fuse
115 V	125 mA @ 250 (T)
230 V	63 mA @ 250 (T)
UL 248-14 (Listed Fuse)	
Power	Fuse
115 V	175 mA @ 250 V Slow-Blow
230 V	80 mA @ 250 V Slow-Blow

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
Protection:	NEMA-4/Type 4 Front Bezel

SECTION 8. SPECIFICATIONS (Continued)

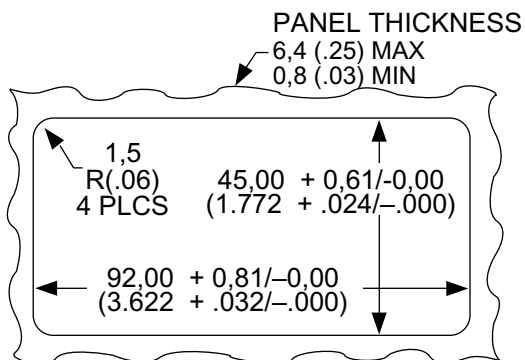
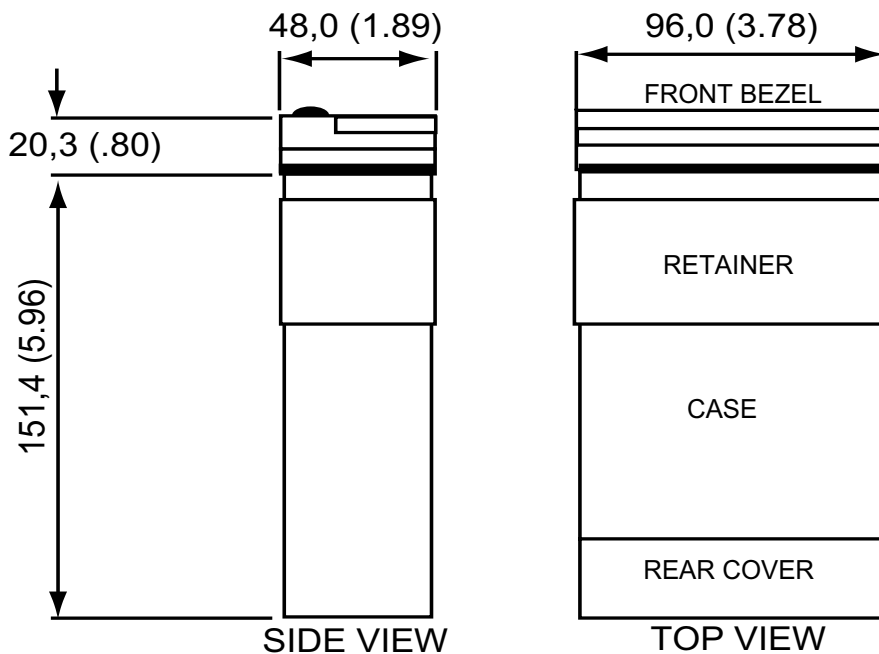
Table 8-1. COLOR CHART FOR DC POWER

COLOR	HIGH BRIGHTNESS	MEDIUM & LOW BRIGHTNESS
RED	Sensor Excitation: 24 V @ 25 mA, 12 V, 10 V, 5 V @ 35 mA Max Analog Output: Non-Isolated option only	Any combination of Sensor Excitation and Analog Output 24 V @ 25 mA, 12 V @ 35 mA Max 10 V @ 35 mA Max 5 V @ 35 mA Max Analog Output: Non-Isolated options or Isolated Analog option
GREEN	Warning: • Do not use Internal Excitation. Use External Excitation.	
AMBER	• Do not use Isolated Analog Output. Use Non-Isolated Analog Output.	

Note

HIGH/LOW Brightness and AMBER are only available on Version “B” meters. Standard display meters are MEDIUM Brightness.

SECTION 8. SPECIFICATIONS (Continued)



NOTE: Dimensions in Millimeters (Inches)

Figure 8-1 Meter Dimensions/ Panel Cutout

Factory Preset Values


SECTION 9. FACTORY PRESET VALUES

Table 9-1. Factory Preset Values

MENU ITEM	FACTORY PRESET VALUES
INPE	Input Type: 0-100 (0-100 mV) input
DECP	Decimal Point Position: FFFF
Rd.S.0	Reading Scale and Offset: 0-100 mV = 0-1000
Rd.CF	Reading Configuration: R.1=R (Ratiometric) R.2=4 (10 μ V resolution for unipolar & 25 μ V resolution for bipolar) R.3=F (Filtered value) R.4=0 (Gross/Net reading)
COLR	Normal Color Display: RED or GRN (Note: depending how unit was ordered)
S1.CF	Setpoint 1 Configuration: S.1=A (Setpoint is Active above) S.2=U (Setpoint is Unlatched) S.3=N (Net reading)
S2.CF	Setpoint 2 Configuration: S.1=A (Setpoint is Active above) S.2=U (Setpoint is Unlatched) S.3=N (Net reading)
S1.db	Setpoint 1 Deadband: 0003
S2.db	Setpoint 2 Deadband: 0003
Ob.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)
Ob.S.0	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 (Display setpoint values)
br.t	H.br.t (Brightness Level)
SP1	Setpoint 1 Value: 0000
SP2	Setpoint 2 Value: 0000
Sensor Excitation	10 Vdc



CE APPROVALS INFORMATION

 This product conforms to EMC 2014/30/EU (EMC directive)

Electrical Safety: 2014/35/EU (Low Voltage Directive)

Safety requirements for electrical equipment for measurement, control and laboratory.

Double Insulation

Pollution Degree 2

Dielectric withstand Test per 1 min

- Power to Input/Output: 2300 Vac (3250 Vdc)
- Power to Input/Output: 500 Vac (720 Vdc)
(Low Voltage dc Power Option*)
- Power to Relays Output: 2300 Vac (3250 Vdc)
- Relay 1 to Relay 2: 2300 Vac (3250 Vdc)
- Isolated Analog to Inputs: 1000 Vac (1420 Vdc)
- Analog to Inputs: No Isolation

Measurement Category I

Category I are measurements performed on circuits not directly connected to the Mains Supply (power). Maximum Line-to-Neutral working voltage is 50 Vac/dc.

This unit should not be used in Measurement Categories II, III, IV.

Transients Overvoltage Surge (1.2 / 50uS pulse)

- Input Power: 2500 V
- Input Power: 500 V
(Low Voltage dc Power Option*)
- Isolated Analog: 500 V
- Input/Output Signals: 500 V

Note: *Units configured for external low power dc voltage, 10-32 Vdc (Basic Insulation)

****I/O signal and control lines require shielded cables and these cables must be located on conductive cable trays or in conduits. Furthermore, the length of these cables should not exceed 30 meters**

Additional Information

RoHS II: The above product has been declared by the original supplier as Compliant. The manufacturer of this item declares that the product complies with the EEE RoHS II Directive 2011/65/EC.



Refer to the EMC and Safety installation considerations (Guidelines) of this manual for additional information.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **61 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **five (5) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, 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 having been 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 in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'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.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order 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.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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