

INFCP

INFINITY[®] C Process Panel Meter

Operator's Manual



Made in the USA

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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 Digital 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 (on-line calibration)
- * Scaling without known loads
- * Enabling/disabling the front-panel tare
- * Displaying the filtered/unfiltered input signal
- * Setting the setpoint's active band
- * Selecting a latched or unlatched operation
- * Setting setpoint deadbands
- * Enabling/disabling setpoint changes
- * Enabling/disabling the RESET button in the run mode

Optional Procedures:

- * Setting input resolution
- * Enabling/disabling analog output
- * Selecting analog output as current or voltage
- * Selecting analog output or proportional control
- * Selecting proportional band
- * Using manual reset (offsetting setpoint errors)
- * Scaling analog output

Table A-1. Sections of the Manual

If you want to read about:	Refer to section	
Unpacking; safety considerations	1	Introduction
Meter description and features	2	About the Meter
Main board power jumpers; panel mounting, sensor input, main power and analog and relay output	3	Getting Started
Input type; decimal point position; reading scale & offset; reading configuration: setpoint configuration; setpoint deadbands, output configuration (analog output); proportional band; manual reset, analog output scaling, lock out configuration	4	Configuring the Meter
Display messages	5	Display Messages
Meter menu/sub-menu messages	6	Menu Configuration
Setpoint configuration messages	7	Setpoint Configuration Displays
Specifications	8	Specifications
Factory Preset Values	9	Factory Default Setup as Shipped

Table of Contents

Section		Page
SEC 1	INTRODUCTION	1
1.1	Unpacking	1
1.2	Safety Considerations	2
SEC 2	ABOUT THE METER	3
2.1	Description	3
2.2	Standard Features/Optional Features	3
2.3	Available Accessories	4
2.4	Front of the Meter	5
2.5	Back of the Meter	8
2.6	Disassembly	11
SEC 3	GETTING STARTED	12
3.1	Rating/Product Label	12
3.2	Main Board Power Jumpers	12
3.3	Panel Mounting	15
3.4	Connecting Sensor Inputs	16
3.5	Connecting Main Power	19
3.6	Connecting External Tare Switch	21
3.7	Connecting Analog and Relay Outputs	21
SEC 4	CONFIGURING THE METER	23
4.1	Selecting the Input Type	23
4.2	Selecting a Decimal Point Position	24
4.3	Selecting Reading Scale and Offset	24
4.3.1	Scaling with Known Loads	25
4.3.2	Scaling without Known Loads	29
4.4	Using Reading Configuration	31
4.4.1	Enabling or Disabling the Front-Panel Tare	31
4.4.2	Setting Input Resolution	32
4.4.3	Displaying the Filtered/Unfiltered Input Signal	32

Table of Contents

Section		Page
4.5	Using Setpoint 1 Configuration	33
4.5.1	Setting Setpoint 1's Active Band	33
4.5.2	Selecting if Setpoint 1 is Latched or Unlatched	33
4.6	Using Setpoint 2 Configuration	34
4.6.1	Setting Setpoint 2's Active Band	34
4.6.2	Selecting if Setpoint 2 is Latched or Unlatched	34
4.7	Setting the Setpoint 1 Deadband	35
4.8	Setting the Setpoint 2 Deadband	35
4.9	Using Output Configuration	37
4.9.1	Enabling or Disabling the Analog Output	37
4.9.2	Selecting Analog Output as Current or Voltage	38
4.9.3	Selecting Analog Output or Proportional Control	38
4.10	Selecting Proportional Band	40
4.11	Using Manual Reset	42
4.12	Using Output Scale and Offset	43
4.13	Using Lock Out Configuration	45
4.13.1	Enabling or Disabling the RESET Button in the Run Mode	45
4.13.2	Enabling or Disabling Setpoint Changes	45
4.13.3	SETPTS Display Function: Software version or Setpoint value	46
SEC 5	DISPLAY MESSAGES	47
SEC 6	MENU CONFIGURATION DISPLAYS	48
SEC 7	SETPOINT CONFIGURATION DISPLAYS	52
SEC 8	SPECIFICATIONS	53
SEC 9	FACTORY PRESET VALUES	57

List of Figures

Figure		Page
2-1	Front-Panel	5
2-2	Connectors (ac-Powered)	8
2-3	Connectors (dc-Powered)	8
3-1	W1 - W3 Main Board Power Jumpers	12
3-2	Main Board Jumper Positions	13
3-3	Upper Option Board Installation	13
3-4	Meter - Exploded View	15
3-5	Panel Cut-Out	15
3-6	3-Wire dc Voltage Input Connections with Internal Excitation	16
3-7	3-Wire dc Voltage Input Connections with External Excitation	16
3-8	4-Wire dc Voltage Input Connections with Internal Excitation	17
3-9	4-Wire dc Voltage Input Connections with External Excitation	17
3-10	dc Current Input Connections with Internal Excitation	18
3-11	dc Current Input Connections with External Excitation	18
3-12	dc Current Input Connections with Current Source	19
3-13	Main Power Connections - ac	19
3-14	Main Power Connections - dc	20
3-15	External Tare Connections	21
3-16	Analog Output Connections	21
3-17	Relay Output Connections	22
3-18	Isolated Analog Output Connections	22
4-1	Alarm Example	36
4-2	Controller Output	40
8-1	Meter Dimensions	56

List of Tables

Table		Page
A-1	Sections of the Manuals	ii
2-1	Accessories and Add-Ons	4
2-2	Connector Description	9
2-3	DIP Switch Positions/Input Range Settings	10
3-1	S3 Jumper Functions	14
3-2	ac-Power Connections	20
4-1	Range Selection Dip Switch Positions for Regular Voltage Input	26
4-2	Range Selection Dip Switch Positions for Millivolt and Milliamp Input	26
4-3	Natural Gain	29
4-4	Input Resolution Multiplier	30
5-1	Display Messages	47
6-1	Menu Configuration Displays	48
6-2	Run Mode Displays	52
7-1	Setpoint Configuration Displays	52
9-1	Factory Preset Values	57

NOTES, WARNINGS and CAUTIONS

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

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



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



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



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

SECTION 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.



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



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.

Note

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

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

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



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

Note

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

EMC Considerations

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

SECTION 2. ABOUT THE METER

2.1 DESCRIPTION

The Digital Programmable Process 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 dc 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 dc 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 Vdc sensor excitation
- * Peak detection and memory
- * Front panel and remote tare function
- * Nonvolatile memory-no battery backup
- * 115 or 230 Vac 50/60 Hz power supply

The following is a list of optional features:

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

2.3 AVAILABLE ACCESSORIES

Table 2-1. Accessories and Add-Ons

Add-On Options	FS	Special Calib/Config
	SPC4	NEMA-4 Splash Proof Cover
	SPC18	NEMA-4 Splash Proof Cover, NEW
Accessories	TP1A	Trimplate panel adaptor. Adapts DIN1A/DIN2A cases to larger panel cutouts
	RP18	19-In. Rack Panel for one (1) 1/8 DIN instrument
	RP28	19-In. Rack Panel for two (2) 1/8 DIN instrument
	RP38	19-In. Rack Panel for three (3) 1/8 DIN instrument

2.4 FRONT OF THE METER

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

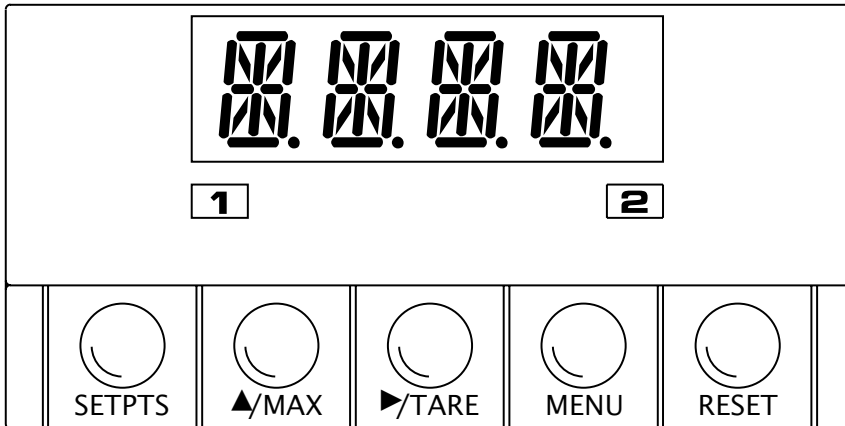


Figure 2-1. Front-Panel

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

2.4 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 **▲/MAX** and **▶/TARE** buttons to alter these settings, then press the **SETPTS** button to store new values.

Unless you press the **SETPTS**, **▶/TARE**, or **▲/MAX** 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 or if the L.3=1 on the "LK.CF" menu, pressing the setpts button will display "v.-03" which is the meter's software version.

▲/MAX Button

In the run mode, this button will recall the **PEAK** reading since the last press of the **RESET** button.

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=T**" or "**R.1=N**" on **RD.CF** menu. When configuring your setpoint values, press the **▲/MAX** 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) if you configure the Reading Configuration bit "**R.1=T**" of the **RD.CF** menu. If you configure **R.1 = N**, the **▶/TARE** button has no function.

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

2.4 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.

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 "**PROC**".

In the run mode, press the **RESET** button to reset tare, if any. The meter shows "**T.RST**" and returns to the run mode.

In the configuration mode, press the **RESET** button once to review the previous menu. Press the **RESET** button twice to perform a hard reset and return to the run mode.

In the peak mode, press the **RESET** button to reset peak values. The meter shows "**PK.RS**" and returns to the run mode.

In the setpoint mode, press the **RESET** button to reset the latched setpoint. The meter shows "**SP.RS**" and enters the run mode.



Note

When in setpoint or configuration mode, if the meter shows 9999 or -1999 with all flashing digits, the value has overflowed. Press the ▲/MAX button to start a new value.

2.5 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.

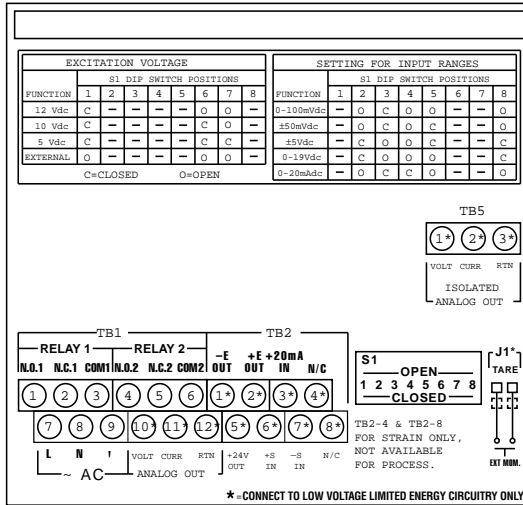


Figure 2-2. Connectors (ac-Powered)

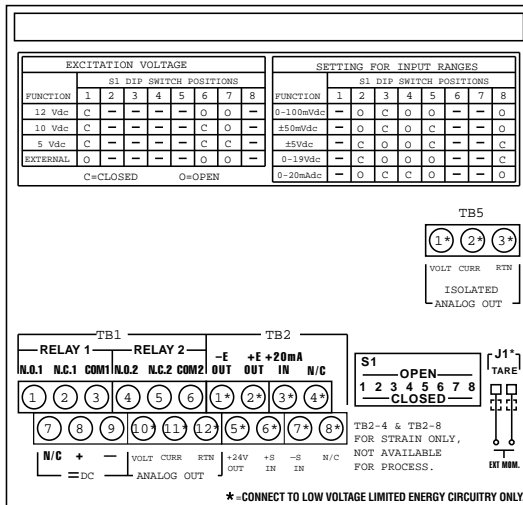


Figure 2-3. Connectors (dc-Powered)

2.5 BACK OF THE METER (Continued)

Table 2-2. Connector Description

Connector	Description
TB1-1	Setpoint 1: Normally open (N.O.1) connection
TB1-2	Setpoint 1: Normally closed (N.C.1) connection
TB1-3	Setpoint 1: Common (COM1) connection
TB1-4	Setpoint 2: Normally open (N.O.2) connection
TB1-5	Setpoint 2: Normally closed (N.C.2) connection
TB1-6	Setpoint 2: Common (COM2) connection
TB1-7	ac line connection (no connections on dc-powered units)
TB1-8	ac neutral connection (+ Input on dc-powered units)
TB1-9	ac earth ground (dc-power return on dc-powered units)
TB1-10	Analog voltage output
TB1-11	Analog current output
TB1-12	Analog return
TB2-1	-E: Negative excitation connection from meter (5, 10, 12 V)
TB2-2	+E: Positive excitation connection from meter (5, 10, 12 V)
TB2-3	+20 mA connection for analog input
TB2-4	Not used.
TB2-5	+24 V output connection
TB2-6	+S: Positive signal input
TB2-7	-S: Negative signal input and return for +20 mA or +24 V.
TB2-8	Not used
TB5-1	Isolated Analog Voltage Output
TB5-2	Isolated Analog Current Output
TB5-3	Isolated Analog Output Return
J1 (1-2)	Remote tare connection with a momentary switch.

2.5 BACK OF THE METER (Continued)

The DIP switches are located at the S1 position (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. DIP Switch Positions/Input Range & Excitation Voltage Settings

Function	S1 DIP Switch Positions							
C= Closed O= Open	1	2	3	4	5	6	7	8
Settings for Excitation Voltage								
Internal 5/10/12 excitation	C	-	-	-	-	-	-	-
External 5/10/12 excitation	O	-	-	-	-	-	-	-
Internal 12 Vdc excitation	C	-	-	-	-	O	O	-
Internal 10 Vdc excitation	C	-	-	-	-	C	O	-
Internal 5 Vdc 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 Vdc	-	C	O	O	C	-	-	C
0-10 Vdc	-	C	O	O	O	-	-	C
0-20 mA dc	-	O	C	C	O	-	-	O

2.6 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:

- Disconnect the main power from the meter.
- Remove the back case cover.
- Lift the back of the main board upwards and it slide out of the case.

SECTION 3. GETTING STARTED



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

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

3.1 RATING/PRODUCT LABEL

This label is located on top of the meter housing (refer to Figure 3-3).

3.2 MAIN BOARD POWER JUMPERS (refer to Figure 3-1)



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.**

Note: W4 jumper is not used.

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

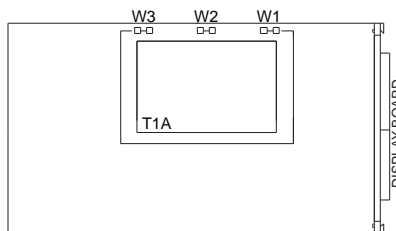


Figure 3-1. Main Board Power Jumpers (W1, W2, W3)

3.2 MAIN BOARD POWER JUMPERS (Continued)

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

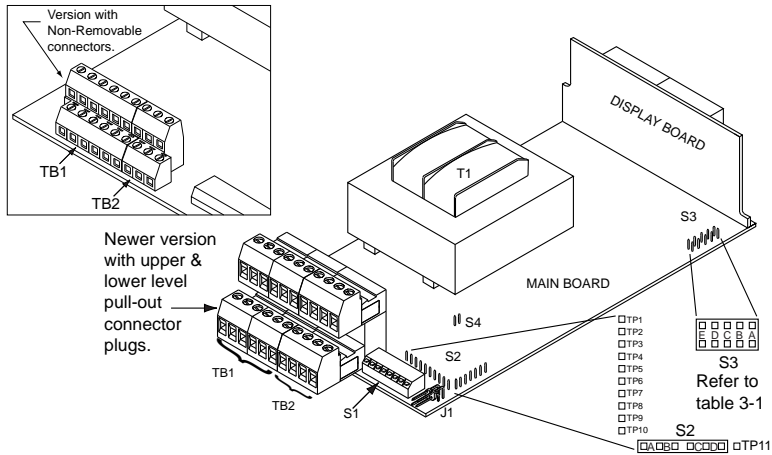


Figure 3-2. Main Board Jumper Positions

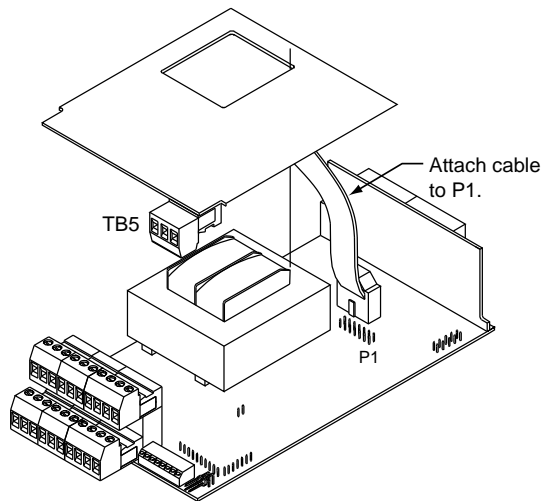


Figure 3-3. Upper Option Board Installation

3.2 MAIN BOARD POWER JUMPERS (Continued)

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

S3 jumpers are used for the following (refer to Figure 3-2):

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

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

Table 3-1. S3 Jumper Functions

Jumper	Description
S3-A	Install to enable front panel push-buttons. Remove to disable all front panel push-buttons
S3-B	Removed. Install for meter calibration.
S3-C	Normally removed. Install for analog output when load is less than 1 K Ω impedance. Care should be taken when installing this jumper.
S3-D	Removed. Not used.
S3-E	If installed without S3-B, the MENU button locks out. If you press the MENU button, the meter shows " LOCK ".

3.3 PANEL MOUNTING

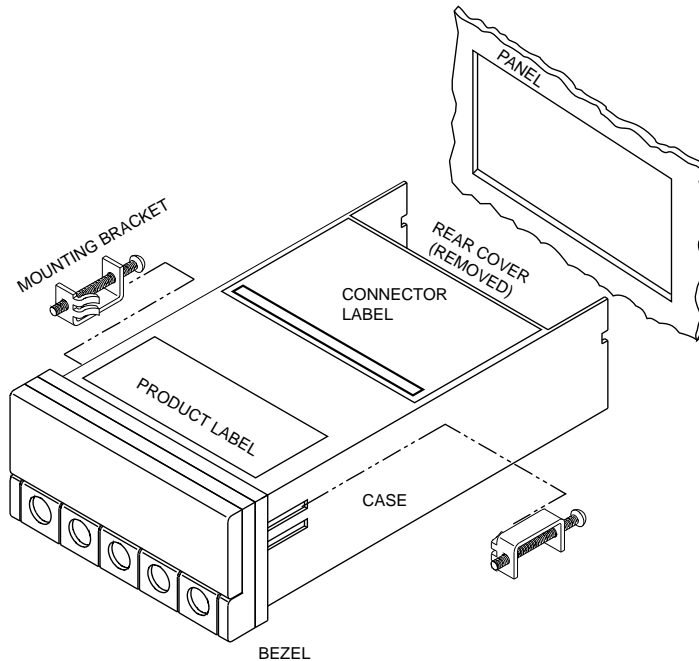
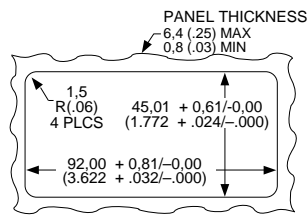


Figure 3-4. Meter - Exploded View

1. Cut a hole in your panel, as shown in Figure 3-3. For specific dimensions refer to Figure 3-4.
2. Insert the meter into the hole. Be sure the front bezel is flush to the panel.



NOTE: Dimensions in Millimeters (Inches)

Figure 3-5. Panel Cut-Out

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

3.4 CONNECTING SENSOR INPUTS

Figures 3-5 through 3-11 describe how to connect your sensors.

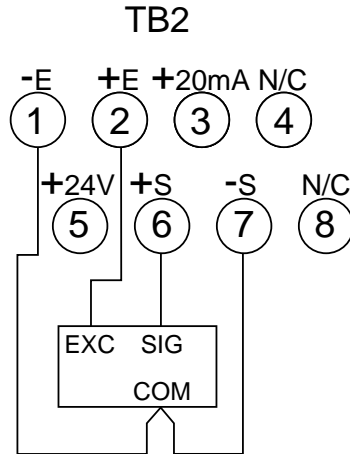


Figure 3-6. 3-Wire dc Input Connections with Internal Excitation

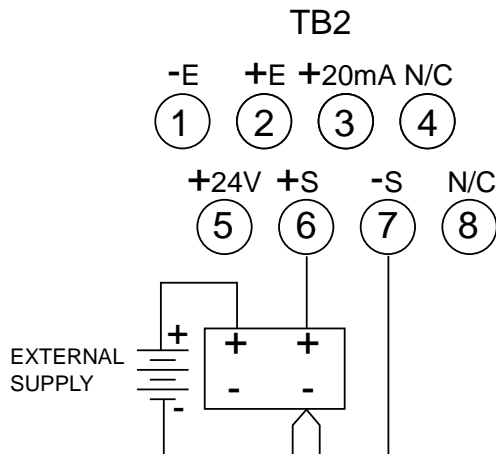


Figure 3-7. 3-Wire dc Input Connections with External Excitation

3.4 CONNECTING SENSOR INPUTS (Continued)

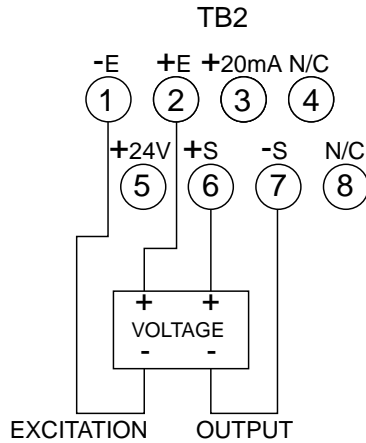


Figure 3-8. 4-Wire dc Input Connections with Internal Excitation

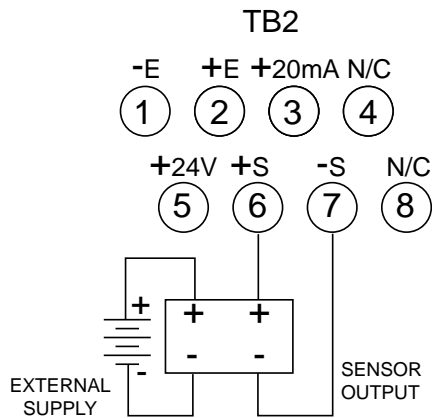


Figure 3-9. 4-Wire dc Input Connections with External Excitation

3.4 CONNECTING SENSOR INPUTS (Continued)

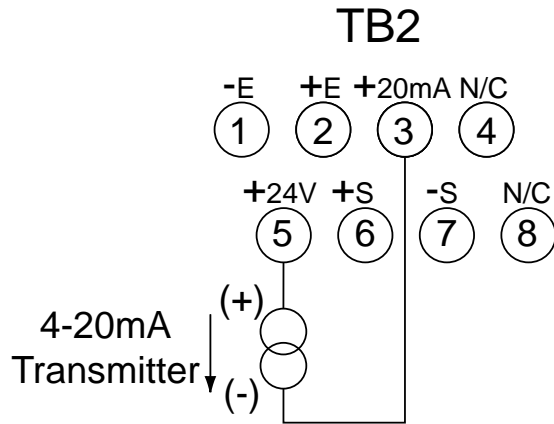


Figure 3-10. dc Current Input Connections with Internal Excitation

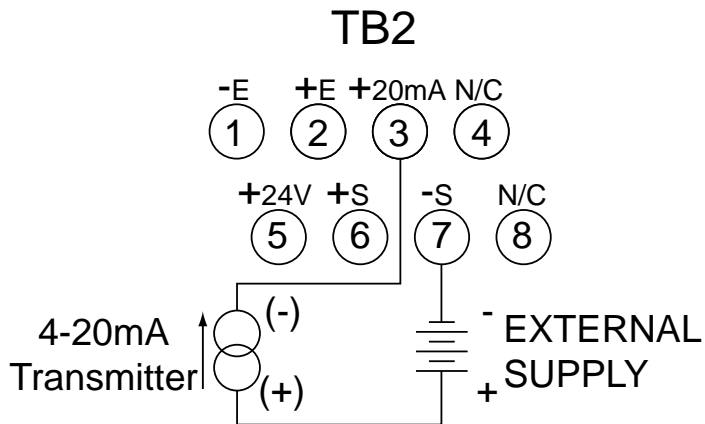


Figure 3-11. dc Current Input Connections with External Excitation

3.4 CONNECTING SENSOR INPUTS (Continued)

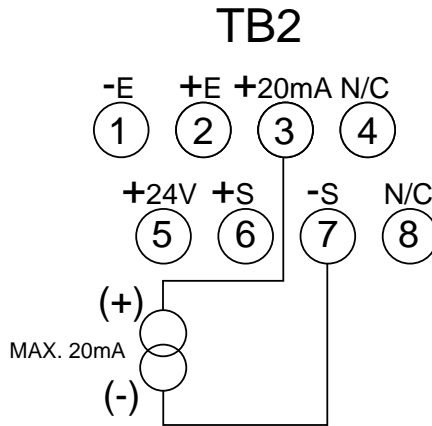


Figure 3-12. dc Current Input Connections with Current Source

3.5 CONNECTING MAIN POWER

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



WARNING: Do not connect ac power to your meter until you have completed all input and output connections. Failure to do so may result in injury!

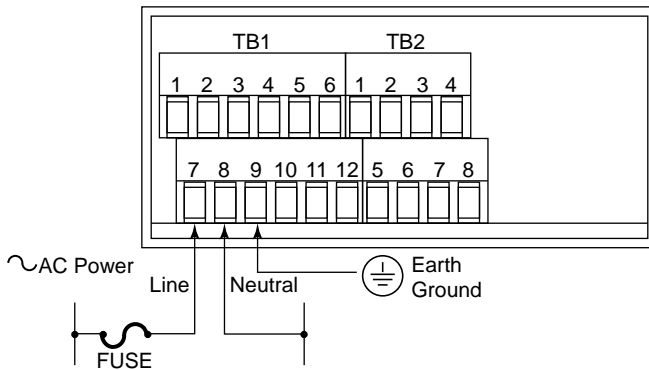


Figure 3-13. Main Power Connections - ac

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 3-13.

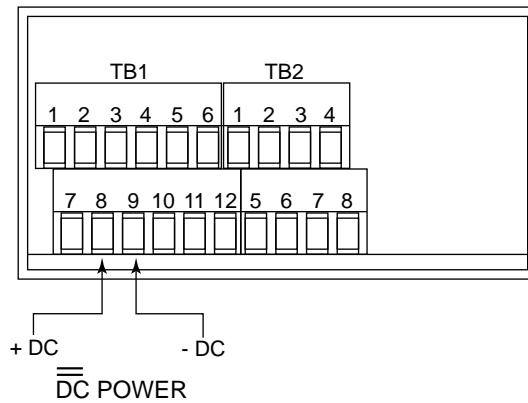


Figure 3-14. Main Power Connections - DC

3.6 CONNECTING EXTERNAL TARE SWITCH

Connect external tare connections as shown in Figure 3-14.

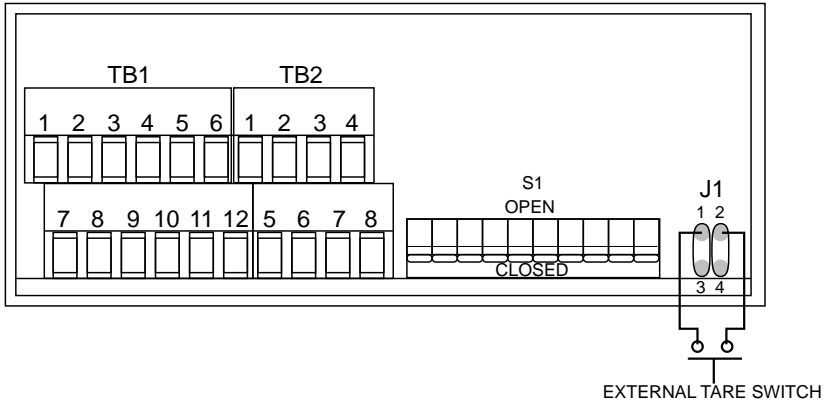


Figure 3-15. External Tare Connections

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.

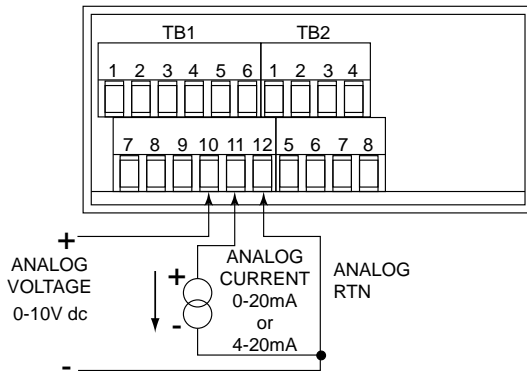


Figure 3-16. Analog Output Connections

3.7 CONNECTING ANALOG AND RELAY OUTPUTS (Continued)

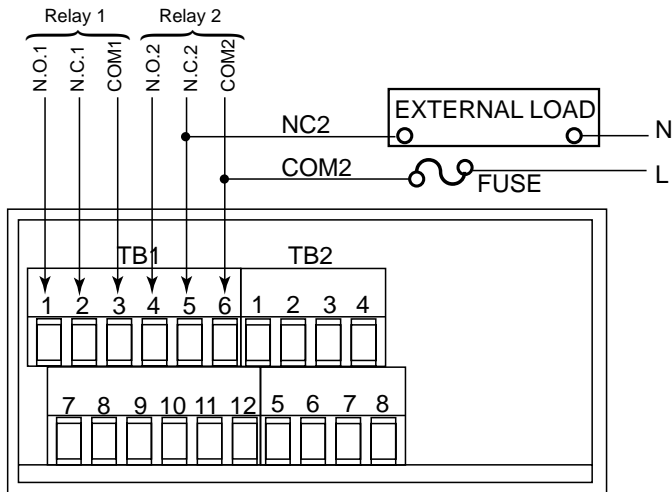


Figure 3-17. Relay Output Connections.

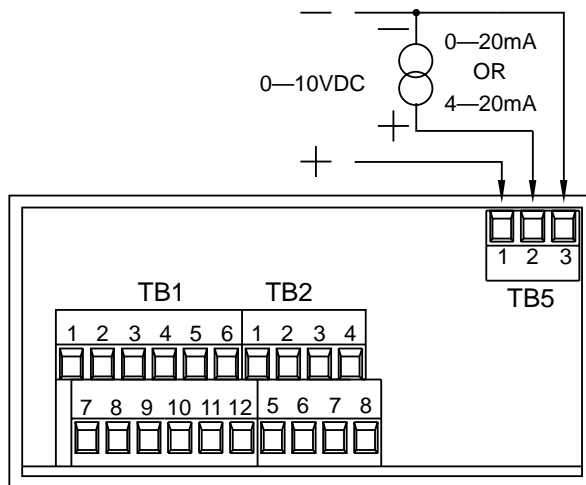


Figure 3-18. Isolated Analog Output Connections.

SECTION 4. CONFIGURING THE METER

Note

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

4.1 SELECTING THE INPUT TYPE (INPT)

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

Note

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

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:
 - **FFFF**. (Default)
 - **FFF.F**
 - **FF.FF**
 - **F.FFF**
3. Press the **▲/MAX** 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.O**" (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.O)

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.

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.

Note

- 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 chart.

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

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

12345678 XCOOXXC	12345678 XCOCXXC	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 XOCOXX0	12345678 XCOCXX0	12345678 XOCCOXX0	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

* Reading Configuration

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 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 "**RD 1**" (Read 1).

Note: "RD 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 **▲/MAX** 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 value as "**RD 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 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 **▲/MAX** 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 "**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 the transducer specifications and manually enter them on the keyboard. The following example assumes a pressure transducer with these specifications:

Pressure Range: 0 to 2000 PSI
Output Span: 1 to 5 Vdc

1. Determine the correct values for "IN 1" and "IN 2" based on the transducer 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 pressure range of the transducer ("RD 1" = 0000 and "RD 2" = 2000). Calculate "IN 1" and "IN 2" using the transducer output span and the following equation:

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

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

4.3.2 Scaling Without Known Loads (Continued)

- 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
+/- 5V	1.000	1.000	1.667	2.500	5.000

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

Example: "IN 1" = (1 Volt) x (1000 cts/v) x (1.000) = 1000

"IN 2" = (5 Volt) x (1000 cts/v) x (1.000) = 5000

"RD 1" = 0000

"RD 2" = 2000

- Press **MENU** button until the meter shows "RD.S.O".
- 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 **▲/MAX** button to change the value of your digits.
- Press the **▶/TARE** button to scroll horizontally to the next digit.

4.3.2 Scaling Without Known Loads (Continued)

9. Press the **MENU** button to store this value. The meter shows "**RD 1**".
10. 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 enable or disable the front panel tare
- To set the input resolution of your meter
- To display the filtered/unfiltered signal input value

4.4.1 Enabling or Disabling the Front-Panel Tare

To enable or disable the front-panel tare, follow these steps:

1. Press the **MENU** button until "**RD.CF**" displays.
2. Press the **▶/TARE** button. The meter shows one of the following:
 - "**R.1=T**" (*Tare enabled*) (Default)
 - "**R.1=N**" (Tare disabled)
3. Press the **▲/MAX** button to view last stored selection. Press the **▲/MAX** button to toggle between selections.
4. Press the **▶/TARE** button to select input resolution or press the **MENU** button to store your selection and enter "**Sl.CF**" (Setpoint 1 Configuration)

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 μV for Unipolar inputs. 25 μV for Bipolar inputs

"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

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

2. Press the **▲/MAX** 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 enter **"S1.CF"** (Setpoint 1 Configuration).

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 **▲/MAX** button to toggle between available choices.
3. Press the **MENU** button to store your selections. **"STRD"** momentarily displays, followed by **"S1.CF"** (Setpoint 1 Configuration).

4.5 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

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 setpoint*) (Default)
 - "**S.1=B**" (Active below the setpoint)
3. Press the **▲/MAX** 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.

4.5.2 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 "**S.1**".
The meter shows one of the following:
 - "**S.2=U**" *setpoint 1 to be unlatched* (Default)
 - "**S.2=L**" setpoint 1 to be latched
2. Press the **▲/MAX** 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)

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

4.6.1 Setting Setpoint 2's Active Band

1. Press the **MENU** button until the meter shows "**S2.CF**".
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 **▲/MAX** 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 "**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 **▲/MAX** 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)

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 **▲/MAX** button to change the value of the flashing digit. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
4. Press the **▶/TARE** button to scroll 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)

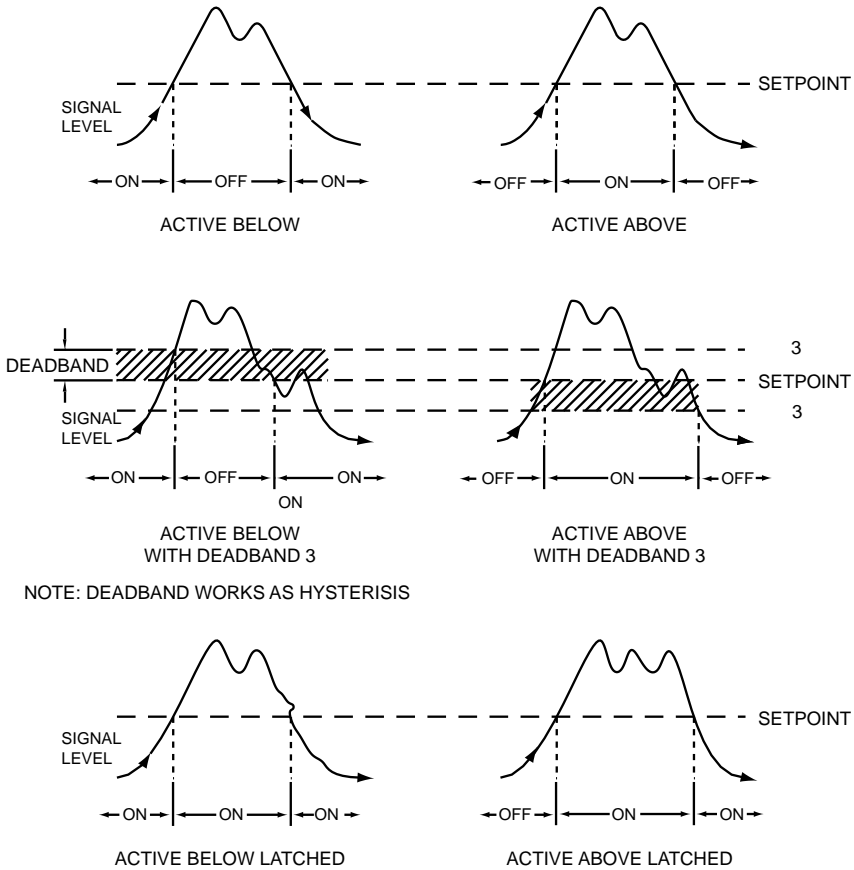
Note 

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 **▲/MAX** button to change the value of the flashing digit. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
4. Press the **▶/TARE** button to scroll to the next digit.
5. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "**OT.CF**" (Output Configuration) if you have analog output capabilities.

Figure 4-1. Alarm Example



To reset latched alarms you must:

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

4.9 USING OUTPUT CONFIGURATION (OT.CF)

Note

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

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. Analog output must be ordered at the time of purchase.

Use Output Configuration (**OT.CF**) to select the following:

- To enable or disable the analog output
- To select if the analog output is current or voltage
- To select if the analog output is regular or proportional

4.9.1 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 "OT.CF".
2. Press the **▶/TARE** button. The meter shows one of the following:
 - "**O.I=E**" (*Analog output enabled*) (Default)
 - "**O.I=D**" (Analog output disabled)
3. Press the **▲/MAX** 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 "**OT.SO**" (Output Scale and Offset).

4.9.2 Selecting Analog Output as Current or Voltage

1. Press the **MENU** button until it shows "OT.CF", then press the **▶/TARE** button twice.
or
Press the **▶/TARE** button from **O.1**.
The meter shows one of the following:
 - "**O.2=C**" (*Analog output = current*) (Default)
 - "**O.2=V**" (Analog output = voltage)
2. Press the **▲/MAX** 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 "**OT.SO**" (Output Scale and Offset).

4.9.3 Selecting Analog Output or Proportional Control



Use this section to select if the meter will transmit an analog signal proportional to the display readings, or proportional to the error signal between the display reading and Setpoint 1.

Proportional Control Analog Option is not available for models without Relay Option.

1. Press the **MENU** button until it shows "OT.CF", then press the **▶/TARE** button twice.
or
Press the **▶/TARE** button from 0.2.
The meter shows one of the following:
 - "**O.3=A**" (*Analog output is regular*) (Default)
 - "**O.3=P**" (Analog output is proportional)
2. Press the **▲/MAX** button to toggle between available choices.

4.9.3 Selecting Analog Output or Proportional Control (Continued)

- 3a. If you select **O.3 to equal A**, press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "**OT.S.O**" (Output Scale and Offset).
- 3b. If you select **O.3 to equal P**, press the **▶/TARE** button. The meter shows one of the following:
 - "**O.4=D**" (Proportional analog output is **DIRECT ACTING**)
 - "**O.4=R**" (Proportional analog output is **REVERSE ACTING**).
4. Press the **▲/MAX** button to toggle between available choices.
5. Press the **MENU** button to store your selections. The meter momentarily shows "**STRD**", followed by "**P.BND**" (Proportional Band).

Additionally, if you select **O.2 to equal V** (Analog output to be voltage), press the **▶/TARE** button. One of the following displays:

- "**O.5=F**" (Proportional 0-10 V analog output)
 - "**O.5=H**" (Proportional 0-5 V analog output).
6. Press the **▲/MAX** button to toggle between available choices.
 7. Press the **MENU** button to store your selections. The meter momentarily shows "**STRD**", followed by "**P.BND**" (Proportional Band).

4.10 SELECTING PROPORTIONAL BAND (P.BND)

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

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

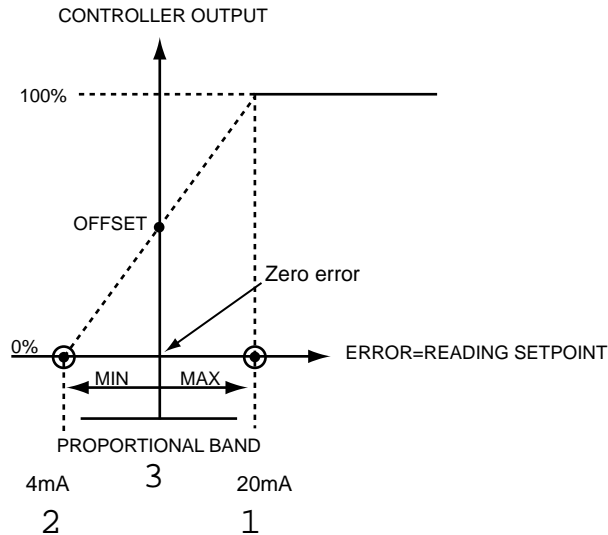


Figure 4-2. Controller Output

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

Note

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

4.10 SELECTING PROPORTIONAL BAND (P.BND) (Continued)

If **A** is the controller gain then,

$$\text{Proportional Band} = \frac{\text{Max. out} - \text{Min. out}}{A}$$
$$\text{CONTROLLER OUT} = A \cdot \text{ERROR} + \text{OFFSET}$$

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

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

If **P.BND** menu doesn't show, set **0.3=P** on Menu **OT.CF**.



Remember to press **▶/TARE** when **OT.CF** is displayed until **0.3=A**, then press **▲/MAX**, unit will show **0.3=P**. Pressing the **MENU** button will store the selection.

2. Press the **▶/TARE** button. The meter shows last previously stored 4-digit number (0000 through 9999) with flashing 4th digit.
3. Press the **▲/MAX** button to change the value of the flashing digit. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
4. Press the **▶/TARE** button to scroll to the next digit.
5. Press the **MENU** button to store your selection. The meter shows "**STRD**", followed by "**M.RST**" (Manual Reset)

4.11 USING MANUAL RESET (M.RST)

Note

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

Manual Reset (**M.RST**) is not active unless your meter has analog output and relay capabilities. The menu will display whether analog output is present or not. This feature allows you to offset the error that may occur with your setpoint. In order to determine the amount of error, you must compare your display value to the setpoint 1 value. The difference between these two values (display - setpoint 1) is the amount of error that you may want to enter into Manual Reset (**M.RST**). The value of **M.RST** must be less than **P.BND/2**. Larger values will not be accepted and the meter will display "**ER 4**" (flashing).

1. Press the **MENU** button until "**M.RST**" displays.

Note

This menu "**M.RST**" and "**P.BND**" will show up if **0.3=P** on **OT.CF**.

2. Press the **▶/TARE** button. The meter shows the last previously stored 4-digit number (-1999 through 9999) with flashing 4th digit.
3. Press the **▲/MAX** button to change the value of the flashing digit. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
4. Press the **▶/TARE** button to scroll to the next digit.
5. Press the **MENU** button to store your selection. "**STRD**" momentarily displays, followed by "**RST**" (Reset).

4.12 USING OUTPUT SCALE AND OFFSET (OT.S.O)

Note

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

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 **MENU** button until "**OT.S.O**" 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 **▲/MAX** 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. "**OUT.1**" (Output 1) displays.

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

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

If you select "O.2=V" for voltage, the maximum signal you may select is 10.00 for an 0-10 Vdc signal output. If you select "O.2=C" for current, the maximum signal you may select is 20.00.

Note

8. Press the **▲/MAX** button to enter the Output 1 signal selection. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
9. Press the **▶/TARE** button to scroll to the next digit.

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

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

Note: This is your second point of display reading.

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 **▲/MAX** button to change the value of the flashing digit. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
13. Press the **▶/TARE** button to scroll to the next digit.
14. 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.

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

If you select "O.2=V" for voltage, the maximum signal you may select is 10.00 for an 0-10 Vdc 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 dc signal output.



16. Press the **▲/MAX** button to change the value of the flashing digit. If you continue to press the **▲/MAX** button, the flashing digit's value continues to change.
17. Press the **▶/TARE** button to scroll to the next digit.
18. Press the **MENU** button to store your selection. The meter momentarily shows "**STRD**", followed by "**LK.CF**" (Lockout Configuration).



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

4.13 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

4.13.1 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**").
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
4. Press the **▲/MAX** button to toggle between available choices.
5. Press the **MENU** button to store the changes. The meter shows "**RST**" if the new value is different otherwise the meter shows "**RUN**" and returns to the run mode.

4.13.2 Enabling or Disabling SETPOINT Changes

1. Press the **MENU** button until the meter shows "**LK.CF**" (after "**OT.S.O**").
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 **▲/MAX** button to toggle between available choices.
4. Press the **MENU** button to store the changes. The meter shows "**RST**" if the new value is different otherwise the meter shows "**RUN**" and returns to the run mode.

4.13.3 SETPOINT Display Function: Software version or Setpoint value

1. Press the **MENU** button until the meter shows "**LK.CF**" (after "**OT.S.O**").
2. 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.
3. Press the **▲/MAX** button to toggle between the choices above.
4. Press the **MENU** button to store the changes. The meter shows "**RST**" if the new value is different otherwise the meter shows "**RUN**" and returns to the run mode.



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
RST	Hard (power on) reset
INPT	Input type
DEC.P	Decimal point
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
P.BND	Proportional band
M.RST	Manual reset
OT.S.O	Output scale and offset
LK.CF	Lock out configuration
±OL	±Overload signal
RS.OF	Resolution overflow
9999	Value overflow in setpoint; menu and peak routines
-1999	Value overflow in setpoint; menu and peak routines
ER1	2 coordinate format programming error
PEAK	Peak value
PK.RS	Peak reset
T.RS	Tare reset
SP.RS	Reset latched alarms
SP1	Setpoint 1 value
SP2	Setpoint 2 value

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	▲/MAX
INPT	Show input choices:	100m ±50m 10 V ±5 V <i>0-20</i>
DEC.P	Show current decimal point position	<i>FFFF.</i> FFF.F FF.FF F.FFF
RD.S.O (Reading Scale & Offset) Enter new value and show " RD 1 " Enter new value and show " IN 2 "	Show IN 1 and prior value entered. Scroll to the next digit to the right Show prior value entered. Scroll to the next digit to the right. Show RD 2 and prior value entered. Scroll to the next digit to the right.	Change the value of the flashing digit. Change the value of the flashing digit. Change the value of the flashing digit.

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/MAX
RD.CF (Reading Configuration)	R.1= R.2= R.3=	<i>T (Tare enabled)</i> N (Tare Disabled) 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) <i>Note: 3 μV resolution means if your input is 0-30mV, at 30mV the display shows 9999.</i> F (Filtered value) U (Unfiltered value)
S1.CF Setpoint 1 Configuration	S.1= S.2=	A (Active above) B (Active below) U (Unlatched) L (Latched)
S2.CF Setpoint 2 Configuration	S.1= S.2=	A (Active above) B (Active below) U (Unlatched) L (Latched)
S1.DB Setpoint 1 Deadband	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

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/MAX
OT.CF* Output Configuration	0.1=	<i>E (Analog output is enabled)</i> D (Analog output is disabled)
	0.2=	<i>C (Analog output is current)</i> V (Analog output is voltage)
	0.3=	<i>A (Regular analog output)</i> P (Proportional analog output)
	0.4=	D (Proportional analog is direct acting) R (Proportional analog is reverse acting)
	0.5=	F (Analog output is 0-10 Vdc) H (Analog output is 0-5 Vdc)
<p><i>Notes:</i> *If you select 0.2=V, you may select your analog output to be 0-10 V or 0-5V by accessing sub-menu 0.5=F or 0.5=H</p> <p>*If 0.3=P, you may select your proportional output analog to be direct 0.4=D (4-20 mA), (0-5V), (0-10v) or reverse acting 0.4=R (20-4 mA), (5V-0V), (10V-0V) .</p>		
P.BND Proportional Band shown menu if 0.3=P	Show prior value entered Scroll to the next digit to the right	Change the value of the flashing digit
M.RST Manual Reset shown menu if 0.3=P	Show prior value entered Scroll to the next digit to the right	Change the value of the flashing digit

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-1. Menu Configuration Displays (Continued)

(Defaults in Bold and Italics)

MENU	►/TARE	▲/MAX
<p>OT.S.O Output Scale & Offset</p> <p>Enter new value and show OUT1</p> <p>Enter new value and show RD 2</p> <p>Enter new value and show OUT2</p>	<p>Show RD1 and prior value entered</p> <p>Scroll to the next digit to the right</p> <p>Show prior value entered.</p> <p>Scroll to the next digit to the right</p> <p>Show prior value entered.</p> <p>Scroll to the next digit to the right</p>	<p>Change the value of the flashing digit</p> <p>Change the value of the flashing digit</p> <p>Change the value of the flashing digit</p>
<p>LK.CF Lock Out Configuration</p>	<p>RS=</p> <p>SP=</p> <p>L3=</p>	<p><i>E (Enable RESET button in the run mode)</i> D (Disable RESET button in the run mode)</p> <p><i>E (Enable setpoint changes)</i> D (Disable setpoint changes)</p> <p><i>0 (SETPTS button display setpoint values)</i> <i>1 (SETPTS button display software “v.-03” version)</i></p>

SECTION 6. MENU CONFIGURATION DISPLAYS (Continued)

Table 6-2. Run Mode Displays

Display	►/TARE	▲/MAX	RESET	Description
PEAK		Displays the peak reading and must be pressed again to return to the normal operating mode without resetting.	Reset the peak reading when in this mode.	Peak Reading Displays the highest reading since last reset.
T.RST	Press to activate		Will reset your tare when viewing this function	Tare Reset
SP.RS				Reset Latched Alarms Pressing the RESET button resets your latched alarms.


SECTION 7. SETPOINT CONFIGURATION DISPLAYS

Table 7-1. Setpoint Configuration Displays

MENU	►/TARE	▲/MAX	Description
SP 1	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
SP 2	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 to Earth Ground:	354 V peak per IEC spacing (3mm) 1500 Vac/dc minimum per 1 min. High Voltage test
Noise Rejection:	Normal Mode Rejection (NMR) = 60dB Common Mode Rejection (CMR) = 120dB
Protection:	240 V rms max for voltage input ranges 200 mA for current input ranges
Resistance:	100 Meg ohms for 100 mV or +50 mV range 1 Meg ohm for 10 V or +5 V range 5 ohms for 20 mA current input
Display Symbols:	LED 14-segment, 13.8 mm (0.54") 

ANALOG TO DIGITAL

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

ACCURACY AT 25°C

Max Error											
Strain/Process:	$\pm 0.03\%$ of reading, ± 1 count										
Span Tempco:	50 ppm/°C										
Step Response:	1 sec										
Warm Up to Rated Accuracy:	30 min										
Excitation Voltage:	<table><thead><tr><th><u>AC power units</u></th><th><u>DC power units</u></th></tr></thead><tbody><tr><td>24 V @ 25 mA,</td><td>24 V @ 25 mA,</td></tr><tr><td>12 V @ 50 mA,</td><td>12 V @ 50 mA,</td></tr><tr><td>10 V @ 120 mA,</td><td>10 V @ 60 mA,</td></tr><tr><td>5 V @ 60 mA</td><td>5 V @ 60 mA</td></tr></tbody></table>	<u>AC power units</u>	<u>DC power units</u>	24 V @ 25 mA,	24 V @ 25 mA,	12 V @ 50 mA,	12 V @ 50 mA,	10 V @ 120 mA,	10 V @ 60 mA,	5 V @ 60 mA	5 V @ 60 mA
<u>AC power units</u>	<u>DC power units</u>										
24 V @ 25 mA,	24 V @ 25 mA,										
12 V @ 50 mA,	12 V @ 50 mA,										
10 V @ 120 mA,	10 V @ 60 mA,										
5 V @ 60 mA	5 V @ 60 mA										
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 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

Note 

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 \pm 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)

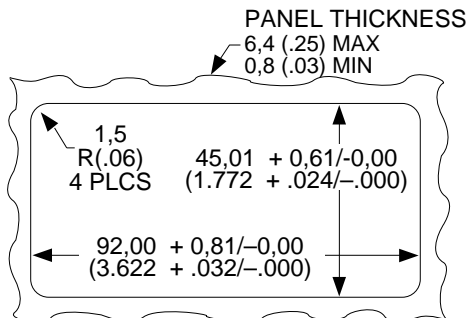
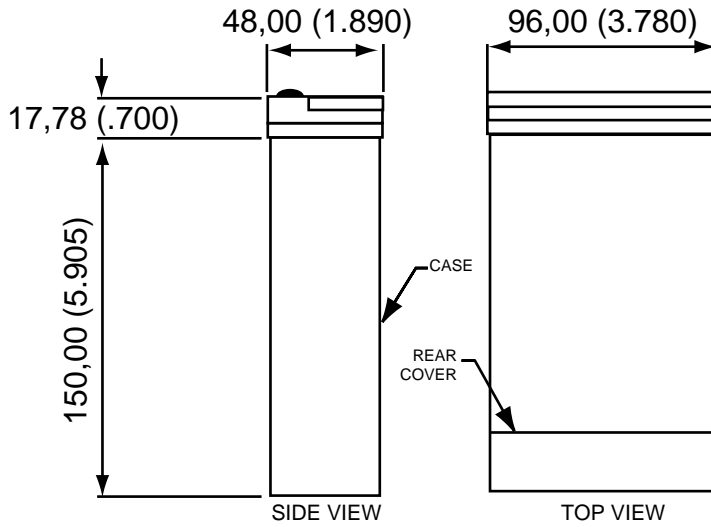
MECHANICAL

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

SECTION 8. SPECIFICATIONS (Continued)



NOTE: Dimensions in Millimeters (Inches)

Figure 8-1

SECTION 9. FACTORY PRESET VALUES

Table 9-1. Factory Preset Values

MENU ITEM	FACTORY PRESET VALUES
INPT	Input Type: 0-20 (0-20 mA dc input)
DEC.P	Decimal Point Position: FFFF.
RD.S.O	Reading Scale and Offset: 4-20 mA dc = 0-1000
RD.CF	Reading Configuration: R.1=T (Tare enabled) R.2=4 (10 μ V resolution for unipolar & 25 μ V resolution for bipolar) R.3=F (Filtered 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	Setpoint 1 Deadband: 0003
S2.DB	Setpoint 2 Deadband: 0003
OT.CF	Output Configuration: O.1=E (Analog output is enabled) O.2=C (Analog output is current) O.3=A (Analog output follows the display value)
OT.S.O	Output Scale and Offset: 0-1000 = 4-20 mA dc
LK.CF	Lock Out Configuration RS=E (Enable the RESET button in the run mode) SP=E (Enable setpoint changes) L3=0 (Display setpoint values)
SP1	Setpoint 1 Value: 0000
SP2	Setpoint 2 Value: 0000
Sensor excitation: 24 V dc	

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

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