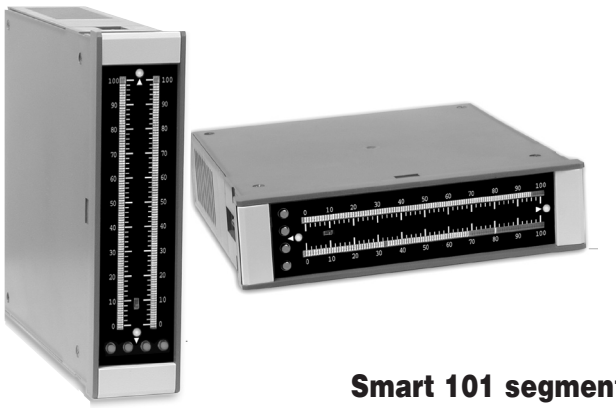


264 SERIES
of
101 Segment Dual Bargraphs

Smart 101 segment dual bargraph with Dual Universal Inputs, an optional isolated analog output and up to four fully programmable set points, for monitoring, measurement, and control applications.

CE

General Features

- Two 10 Amp Form C, and two 5 Amp Form A relays available.
- Auto-sensing AC/DC power supply. For voltages between **85-265 V AC / 95-370 V DC (Z)** or 16-48 / 18-72 V AC / DC (Y).
- Optional isolated 16 bit analog output. User or factory scalable to 4 to 20 mA, 0 to 20 mA or 0 to 10 V across any desired span from one segment to the full scale range.
- Optional NEMA-4 front cover.
- 24 V DC excitation is available to power external 4/20 mA transmitters and 5 or 10 V DC excitation is available for resistance bridge type sensors.

Software Features

- The two 101 segment bargraph can be independently scaled.
- Bargraph center zero function.
- Four programmable setpoints.
- Relay activation can be selected to occur above (HI) or below (LO) each setpoint.

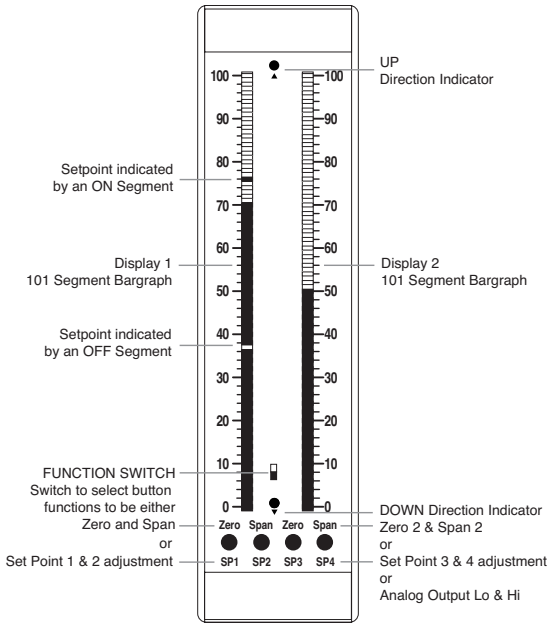
Compatibility

Input Specs: .....Depends on range and function selected
A/D Converter:.....14 bit single slope
Accuracy:.....±(0.05% of reading + 1segment)
Temp. Coeff.: .....100 ppm/°C (Typical)
Warm up time:.....2 minutes
Conversion Rate: .....10 conversions per second (Typical)
Bargraph Display:.....**101 segment 4" vertical dual red bars (std)**, horizontal (optn), **red dual bars (std),** dual green (optn), one red bar and one green bar (optn)
Polarity:.....Selectable center zero
Positive Overrange:..Bargraph display flashes
Negative Overrange:.First segment of bargraph display flashes
Relay Output: .....Two 5 Amp Form A relays and Two 10 Amp Form C relays
Analog Output:.....Isolated 16 bit user scalable mA or V
1: (volts out) ..... 0-10 V DC @ 500 Ω or higher resistance
2: (mA out) .....4-20 mA @ 0 to 500Ω max loop resistance
Power Supply: .....AC/DC Auto sensing wide range supply
Y.....16-48 VAC / 18-72 VDC @ 2.5W max 4.2W
Z (std).....**85-265 VAC / 95-370 VDC @ 2.5W max 4.2W**
Operating Temp.:.....0 to 60°C
Storage Temp: .....–20°C to 70°C
Relative Humidity: ....95% (non condensing)
Case Dimensions:.....3/32 DIN (Bezel 36Wx144Hmm)
Depth behind bezel 135 mm (5.32")
Plus 16 mm (0.63") for connectors
Weight:.....9.5 oz., 12 oz when packed

Ordering Code

RELAYS	POWER SUPPLY	UNIVERSAL PROCESS INPUT	DISPLAY	COLOR	ANALOG OUTPUT
DTV: No Relays	**A: 85 ~ 264V AC**	**: Custom Input	**VS: Vertical**	**RD: Red Bargraph**	_: Custom Output
DTT: Two 10A Form C Relays	**110 ~ 370V DC**	1: 0 ~ 1mA	HS: Horizontal	GN: Green Bargraph	_: 0 ~ 10V
DTF: Two 10A Form C Relays and Two 5A Form A Relays	B: 19 ~ 36V AC/DC	**2: 4 ~ 20mA**		YL: Yellow Bargraph	**_: 4 ~ 20mA**
		3: 0 ~ 1V		: Tricolor Bargraph	_: 0 ~ 20mA
		4: 1 ~ 5V			
		5: 0 ~ 5V			

Controls and Indicators



Quickset Programming

This bargraph features our unique QUICKSET PROGRAMMING. When a front panel button is pressed the associated function is directly changed. The direction of change will be either up or down, as indicated by the UP and DOWN indicator LEDs. After the indicator LED lights up there is a 0.5 second delay before any change occurs. When a button is released and pressed again the direction of change is reversed. As there are no menu or sub-menus to navigate, the programming and setup is quick and easy.

Front Panel Buttons

Display 1 Zero / SP1 Button

This Button sets the Channel 1 low input signal scaling when the Function Switch is in the UP position. This Button sets up the Setpoint SP1 when the Function Switch is in the DOWN position.

Display 1 Span / SP2 Button

The Button sets the Channel 1 high input signal scaling when the Function Switch is in the UP position. This Button sets up the Setpoint SP2 when the Function Switch is in the Down position.

Display 2 Zero / SP3 / Analog Output Lo Button

This button has three functions. When the Function Switch is in the UP position, this Button sets the Channel 2 Lo input signal scaling. When the Function Switch is in the Down position, this button sets up the Setpoint SP3. When the Zero 2 and Span 2 buttons are pressed down and the meter is powered up, then this Button sets the lower level of the Analog Output to 0mA, 4mA or 0V.

Display 2 Span / SP4 / Analog Output Hi Button

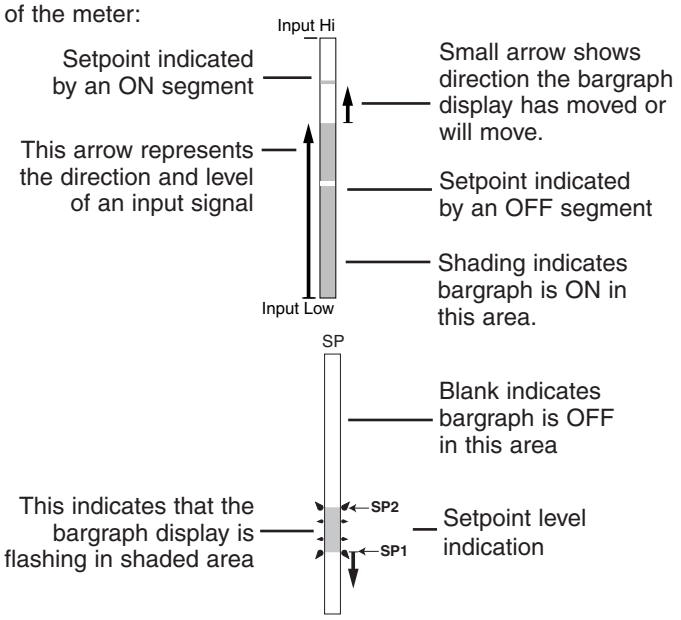
This button has three functions. When the Function Switch is in the UP position, this Button sets the Channel 2 Hi input signal scaling. When the Function Switch is in the Down position, this button sets up the Setpoint SP4. When the Zero 2 and Span 2 buttons are pressed down and the meter is powered up, then this Button sets the higher level of the Analog Output to 4mA, 20mA or 10V.

SP1, SP2, SP3 and SP4 Buttons

These buttons set up the corresponding setpoints. The position of the Set Points on the bargraph display are indicated by an ON or OFF Segment depending on whether the bargraph display is below or above the Set Point.

Glossary of Programming Symbols and Modes of Operation

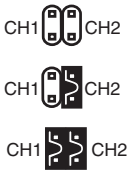
To explain software programming procedures, logic diagrams are used to visually assist in following programming steps. The following symbols are used to represent the functions and displays of the meter:



Relay Activation Mode Select Header

When no jumper clips are installed the relays will activate when the display exceeds the set point. Any relay that has a jumper clip installed will activate when the display is less than the set point.

Standard or Center Zero Display Mode Select Header

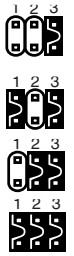


- No jumper clips enables standard display on CH1 and CH2.
- Add jumper clip to enable Center Zero display on selected channel.
- Two jumper clips enable Center Zero display on both CH1 and CH2.

Operating Mode Select Header: This header selects one of the eight operating modes presently available.

Mode 0	Dual inputs channels with two set points per input.
Mode 1	Single input with 4 setpoints displayed on right side bargraph display.
Mode 2	Single input with four set points displayed on left bargraph display with MIN MAX displayed on right side bargraph display.
Mode 12	Single input with two tracking set points adjustable by an external potentiometer.

When a jumper clip is inserted in the Mode 3 position, the Hysteresis function is added.



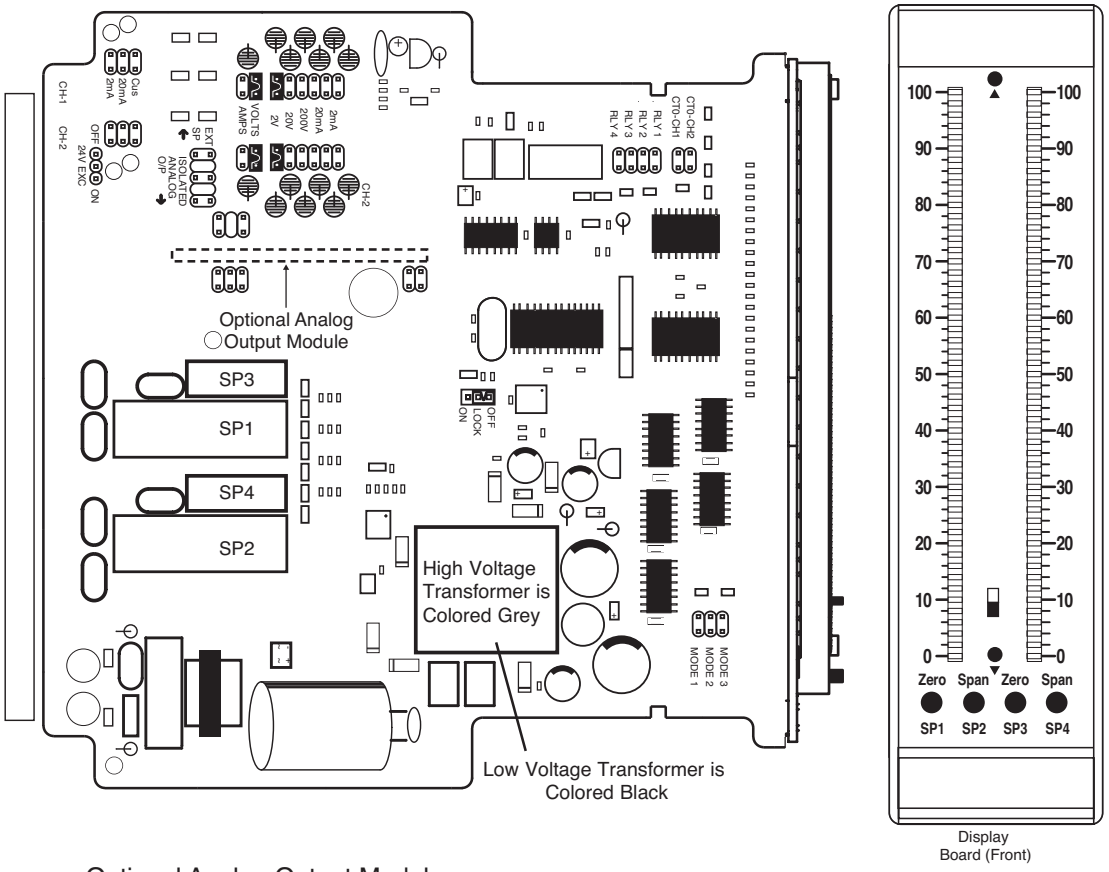
Mode 0 with Hysteresis.

Mode 1 with Hysteresis.

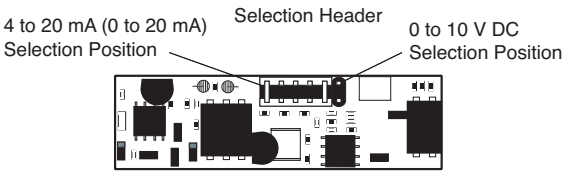
Mode 2 with Hysteresis.

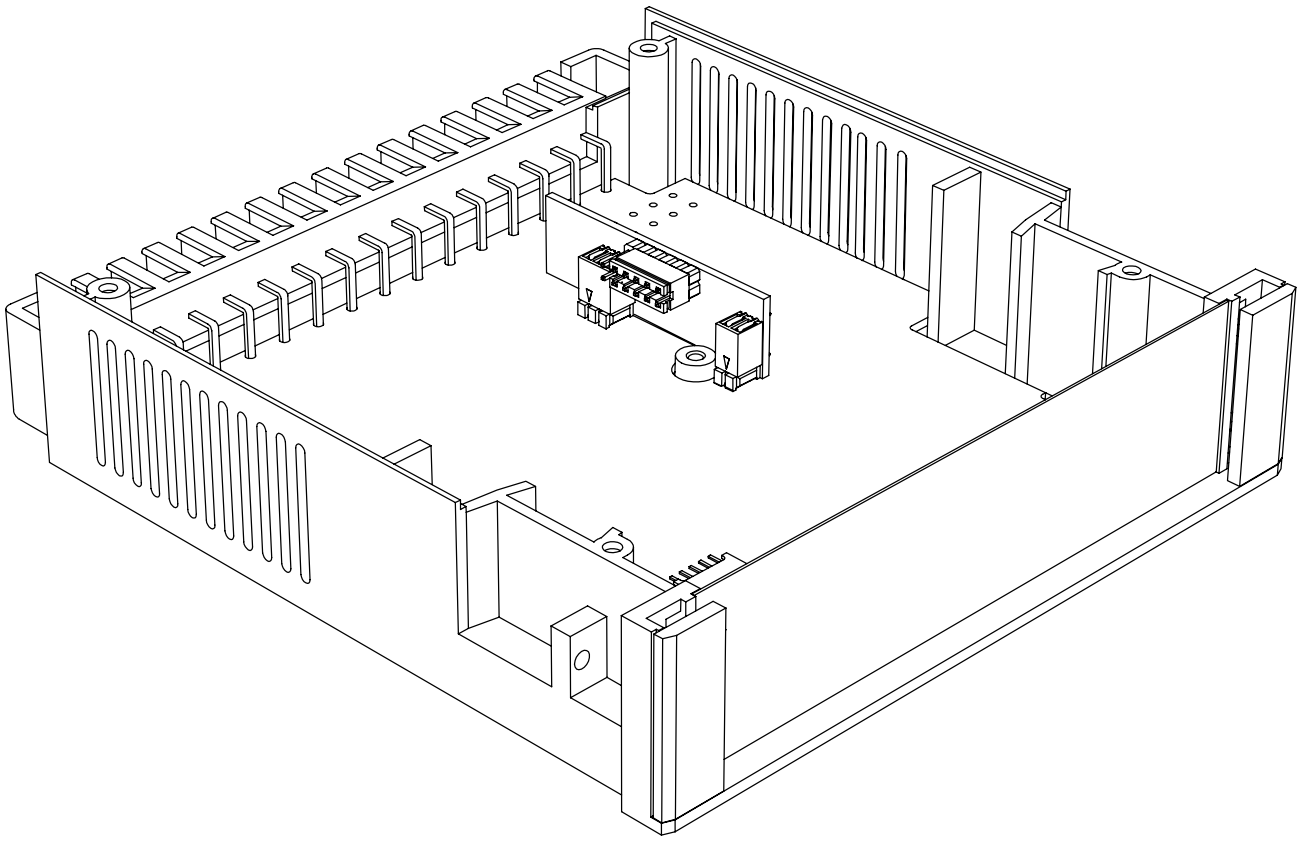
Mode 12 with Hysteresis.

Component Layout

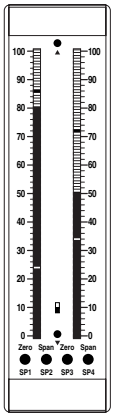


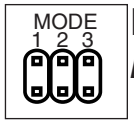
Optional Analog Output Module





Bargraph Display Mode Selection and Calibration





Mode 0

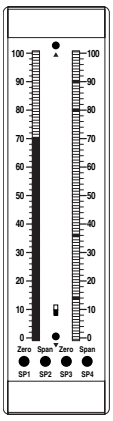
Dual Inputs with Two Setpoints per Display

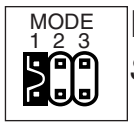
2 Inputs / 2 Displays / 2 Setpoints per Display

- ❑ Display 1 displays input signal 1.
- ❑ Display 1 also displays SP1 and SP2 setpoints.
- ❑ SP1 and SP2 are activated by input signal 1.
- ❑ Display 2 displays input signal 2.
- ❑ Display 2 also displays SP3 and SP4 setpoints.
- ❑ SP3 and SP4 are activated by input signal 2.

Calibration

1) Put the front panel switch into the top position.
2) Calibrate input signal 1 on display 1 using the display 1 ZERO and SPAN buttons.
3) Calibrate input signal 2 on display 2 using the display 2 ZERO and SPAN buttons.
4) Put the front panel switch into the bottom position.
5) Set the position of SP1 and SP2 using buttons SP1 and SP2.
6) Set the position of SP3 and SP4 using buttons SP3 and SP4.





Mode 1

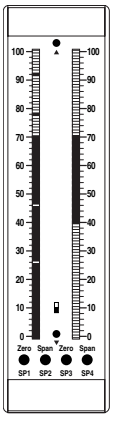
Single Input on Display 1, Four Setpoints on Display 2

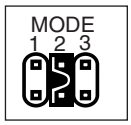
1 Input on Display 1 / Four Setpoints on Display 2

- ❑ Display 1 displays input signal 1.
- ❑ Display 2 displays SP1 to SP4 setpoints.
- ❑ SP1 to SP4 are activated by input signal 1.

Calibration

1) With the Function Switch in the top position, calibrate input signal 1 on display 1 using the display 1 ZERO and SPAN buttons.
2) With the Function Switch in the bottom position, set the four setpoints on display 2 using buttons SP1 to SP4.





Mode 2

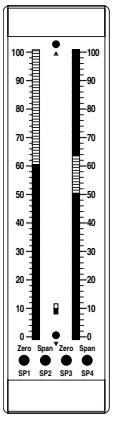
Single Input to Display 1 with Four Setpoints, MIN/MAX on Display 2

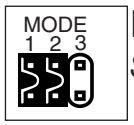
1 Input on Display 1 / Four Setpoints on Display 1 / MIN MAX on Display 2

- ❑ Display 1 displays input signal 1.
- ❑ Display 1 displays SP1 to SP4.
- ❑ Display 2 displays input signal 1 minimum and maximum.

Calibration

1) With the Function Switch in the top position, calibrate input signal 1 on display 1 using the display 1 ZERO and SPAN buttons.
2) With the Function Switch in the bottom position, set the four setpoints on display 1 using buttons SP1 to SP4.
3) MIN/MAX can be reset by pressing buttons SP1 and SP2 at the same time, if the Function Switch is in the bottom position.





Mode 12

Single Input to Display 1, One Floating One Tracking Setpoint on Display 2

1 Input on Display 1 / Two Setpoints on Display 2 / SP1 Floating / SP2 Tracking SP1

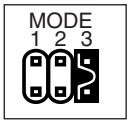
- ❑ Display 1 displays input signal 1.
- ❑ Display 2 displays SP1 and SP2.
- ❑ SP 1 is a floating setpoint that is constantly adjusted by input signal 2.
- ❑ SP 2 tracks SP1.
- ❑ While SP2 is higher than SP1, the segments below SP1 and above SP2 are ON.
- ❑ While SP1 is higher than SP2, the segments between SP1 and SP2 are ON.

Calibration

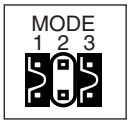
1) With the Function Switch in the top position, calibrate input signal 1 on display 1 using the display 1 ZERO and SPAN buttons.
2) With the Function Switch in the bottom position, set SP2 with SP2 button.

Hysteresis Band between SP1 & SP2

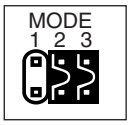
When a jumper clip is inserted in the Mode 3 position, the Hysteresis function is added. In order for Hysteresis to function, SP2 must be set to a value greater than SP1, and SP2 should be selected as High (h) Setpoint. When these conditions are met, and Mode 3 is selected, then a Hysteresis band is created for the SP1 relay, with the upper limit of SP2 and the lower limit of SP1. SP2 relay continues to operate normally.



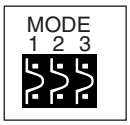
Mode 0 with Hysteresis.



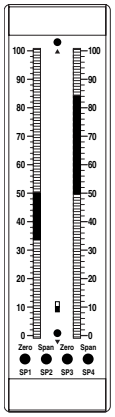
Mode 1 with Hysteresis.



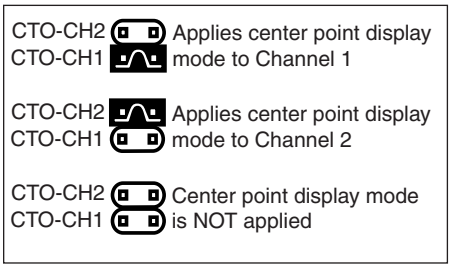
Mode 2 with Hysteresis.



Mode 12 with Hysteresis.



Center Zero Point Display Selection Header



Two Point Quickset Scaling and Calibration

Meters with **QUICKSET PROGRAMMING** feature a unique, easy-to-use, two point scaling and calibration system.

Scaling or calibration is accomplished simply, by applying a zero or low input signal and adjusting the bar to the desired reading, using the ZERO button. A higher input signal is then applied, and the bar is adjusted to the desired reading for that input value, using the SPAN button.

IMPORTANT DETAILS THAT MAKE QUICKSET PROGRAMMING EASY TO USE AND UNDERSTAND

1. The zero and span buttons are functionally the same, except as follows: The ZERO button can initiate a scaling with input signals from zero to 95% of fullscale.The Span button can initiate a scaling with input signals from 5% of fullscale to 105% of fullscale.

2. When a Zero or Span button is pressed, the Up or Down indicator LED will immediately light up to show the direction, in which the Bar will move, after a 0.5 second delay. If the button is released and pressed again, the opposite Up or Down indicator will light up, and 0.5 seconds later the Bar will begin to move in that direction until the button is released. When the bar is being adjusted to zero or fullscale, the bar will automatically stop at the zero or fullscale position, and will not overshoot these positions, even if the button continues to be pressed.

3. While the bar is being adjusted, a new offset and scale factor is continuously being calculated. At the moment the button is released, and the scaling is accepted, the calculation data is memorized and implemented. The Scaling calculation is based on the new position of the Bar, the input signal being applied at that moment, and the previously memorized position of the Bar and the input signal that was being applied, when the other button was last released.

Two Point Quickset Scaling and Calibration Continued

4. Positive and negative signals maybe integrated into a two point scaling. However when either a ZERO or SPAN button is pressed the input signal being applied, must be more than 5% higher or lower than the previously memorized value of the input signal, that was being applied when the other button was last released. If not, the bar will flash, the scaling will not be accepted, and the previous scaling will still be retained in memory.

5. Because of the requirement, that a new scaling input signal must be 5% higher or lower than the previously stored value, it can sometimes be difficult to implement a desired scaling, particularly when using a calibrator that only has fixed output values. In this case Reset the Scaling by pressing the ZERO and SPAN buttons simultaneously for two seconds. Both scaling memories will be erased and an internal default scale factor will be loaded. This provides a display of zero to fullscale on the bar for an input of approximately 0 to 100% of the range selected on the input signal conditioning module. After Resetting the Scaling a new calibration, using either button, can be implemented with new input signal values. It is good practice to always use the Zero button for lower input signals and the Span button for higher input signals, even when the bar display scale is inversed.

6. The larger the difference between two points used for calibration, the better the accuracy. However if the difference is too high, and the output from the input signal conditioning module is greater than +2.1VDC, or less than -1.05VDC, the bar will flash over range. The calibration will not then be accepted and, the previous scaling will still be retained in memory. In this case, either a lower input signal must be used, or a higher range on the input module should be selected to recalibrate the meter.

Note: Most input signal conditioners have provisions for analog calibration and scaling. If the meter's scale factor is set to read zero with a zero input (shorted input), and to read 10 Bars fullscale with a 2.000 V input, any pre-calibrated signal conditioner with an output that does not exceed – 1 V to + 2 V, will read correctly in the meter without any further calibration.

Standard Display Mode Calibration Procedure

Standard Display with Jumper Clips in OFF position

Standard or Center Zero Display Mode may be selected, depending on the Operating Mode selected. If the standard display mode is not already selected open the meter case as showing on page 4 and move the jumper clips on the display mode select header to the OFF position.

STEP A REVIEW THE INPUT MODULE STATUS

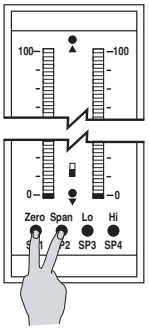
1) See pages 15 – 21 for information on input modules that may be used with this meter.
2) Confirm that the correct range and input is selected on the input signal conditioning module.

Note: When undertaking an initial set up and primary scaling and calibration of the meter it is best to start with a reset of the scaling.

STEP B RESET THE SCALING

1)Apply power to the meter and press the ZERO and SPAN buttons simultaneously for 2 seconds. This erases any previously memorized scalings, and resets the scaling to the factory default, of approximately zero to full scale, for an input, that is 0 to 100% of the range selected on the input signal conditioner.

Reset the scaling to the default value on by pressing the Zero and Span buttons simultaneously for 2 secs.

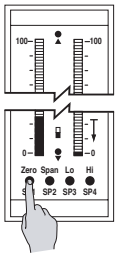


Note: To calibrate the bargraph you must be able to input two input signals. Usually the minimum input (LO Input) and the maximum input (HI Input) signals are used for optimum accuracy. However a scaling can be accomplished with any two signals that are higher or lower than each other by more than 5% of fullscale and are not greater than +2.1VDC or less than -1.05VDC.

STEP C SET THE LOW INPUT SIGNAL READING ON THE BAR

1) Apply the LO input signal (4ma in this example) to the input pins.
2) Using the ZERO button adjust the bar up or down to the required position.

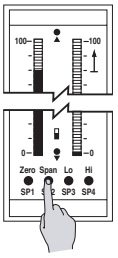
Apply 4 mA to the Input Pins and adjust bar display to the required position



STEP D SET THE HIGH INPUT SIGNAL READING ON THE BAR

1) Apply the high input signal (20mA in this example) to the input pins. Using the SPAN button adjust the bar to the required position. This position could be higher or lower than the position adjusted in Step 2. The scaling for an input of 4 to 20mA is now complete.

Apply 4 mA to the Input Pins and adjust bar display to the required position



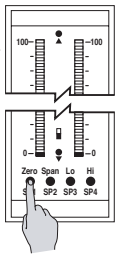
One Point Quickset Rescaling and Calibration Procedure

ONE POINT RECALIBRATION

As explained earlier, the bargraph is calibrated using two point calibration. Once a bargraph is calibrated, the low end of the range may be then recalibrated without affecting the calibration of the high end, and vice versa.

For example, take a bargraph that has been calibrated to read zero to full scale for an input of 4 to 20mA. If now the scaling has to be changed to read zero to full scale for an input of 0 to 20mA, only the low (4 mA) end needs to be recalibrated. The high (20 mA) end of the scaling is left untouched, and so does not change. The following one point recalibration procedure is used for this purpose.

Apply 0 mA to the Input Pins and adjust bar display to the required position



STEP A RECALIBRATE THE LOW INPUT SIGNAL READING ON THE BAR

1) Apply the LO input signal (0ma in this example) to the input pins. The first segment will flash, indicating an under range condition.
2) Using the ZERO button adjust the bar up to the required position.
3) The bargraph has now been recalibrated to read zero to fullscale for a 0 to 20 mA input.

Center Zero Mode Scaling For Bipolar Inputs

The procedure for scaling the bar graph for bipolar signals is very simple. If say CH1 has to be scaled for -1V to +1V, the steps are as follows:

STEP A SELECT THE CENTER ZERO DISPLAY MODE FOR CH1

CH1, Center Zero Mode Selected

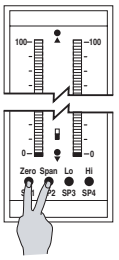
1) Following the instructions on page 4, remove the meter from the case.
2) Select the Center Zero Mode for CH1 by repositioning the jumper clip on the Center Zero Display Mode Select Header.

STEP B REVIEW THE INPUT MODULE STATUS

1) See pages 15 – 21 for information on input modules that may be use with this meter.
2) Only the IDP4 Universal Input module can be used for dual inputs and information on this module can be found on page 15.
3) Confirm that the correct range and input is selected on the input signal conditioning module.

Note: When undertaking an initial set up and primary scaling and calibration of the meter it is best to start with a reset of the scaling.

Reset the scaling to the default value on by pressing the Zero and Span buttons simultaneously for 2 secs.



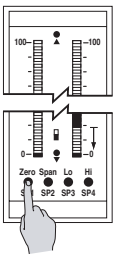
STEP C RESET THE SCALING ON CHANNEL ONE

1) Apply power to the meter and press the CH1 ZERO and CH1 SPAN buttons simultaneously for 2 seconds. This erases any previously memorized scalings, and resets the scaling to the factory default, of approximately zero to full scale, for an input, that is 0 to 100% of the range selected on the input signal conditioner.

STEP D SET THE LOW INPUT SIGNAL READING ON THE BAR

1) Apply the LO input signal (-1V in this example) to the CH1 input pins.
2) Using the CH1 ZERO button adjust the bar down to the required position. In this case, all the bar segments from mid point down to the bottom will be ON.

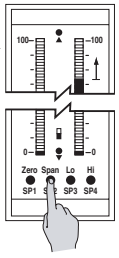
Apply -1V to the Input Pins and adjust bar display to the required position



STEP E SET THE HIGH INPUT SIGNAL READING ON THE BAR

1) Apply the high input signal (+1V in this example) to the CH1 input pins.
2) Using the CH1 SPAN button adjust the bar to the required position. This position could be higher or lower than the position adjusted in Step 2. In this case, all the bar segments from mid point up to the top will be ON.
3) The scaling of CH1 for an input of -1V to +1V is now complete.

Apply +1V to the Input Pins and adjust bar display to the required position



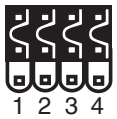
Setpoint Adjust

The bargraph has the option to have up to 4 setpoints (two 10A Form C relays and two 5A Form A relays) installed. Each relay may be set to activate either above or below its setpoint by inserting jumper clips on the Relay Activation header which is located on the Display Driver Board. See the layout diagram on Page 4 and 14 for the exact location. The steps to setup the setpoints are as follows:

1) SELECT THE RELAY ACTIVATION MODE FOR EACH INSTALLED RELAY

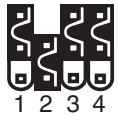
Make sure that the required relays have been installed in the meter. Refer to the component layout on Page 14 for relay positions. If a jumper clip is installed in a specific relay position on the Relay Activation Mode Header, that relay will activate when the display bar is lower that the programmed setpoint. If no jumper clip is installed in a specific relay position on the Relay Activation Mode Header, that relay will activate when the display bar is equal to or higher that the programmed setpoint. The Diagrams below show some of the various possibilities for relay activation.

Default
SP1, SP2, SP3, and SP4 all activate when input is equal to or higher than set point.



SP2 and SP4 activate when input is lower than set point. SP1 and SP3 activate when input is equal to or higher than set point.

SP2 activate when input is lower than set point. SP1, SP3 and SP4 activate when input is equal to or higher than set point.



SP1 and SP3 activate when input is lower than set point. SP2 and SP4 activate when input is equal to or higher than set point.

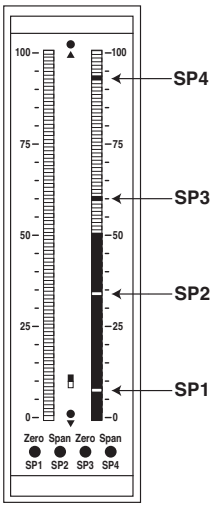
SP1, SP2, SP3, and SP4 all activate when input is lower than set point.

SP1 and SP2 activate when input is lower than set point. SP3 and SP4 activate when input is equal to or higher than set point.

2) ADJUST THE SETPOINT FOR EACH RELAY

The setpoint for each relay is set by the front panel buttons marked SP1, SP2, SP3 and SP4. When a front panel button is pressed and held down, the associated setpoint is directly changed. The direction of change will be either up or down, as indicated by the UP and DOWN indicator LEDs. After the indicator LED lights up there is a 0.5 second delay before any change occurs. To reverse the direction of change, release the button and then press down again. As there are no menus or sub-menus to navigate, the programming and setup is quick and easy.

Setpoints are indicated on the bar display by an ON segment if the bar is below the setpoint and with an OFF segment if the bar display is above the setpoint.



Analog Output Scaling and Calibration

When the optional analog output module is installed, an independently calibrated 16 bit isolated, voltage or current analog output is available. **The analog signal is independently scaled to the input signal and not to the bargraph display.** It is important to note that the Analog Output is completely independently of the bargraph display. This means for example that the bargraph display may be scaled to go from zero to full scale as the input changes from 0 to 5V, while at the same time, the analog output is scaled to go from 4 to 20mA as the input changes from 2 to 3V. Rescaling the bargraph or the analog output will not affect the scaling of the other.

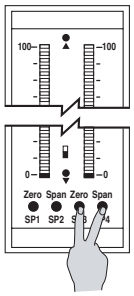
To calibrate the Analog Output you must be able to input two input signals. Usually the minimum input (LO Input) and the maximum (HI Input) signals are used for maximum accuracy.

For example the five steps to obtain an Analog Output of 4mA to 20mA for an input of 0 to 10V are:

STEP A ACCESS THE ANALOG CALIBRATION MODE

1) Confirm the internal analog output module is installed and that the required voltage or current output option is selected.
2) Turn OFF the power to the bargraph. Make sure Function Switch is in the top position.
3) Hold down the CH2 ZERO and SPAN buttons simultaneously and re-power the bargraph. The ZERO button will now function as the LO button and the SPAN button will now function as the HI button for calibrating the Analog Output.

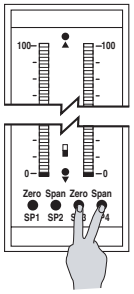
Turn Power ON while holding down the CH2 Zero and Span buttons simultaneously



STEP B RESET THE ANALOG OUTPUT SCALING

1) Press the LO and HI buttons simultaneously and hold them down for 2 seconds. This will reset the analog output scaling to the default value. The default analog output scaling is approximately 0 to 20mA (0 to 10V if voltage output option is selected) for an input that is 0 to 100% of the range selected on the input signal conditioner.

Reset the analog output scaling by pressing the LO (zero) and HI (span) buttons simultaneously for 2 secs.

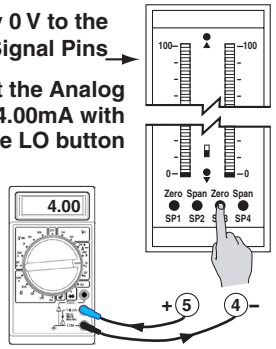


STEP C CALIBRATE ANALOG OUTPUT FOR LO SIGNAL

1) Apply the low input signal (0V in this example) to the meter.
2) Connect an external multimeter to the analog output pins (Pins 17 and 18).
3) Using the LO button adjust the analog output as measured on the external multimeter to be the required value. (4mA in this example). When the LO button is pressed, the UP or DOWN indicator LED shows the direction of change. To reverse the direction of change release the LO button and press down again. Initially the output changes very slowly, but speeds up as the LO button remains pressed down. The analog output for a low input can be set in this step to any value in the range of 0 to 20mA or 0 to 10V (if the voltage output option is selected).

Apply 0 V to the Input Signal Pins

Adjust the Analog output to 4.00mA with the LO button

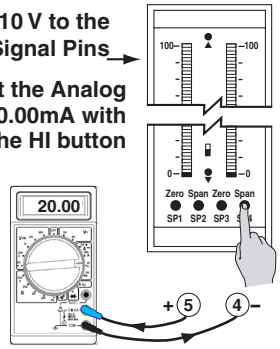


STEP D CALIBRATE ANALOG OUTPUT FOR HI SIGNAL

1) Next apply the high input signal (10V in this example) to the meter.
2) Using the HI button, adjust the analog output as measured on the external multimeter to be the required value. (20mA in this example). When the HI button is pressed the UP or DOWN indicator LED shows the direction of change. Release the HI button and press again to reverse the direction of change. Initially the output changes very slowly, but speeds up as the HI button continues to remain pressed. This output may be higher or lower than the value set in Step 2, and may be any value in the range of 0 to 20mA or 0 to10V. This allows the easy reversal of analog output that is required in some applications.

Apply 10 V to the Input Signal Pins

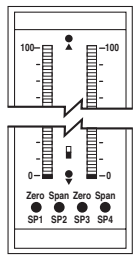
Adjust the Analog output to 20.00mA with the HI button



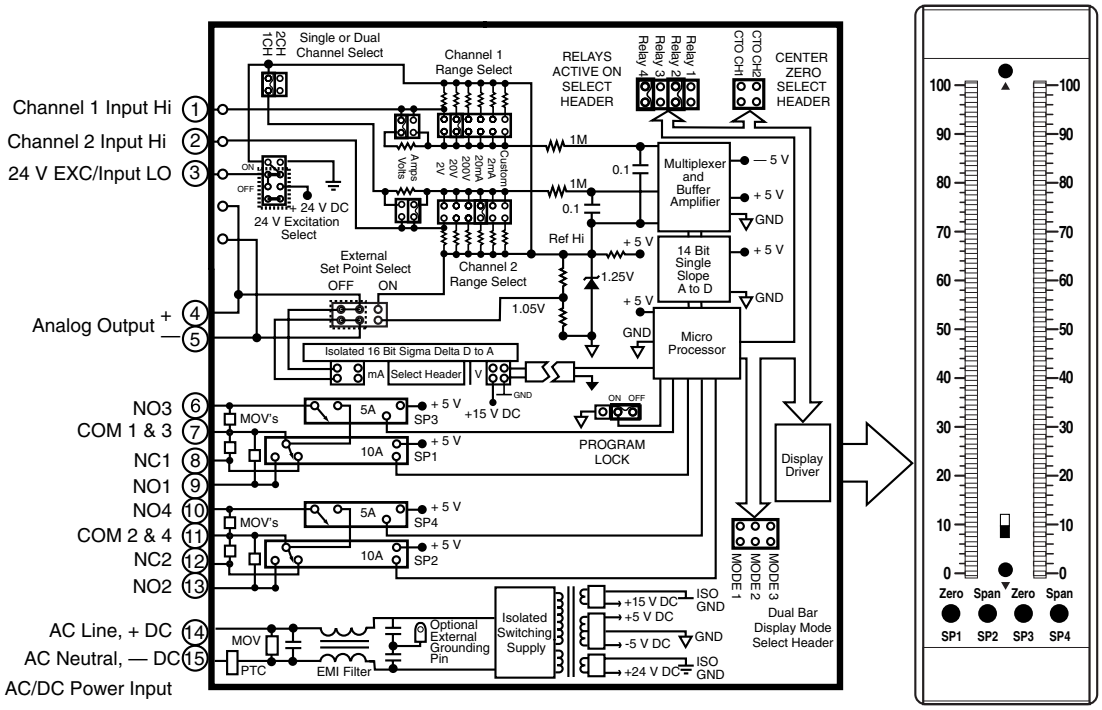
STEP E EXIT THE ANALOG OUTPUT CALIBRATION MODE

1) Turn OFF the power to the bargraph
2) Re-power the bargraph. The two buttons will now return to their original function of DISPLAY 2 ZERO and DISPLAY 2 SPAN.
3) Calibration is now complete and the bar is scaled for a 0 to 10V input to produce an analog output of 4 to 20mA.

Turn Power OFF and then back ON to exit Analog output Calibration Mode



Functional Diagram

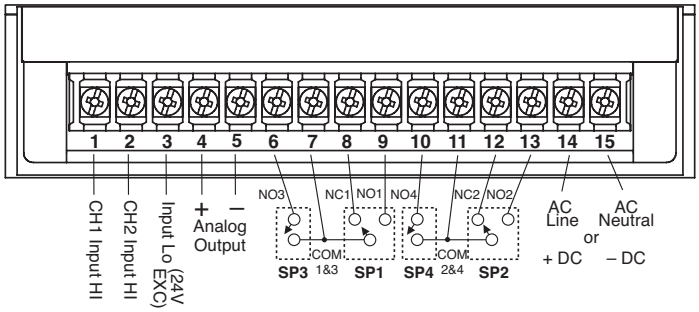


Connector Pinouts

Rear Panel Pinout Diagram

This meter uses plug-in type screw terminal connectors for all input and output connections.

WARNING: AC and DC input signals and power supply voltages can be hazardous. Do Not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.



Pin Descriptions

Input Signal – Pins 1 to 3

Pin 1 CH1 Input Hi
Pin 2 CH2 Input Hi
Pin 3 Input Lo (24V EXC)

Analog Output – Pins 4 to 5

Pin 4 Analog Output +
Pin 5 Analog Output –

Pins 6 to 13 – Relay Output Pins

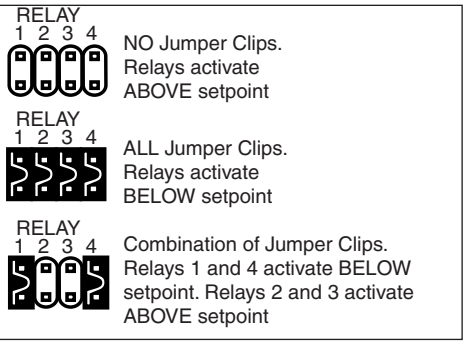
Pin 6 **SP3 NO.** Normally Open 5 Amp Form A.
Pin 7 **SP1/3 COM.** Common for SP1 and SP3.
Pin 8 **SP1 NC.** Normally Closed 10 Amp Form C.
Pin 9 **SP1 NO.** Normally Open 10 Amp Form C.
Pin 10 **SP4 NO.** Normally Open 5 Amp Form A.
Pin 11 **SP2/4 COM.** Common for SP2 and SP4.
Pin 12 **SP2 NC.** Normally Closed 10 Amp Form C.
Pin 13 **SP2 NO.** Normally Open 10 Amp Form C.

Pins 14 to 15 – AC/DC Power Input

Pin 14 AC2. Power input. The standard power is 85 to 265VAC or 95 to 370VDC. Optional power supply of 16 to 48VAC or 18 to 72VDC power is also available.

Pin 15 AC1. Power input. The standard power is 85 to 265VAC or 95 to 370VDC. Optional power supply of 16 to 48VAC or 18 to 72VDC power is also available.

Relay Activation Header

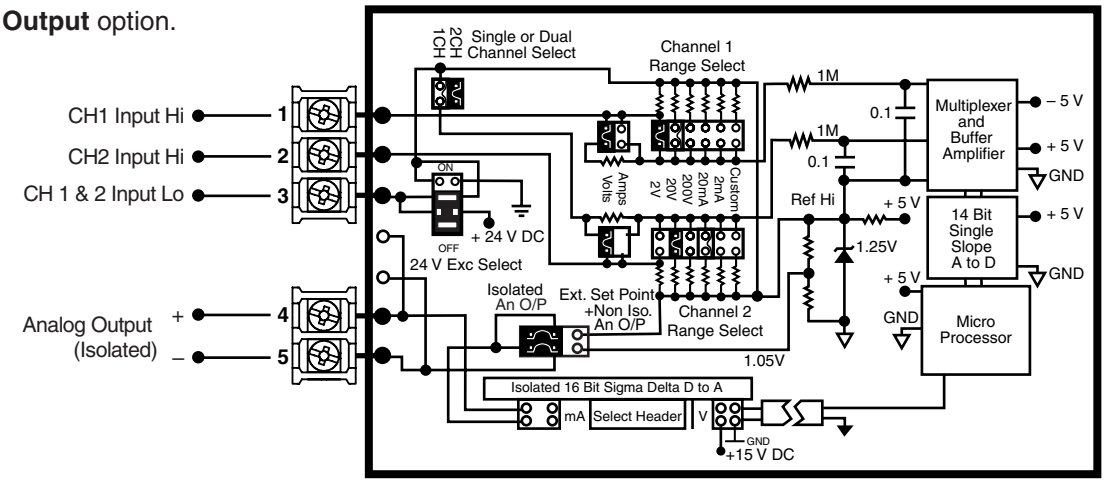


- ❑ The relays are default to activate ABOVE (HIGH) the setpoint.
- ❑ Any relay WITHOUT a jumper clip activates ABOVE the setpoint.
- ❑ Any relay WITH a jumper clip activates BELOW the setpoint.
- ❑ Any combination of relay activation using the header and jumper clips is possible.

DUAL CHANNEL DC VOLTS:

Select appropriate range of 2 V, 20 V, or 200 V. (Custom ranges also available). Example shown is for CH1, 2 V and CH2, 20 V.

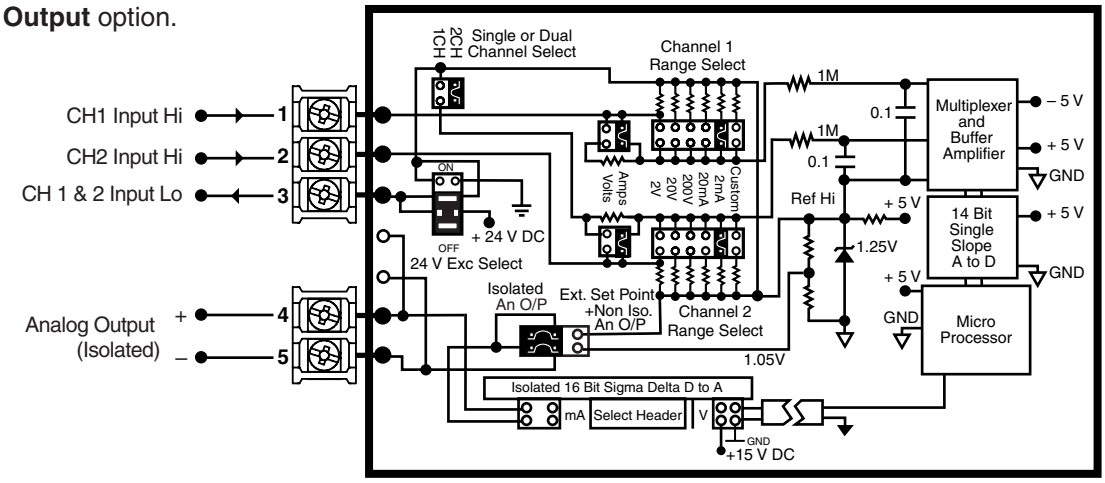
with **ISOLATED Analog Output** option.



DUAL CHANNEL DC mA:

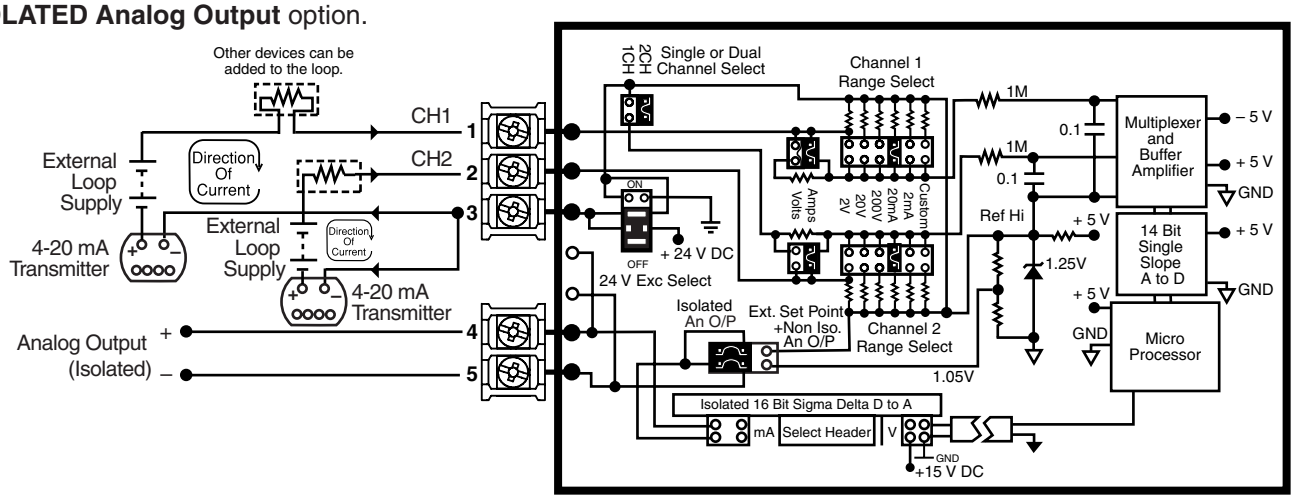
Select appropriate range of 2 mA or 20 mA. (Custom ranges also available). Example shown is for CH1, 2 mA and CH2, 2 mA.

with **ISOLATED Analog Output** option.

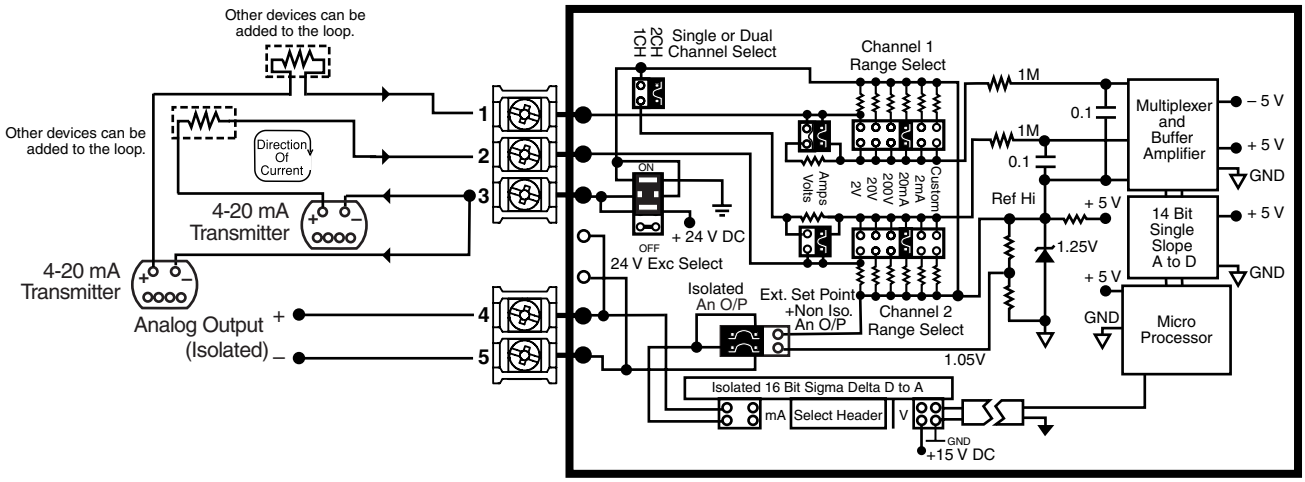


DUAL CHANNEL 4 to 20 mA:

with **ISOLATED Analog Output** option.



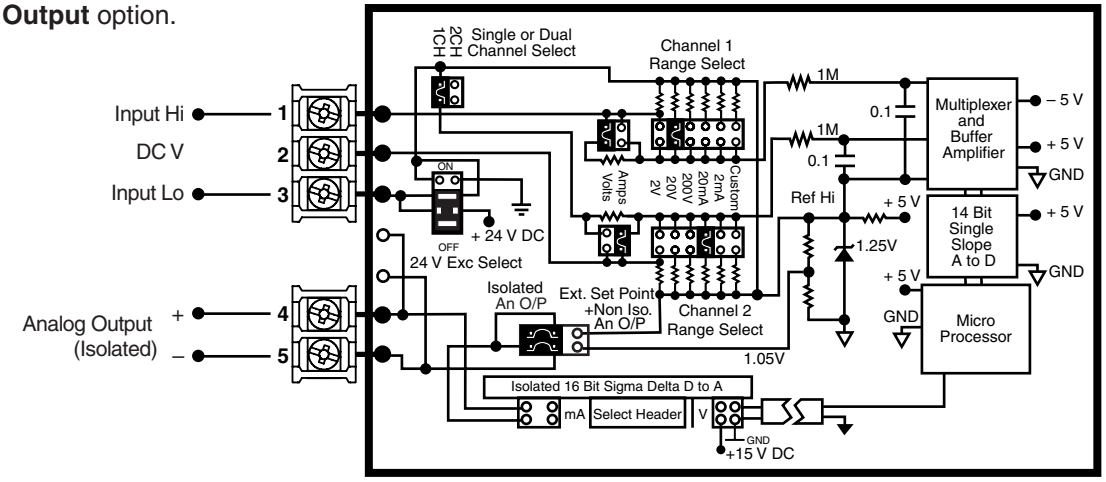
with **ISOLATED Analog Output** option. **Excitation provided by bargraph**



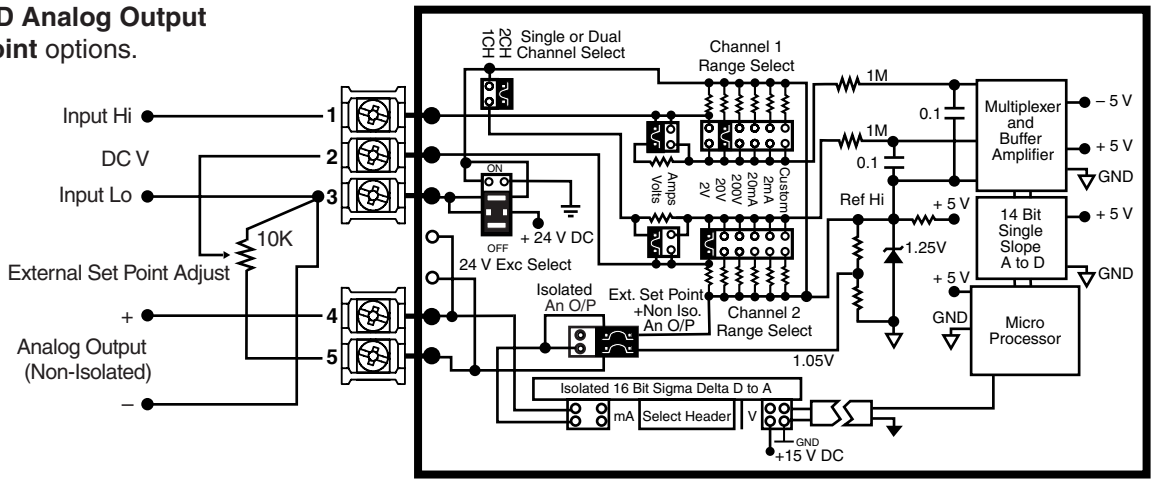
SINGLE CHANNEL DC VOLTS:

Select appropriate range of 2 V, 20 V, or 200 V. (Custom ranges also available). Example shown is for 20 V DC.

with **ISOLATED Analog Output** option.



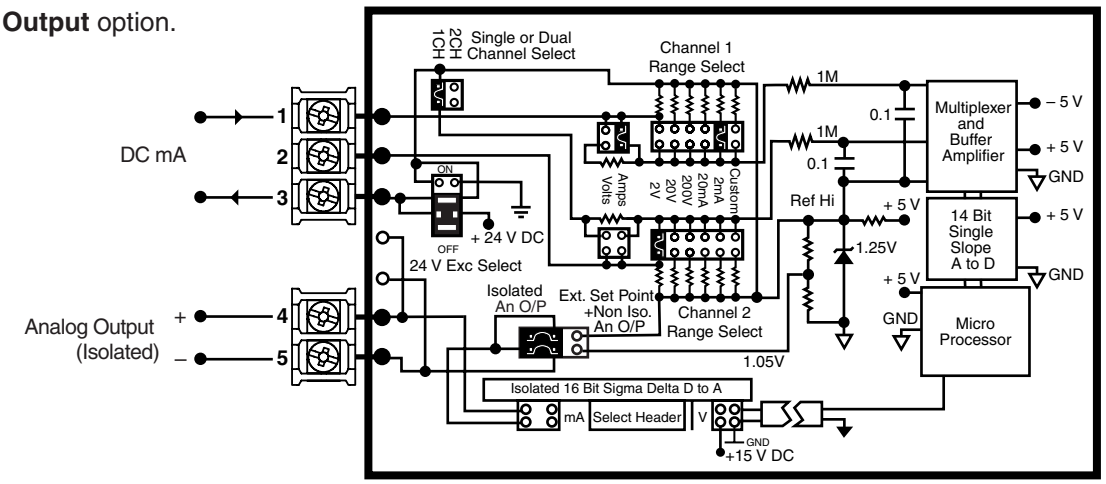
with **NON-ISOLATED Analog Output** and **External Set Point** options.



SINGLE CHANNEL DC mA:

Select appropriate range of 2 mA or 20 mA. (Custom ranges also available). Example shown is for 2 mA.

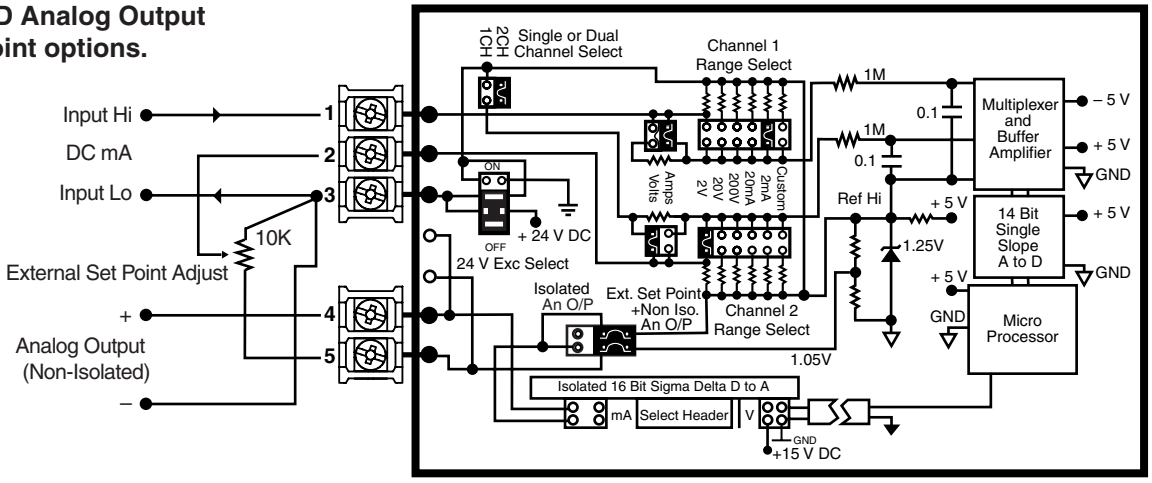
with **ISOLATED Analog Output** option.



SINGLE CHANNEL DC mA:

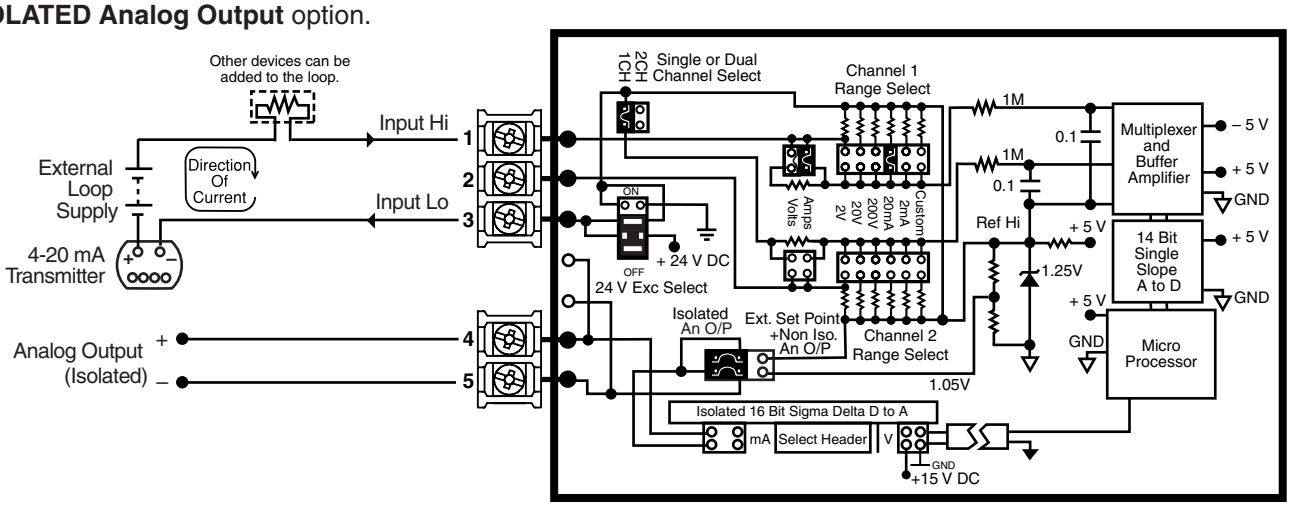
Select appropriate range of 2 mA or 20 mA. (Custom ranges also available). Example shown is for 2 mA.

with **NON-ISOLATED Analog Output** and **External Set Point options.**

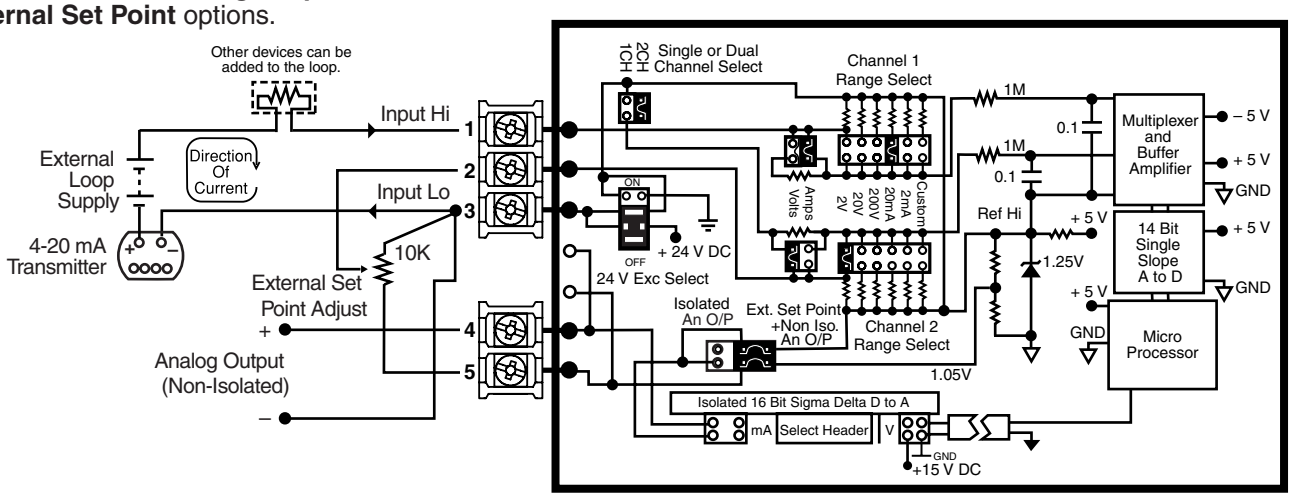


SINGLE CHANNEL 4 to 20 mA:

with **ISOLATED Analog Output** option.

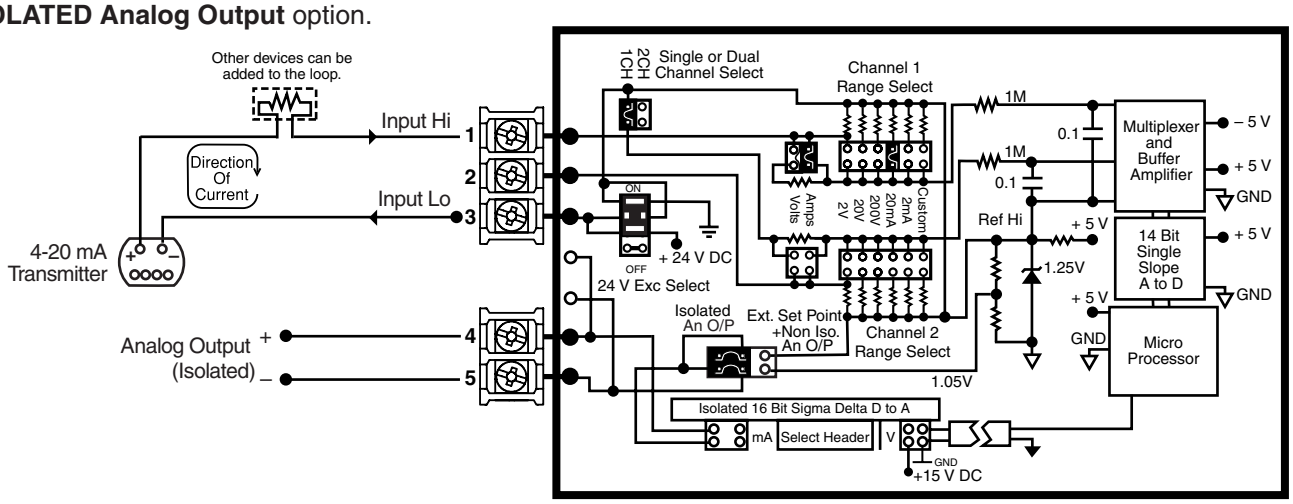


with **NON-ISOLATED Analog Output** and **External Set Point** options.

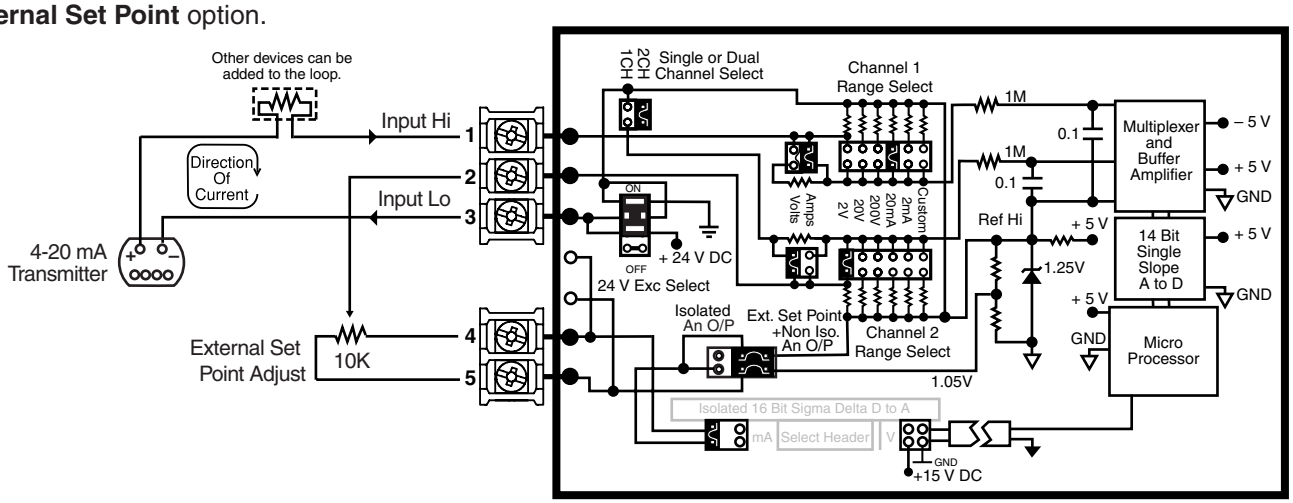


SINGLE CHANNEL 4 to 20 mA with excitation provided by bargraph:

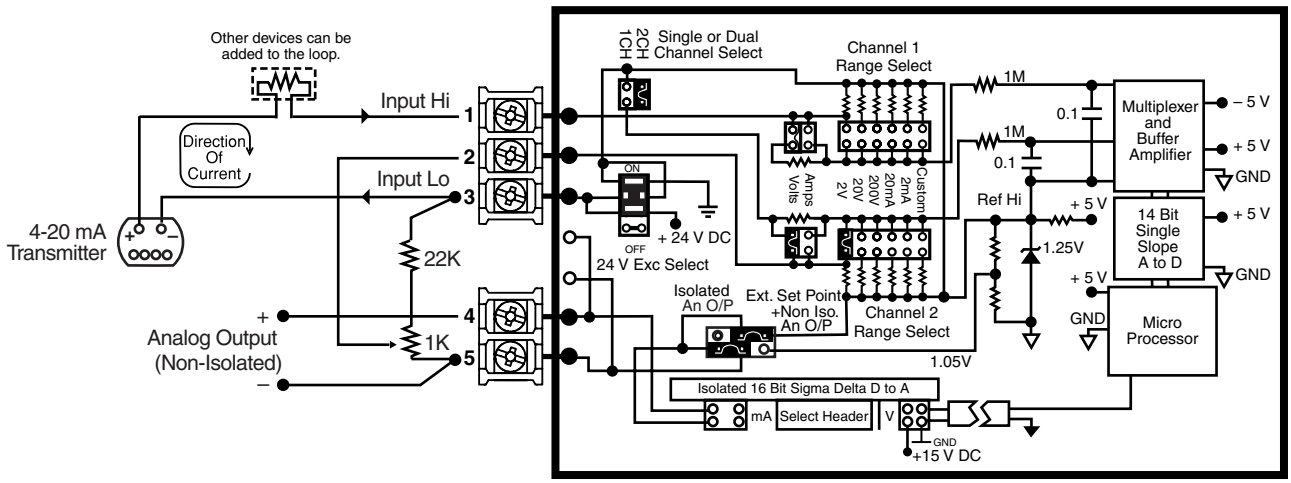
with **ISOLATED Analog Output** option.



with **External Set Point** option.



with **NON-ISOLATED Analog Output** and **External Set Point** options.



Installation Instructions

STEP A Prepare the Panel

1) Cut a hole in the panel to suit the panel cutout. See Case Dimensions for panel cutout sizes.

STEP B Fit the Meter

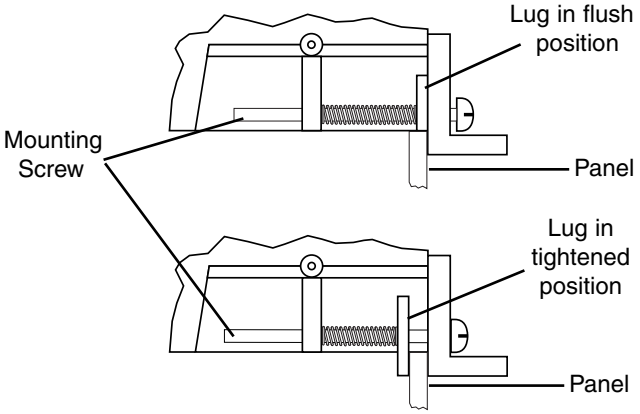
1) Turn both mounting screws counterclockwise to allow for the thickness of the panel.
2) Make sure that both lugs on the mounting screws are flush with the edge of the bargraph case.
3) Push the bargraph into the panel cutout from the front of the panel.
4) Push and turn the mounting screws in a clockwise direction until they are tight.

STEP C Connect the Cables

1) Connect all input cables to the connector pins (see Connector Pinouts for details).
2) Connect the power cables to the connector pins (see Connector Pinouts for details).

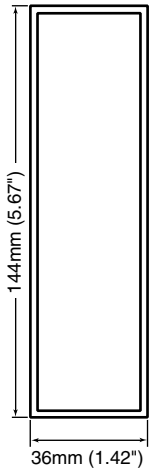
WARNING

AC and DC power supply voltages are hazardous. Make sure the power supply is isolated before connecting to the bargraph.

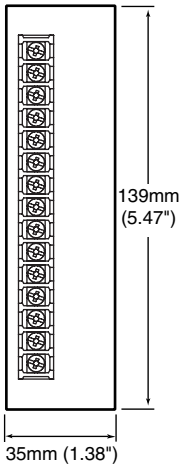


Case Dimensions

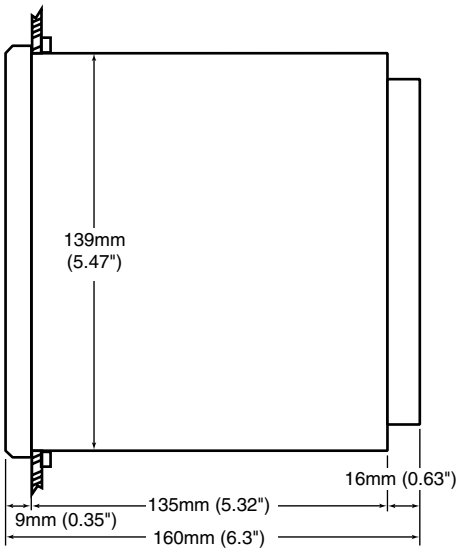
Bezel



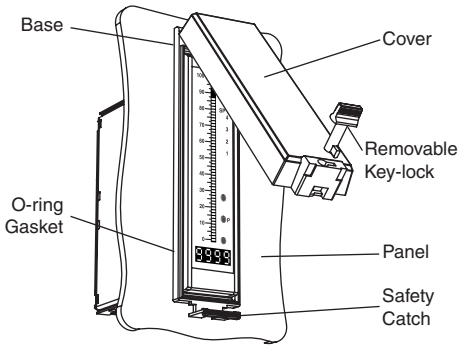
Rear View



Top View



NEMA-4X Lens Cover



Part #: OP-N4/144T36

This cover is designed to be dust and water proof to NEMA-4 standards. The lens cover consists of a base and cover with a cam hinge and key-lock locking device.
An O-ring, or Neoprene gasket forms a seal between the base and the panel. The cam hinge holds the cover from closing when opened until pushed closed. A safety catch keeps the cover closed even when the key is removed and the key hole can be used to attach a safety seal clip, preventing unauthorized opening.

Crompton Instruments Ltd.
Freebournes Road
Witham
CM8 3AH
Essex
Tel: 01376 512601 • Fax: 01376 500860

Crompton Instruments Inc.
1640 Airport Road #109
Kennesaw, GA 30144
Tel: 770-425-8903 • Fax: 770-423-7194