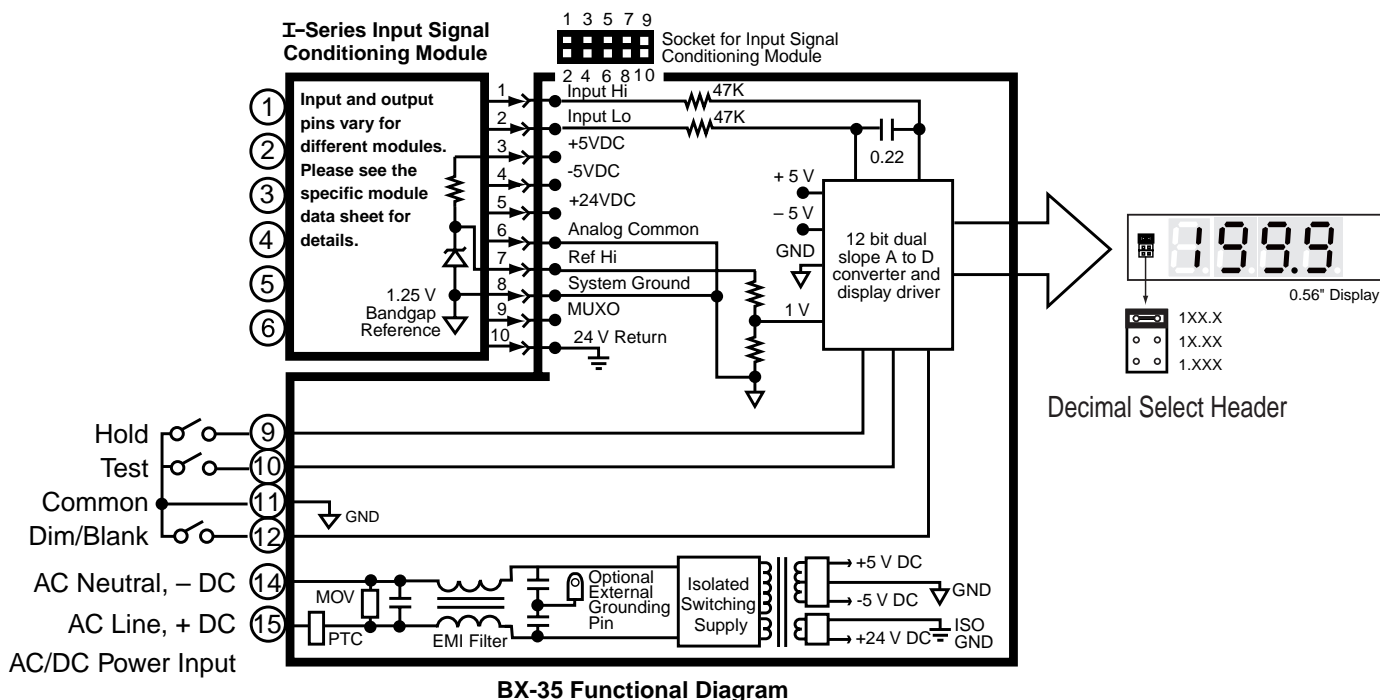


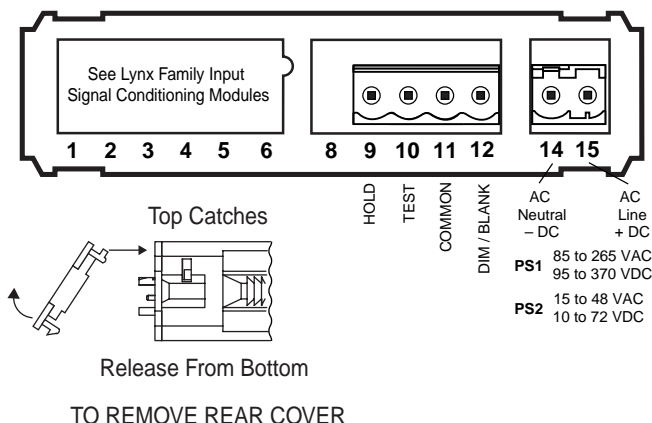


## Functional Diagram



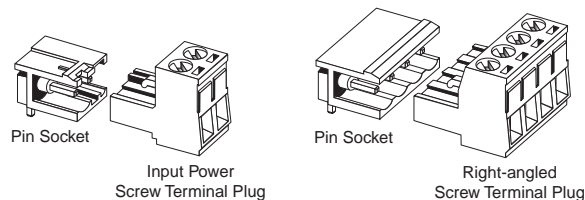
## Connector Pinouts

This meter comes standard with screw terminal plug connections.



## Connectors

This meter uses plug-in type screw terminal connectors for all input and output connections. The power supply connections (pins 14 and 15) have a unique plug and socket outline to prevent cross connection. The main board uses standard right-angled connectors.



**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

**Pins 1 to 6 - Input Module:** See the individual pin out of the input signal conditioning module selected. Usually Pin 1 is the Signal Input High pin and Pin 3 is the Signal Input Low pin. All calibration and scaling functions are performed on the individual input signal conditioner module. See pages 6 and 7.

**Pin 9 - Hold:** If this pin is left unconnected the meter will operate in a free running mode. When this pin is connected to the Common Pin 11, the meter display will be latched. A/D conversions will continue, but the display will not be updated until Pin 9 is disconnected from Pin 11.

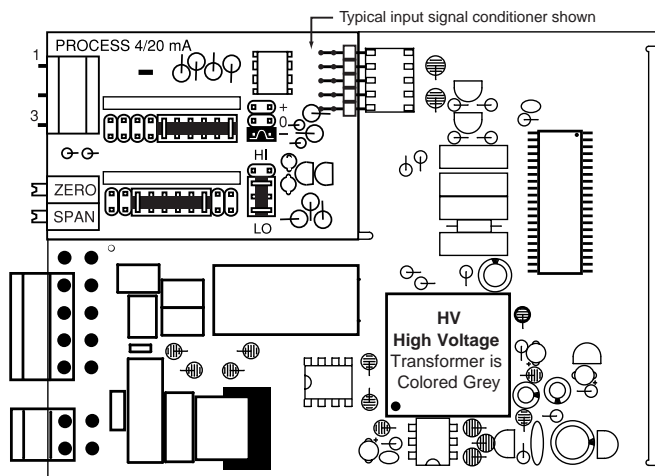
**Pin 10 - Display Test:** When this pin is connected to the Common Pin 11, all segments of the display light up and 1888 is displayed. This is used to detect any missing segments in the display.

**Pin 11 - Common:** To Hold, Test or Dim the display, the respective pins have to be connected to this Common Pin.

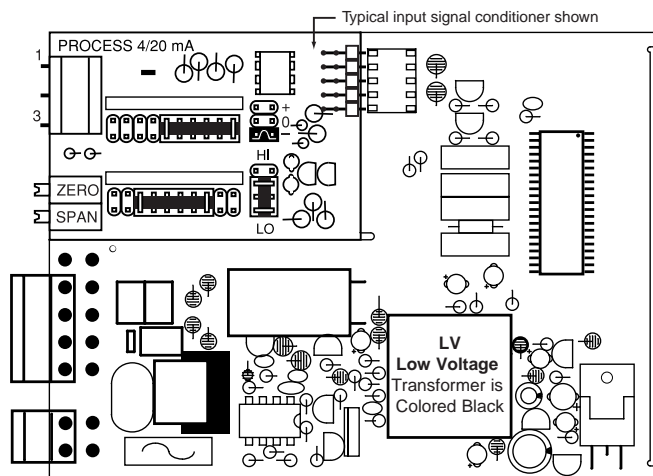
**Pin 12 - Dim/Blank:** When this pin is connected to the Common Pin 11 the display is blanked out. If it is connected through an external 1KΩ pot, the display may be dimmed.

**Pin 14 & 15 - AC/DC Power Input:** These pins are the power pins of the meter and they only accept a special polarized screw terminal plug that can not be inserted into any other input socket. The standard meter has a auto sensing AC/DC power supply that operates from 85-265 VAC/95-370 VDC (PS1 Std). An optional isolated low voltage power supply that operates from 15-48 VAC/10-72 VDC (PS2) is also available.

## BX-35-XX-PS1 (High Voltage)



## BX-35-XX-PS2 (Low Voltage)












## I-Series Input Signal Conditioning Modules

Many additional input modules are available and others are constantly being developed. Check with your local distributor or [www.texmate.com](http://www.texmate.com) for updated information.

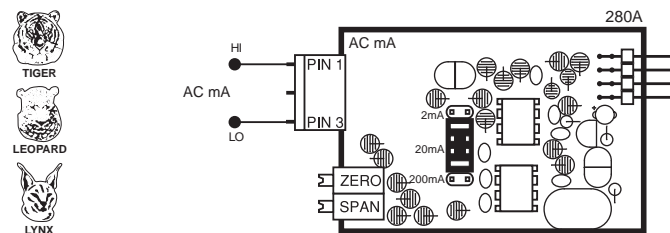
Precalibrated **I-Series** input modules, that have span or zero potentiometers, can be interchanged between any **I-Series** compatible meter, without recalibration, because all of the analog scaling and reference circuitry is self-contained within the module. Where appropriate, all the standard ranges shown are designed to be header selectable by the user, and Texmate's unique SPAN ADJUST Header facilitates scaling to almost any required engineering unit. See Input Module Component Glossary and Calibration on pages 6 and 8.

Unless otherwise specified Texmate will ship all modules precalibrated with factory preselected ranges and/or scalings as shown in **BOLD** type. Other precalibrated standard ranges or custom ranges may be ordered. Factory installed custom scaling and other custom options are also available (see Ordering Information, Special Options on last page).

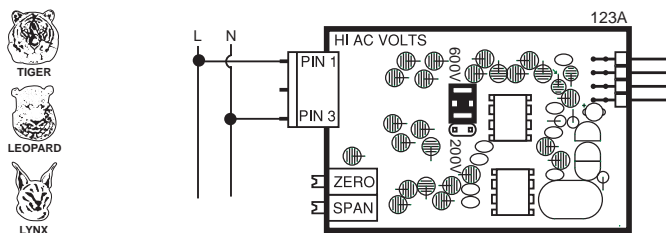
### Symbols Indicate Module Compatibility Within Meter Families

 <b>TIGER Family</b>	 <b>TIGER Family</b>	 <b>TIGER Family</b>
 <b>LEOPARD Family</b>	 <b>LEOPARD Family</b>	 <b>LEOPARD Family</b>
 <b>LYNX Family</b>	 <b>LYNX Family</b>	 <b>LYNX Family</b>
<b>ALL MODELS</b>	<b>SOME MODELS</b>	<b>MODEL SPECIFIC</b>

### IA03: AC Milliamps Scaled RMS, 2/20/200mA AC

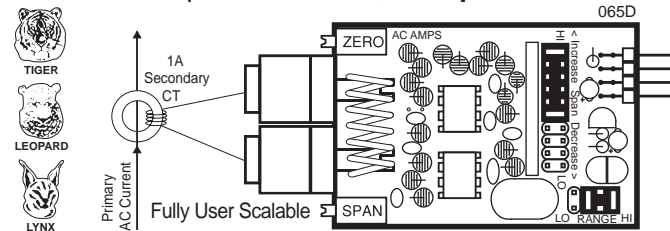


### IA01: AC Volts Scaled RMS, 200/600V AC

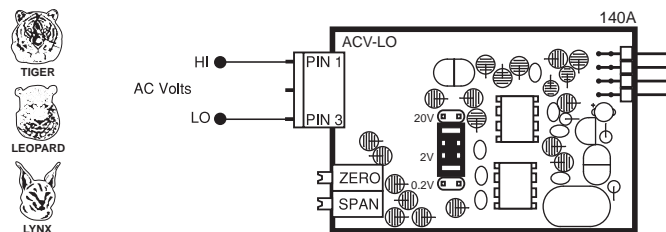


### IA04: AC Amps Scaled RMS, 1 Amp AC

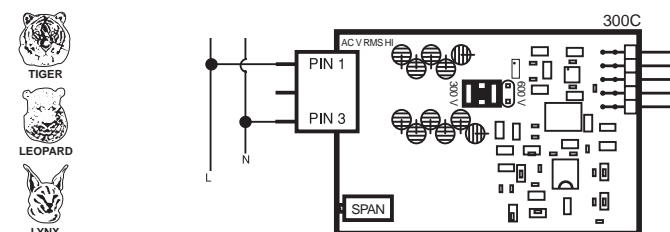
### IA05: AC Amps Scaled RMS, 5 Amp AC



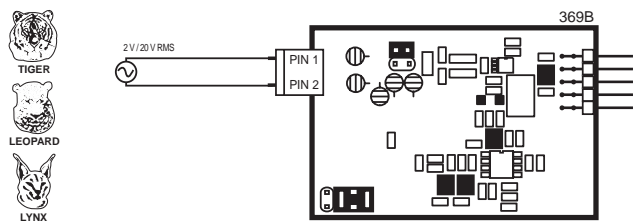
### IA02: AC Volts Scaled RMS, 200mV/2V/20V AC



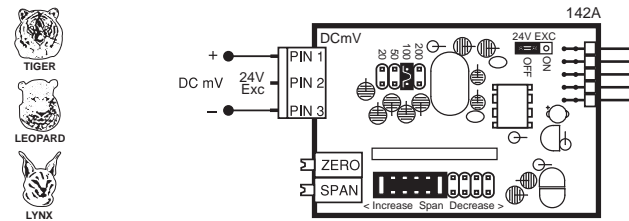
### IA06: AC Volts True RMS, 300/600V AC



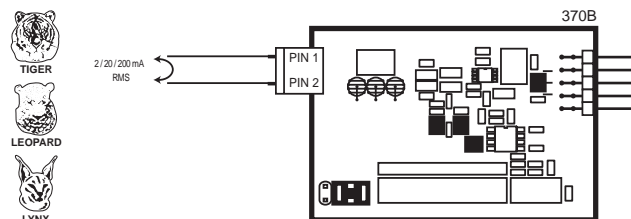
IA07: AC Volts True RMS, 200mV/2V/20V AC



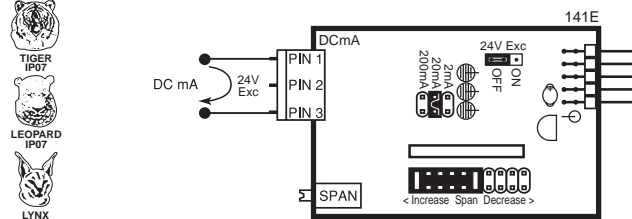
ID02: DC Millivolts, 20/50/100/200mV DC w/24V DC Exc



IA08: AC Milliamps True RMS, 2/20/200mA AC

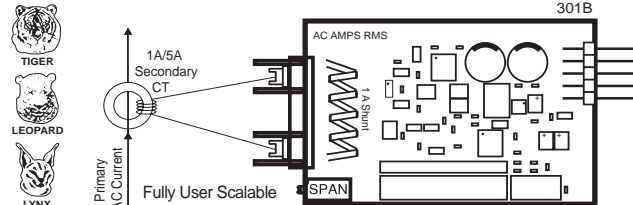


ID03: DC Milliamps, 2/20/200mA DC w/24V DC Exc



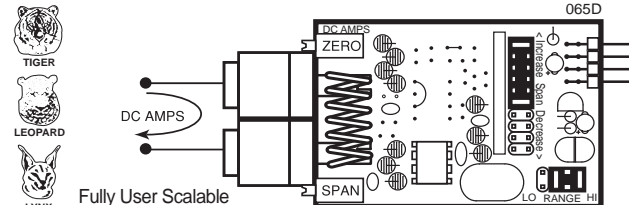
IA09: AC Amps True RMS, 1 Amp AC

IA11: AC Amps True RMS, 5 Amp AC

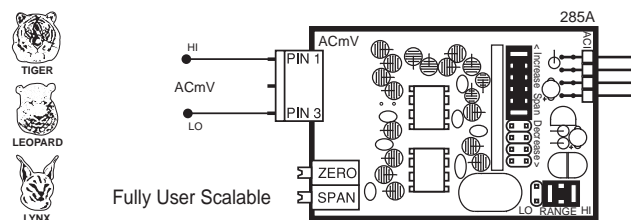


ID04: DC Amps, 5A DC

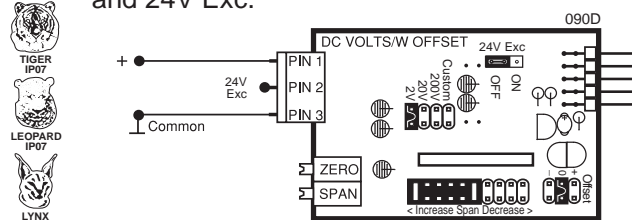
ID09: DC Amps, 1A DC



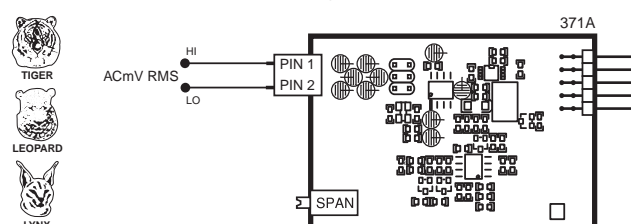
IA10 AC Millivolts, Scaled RMS, 100mV AC



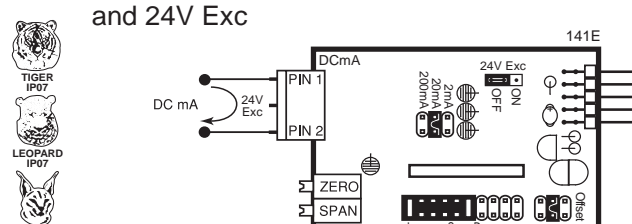
ID05: DC Volts 2/20/200/Custom V DC with Offset and 24V Exc.



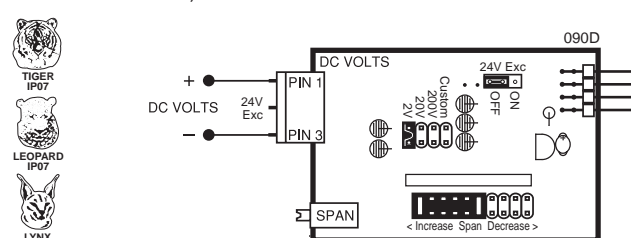
IA12: AC Millivolt RMS Sigma Delta



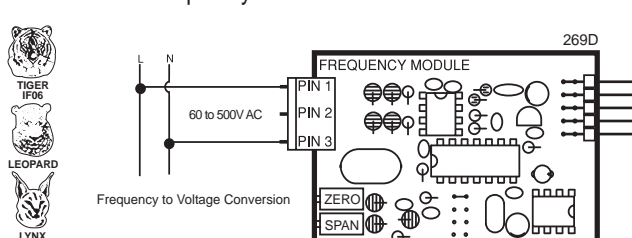
ID07: DC Milliamps, 2/20/200mA DC with Offset and 24V Exc



ID01: DC Volts, 2/20/200V/Custom w/24V DC Exc

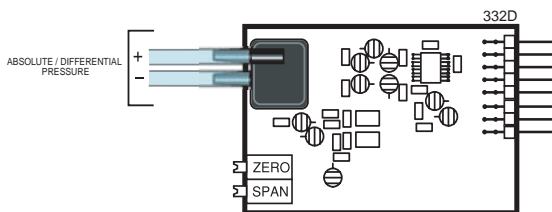


IF02: Line Frequency



# I-Series Input Signal Conditioning Modules Continued

IGYZ: Universal Direct Pressure (Absolute or Differential/Gage)  
See below for ordering code options



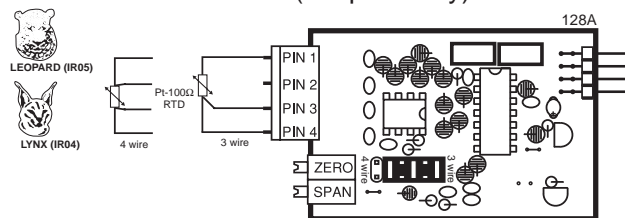
Ordering Code Options for Direct Pressure (IGYX, IGYG & IGYZ)

Sensor Range	CH1 Order Code	CH2 Order Code
1 psi Absolute	A	A
1 psi Differential	B	B
5 psi Absolute	C	C
5 psi Differential	D	D
15 psi Absolute	E	E
15 psi Differential	F	F
30 psi Absolute	G	G
30 psi Differential	H	H
100 psi Absolute	J	J
100 psi Differential	K	K

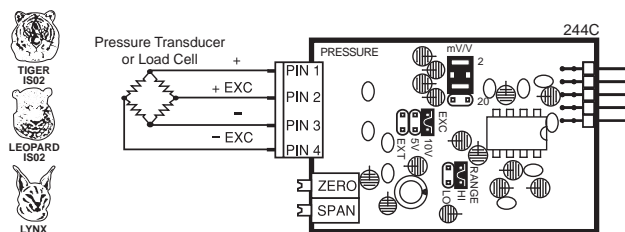
For Single Channel IGYX with two digital inputs, the last digit of order code is always X.

For Universal Direct Pressure IGYZ, the last digit of order code is always Z.

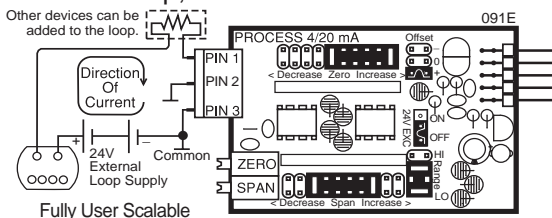
IR04: Resistance 2K $\Omega$  (Lynx only)  
IR05: Resistance 2K $\Omega$  (Leopard only)



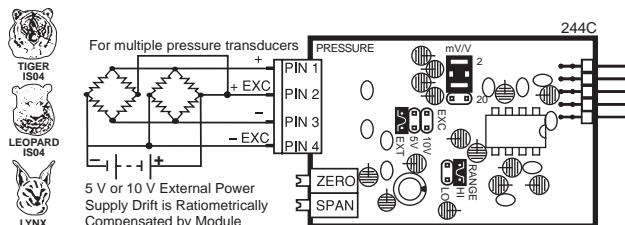
IS05: Pressure/Load Cell 20/2mV/V, 5/10V Exc 4-wire



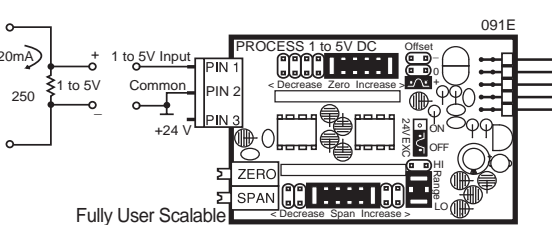
IPO1: Process Loop, 4-20mA  
IPO2: Process Loop, 4-20mA with 24VDC EXC



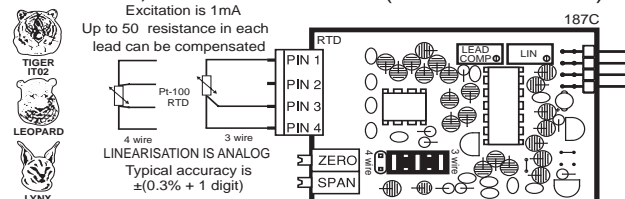
IS06: Pressure/Load Cell Ext Exc., 20/2mV/V, 4-wire



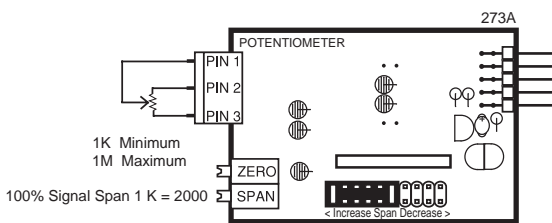
IPO3: Process Input, 1-5V DC with Offset, 24V Exc



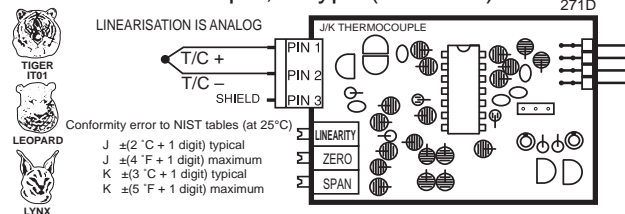
IT03: RTD, 100 Pt. 2/ 3/4-wire (-200 to 800°C)  
IT04: RTD, 100 Pt. 2/ 3/4-wire (-200 to 1470°F)  
IT05: RTD, 100 $\Omega$  Pt. 2/3/4-wire (-199.9 to 199.9°F)  
IT14: RTD, 100 $\Omega$  Pt. 2/3/4-wire (-199.9 to 199.9°C)



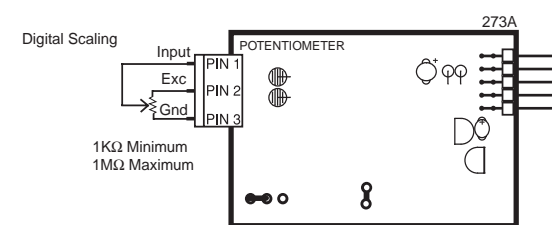
IR02: 3 wire Potentiometer 1K min (0-F.S.)



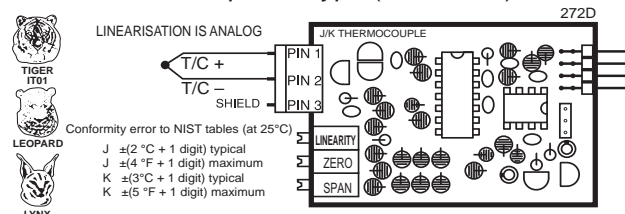
IT06: Thermocouple, J Type (0-1400 °F)  
IT08: Thermocouple, J Type (0-760 °C)

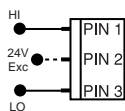


IR03: Linear Potentiometer 1K $\Omega$  min



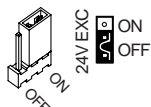
IT07: Thermocouple, K Type (0-1999 °F)  
IT09: Thermocouple, K Type (0-1260 °C)





## Input and Output Pins

On most modules Pin 1 is the Signal High input and Pin 3 is the Signal Low input. Typically Pin 2 is used for Excitation Voltage output.



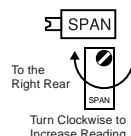
## 24V DC Output Header

On some modules this header enables a 24V DC 25mA (max) Excitation/Auxiliary output to be connected to Pin 2.



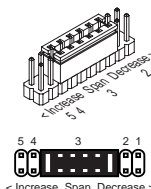
## INPUT RANGE Header

Range values are marked on the PCB. Typically two to four positions are provided, which are selected with either a single or multiple jumper clip. When provided, a custom range position is only functional when the option has been factory installed.



## SPAN Potentiometer (Pot)

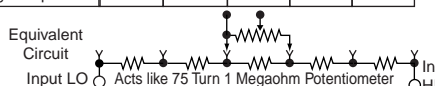
If provided, the 15 turn SPAN pot is always on the right side (as viewed from the rear of the meter). Typical adjustment is 20% of the input signal range.



## SPAN ADJUST Header

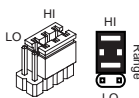
This unique five-position header expands the adjustment range of the SPAN pot into five equal 20% steps, across 100% of the input Signal Span. Any input Signal Span can then be precisely scaled down to provide any required Digital Display span from 1999 counts to 001 (one count).

SPAN Adjust Header position	1	2	3	4	5
SPAN Pot %	20%	20%	20%	20%	20%
Signal Span %	20%	40%	60%	80%	100%



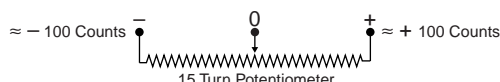
## SPAN RANGE Header

When this header is provided it works in conjunction with the SPAN ADJUST Header by splitting its adjustment range into a Hi and a Lo range. This has the effect of dividing the adjustment range of the SPAN pot into ten equal 10% steps across 100% of the input Signal Span.

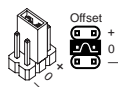


## ZERO Potentiometer (Pot)

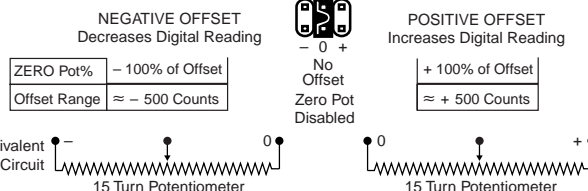
If provided, the ZERO pot is always to the left of the SPAN pot (as viewed from the rear of the meter). Typically it enables the input signal to be offset  $\pm 5\%$  of full scale (-100 to +100 counts).



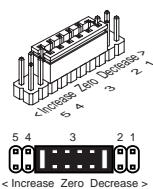
## ZERO OFFSET RANGE Header



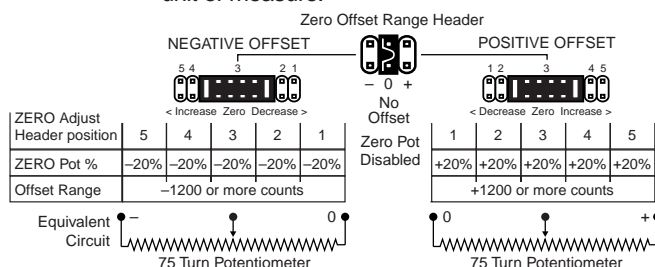
When provided, this three position header increases the ZERO pot's capability to offset the input signal, to  $\pm 25\%$  of the digital display span. For example a Negative offset enables a 1 to 5V input to display 0 to full scale. The user can select negative offset, positive offset, or no offset (ZERO pot disabled for two step non-interactive span and offset calibration).



## ZERO ADJUST Header



When this header is provided, it works in conjunction with the ZERO OFFSET RANGE Header, and expands the ZERO pot's offset capability into five equal negative steps or five equal positive steps. This enables virtually any degree of input signal offset required to display any desired engineering unit of measure.



## Input Module Calibration



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

**Basic standard range calibration of direct reading modules that utilize either Auto Zero or a ZERO pot, an INPUT RANGE Header and or a SPAN pot.**

- 1 If the module has an INPUT RANGE Header, reposition the jumper clip to select the desired input signal range.
- 2 Apply a zero input or short the input pins. The display will auto zero, or if the module has a ZERO pot, it should be adjusted until the display reads zero.
- 3 Apply a known input signal that is at least 20% of the full scale input range and adjust the SPAN pot until the display reads the exact input value.
- 4 Decimal Points. The selection or positioning of decimal points has no effect on the calibration of the modules

**Wide range scaling, in engineering units not requiring offsets, with modules that utilize auto-zero or a ZERO pot, a SPAN RANGE Header and or a SPAN ADJUST Header.**

Texmate's unique SPAN ADJUST and SPAN RANGE Headers provide the circuit equivalent of an ultra-precision one megohm 75 or 150 turn potentiometer that can infinitely scale down any Input Signal SPAN to provide any full scale Digital Display Span from 1999 (counts) to 001 (one count).

## Input Module Calibration Procedures Continued

If the module has an INPUT RANGE Header, and the required full scale Digital Display Span (counts) is to be larger than the directly measured value of the input Signal Span, then the next lower range on the INPUT RANGE Header should be selected. The resulting over range Signal Span is then scaled down, by selecting the position of the SPAN RANGE Header and or the SPAN ADJUST Header, which will reduce the input Signal Span to a percentage, that the required Digital Display Span can be reached by calibration with the SPAN pot.

**Example A:** 0 to 10 V to read 0 to 1800 gallons.

Signal Span = 10V, Digital Display Span = 1800 counts

- 1 Select the 2 V INPUT RANGE Header position. This will provide a digital display of 1800 counts with an input of only 1.8 V which is  $(1.8 \div 10) = 18\%$  of the examples 10 V Signal Span.
- 2 To scale down the Signal Span to 18% select the 20% Signal Span position on the SPAN ADJUST Header (position 1) or if the module has a SPAN RANGE Header, select (LO Range) and 20% Signal Span position on the SPAN ADJUST Header (position 2).
- 3 Apply a zero input or short the input pins. The display will auto zero, or if the module has a ZERO pot, it should be adjusted until the display reads zero.
- 4 Apply 10 V and adjust the SPAN pot until the display reads 1800.

### Large offset scaling and calibration of process signal inputs with modules that utilize ZERO ADJUST Headers and or ZERO OFFSET RANGE Headers.

Texmate's unique ZERO OFFSET RANGE Header enables the use of a simple two step scaling and calibration procedure for those process signals that require large offsets. This eliminates the back and forth interaction, between zero and span settings, that is often required to calibrate less finely engineered products.

The first step is to set the ZERO OFFSET RANGE Header to the center position (No Offset) and scale down the Input Signal Span to a percentage that will enable calibration with the SPAN pot to reach the required Digital Display Span.

The second step is to set the ZERO ADJUST and or ZERO OFFSET RANGE Header to provide a positive or negative offset of sufficient counts that calibration with the ZERO pot will offset the Digital Display Span to produce the required digital reading.

**Example B:** 1 to 5 V to read -100 to 1500 °C.

Signal Span = 4V, Digital Display Span = 1600 counts

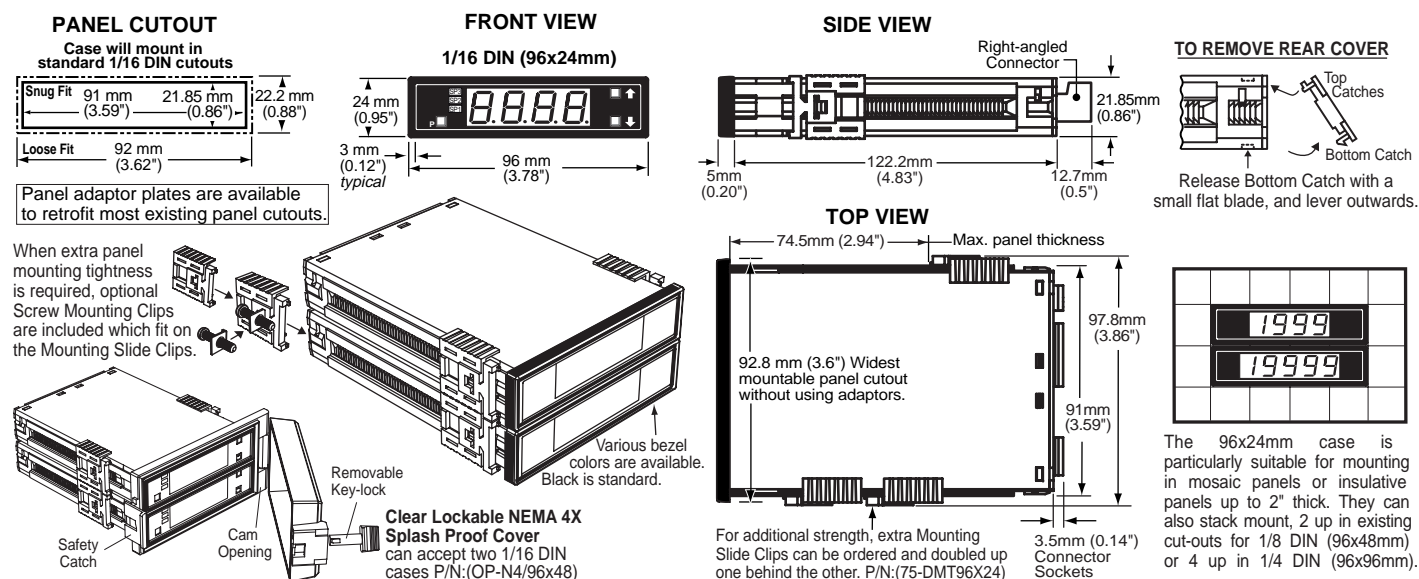
- 1 If the module has an INPUT RANGE Header the 2 V position should be selected. This will provide a digital display of 1600 counts for an input of 1.6 V which is  $(1.6 \div 4) = 40\%$  of the examples 4 V signal span. To scale down the Signal Span to 40% select the 40% Signal Span position on the SPAN ADJUST Header (position 2).
- 2 If the module is a Process Input 1-5 V DC type, select the (Hi Range) position on the SPAN RANGE Header and the 100% Signal Span position on the SPAN ADJUST Header (position 5, max increase). This will provide a digital display of 1600 counts for an input of 4V which is 100% of the examples 4V Signal Span.
- 3 Set the ZERO OFFSET RANGE Header to the center position (no offset). Apply 1 V and adjust the SPAN pot until the display reads 400 . A 4V input would then read 1600 counts.
- 4 Set the ZERO OFFSET RANGE Header to the negative offset position. If the module has a ZERO ADJUST Header select the position that will provide a negative offset of  $\approx -500$  counts. Apply 1 V and adjust the ZERO pot until the display reads -100. Apply 5 V and check that the display reads 1500.

**Example C:** 4 to 20 mA to read 00.0 to +100.0%

Signal Span = 16 mA, Digital Display Span = 1000 counts.

- 1 The full scale Signal Span of the Process Input 4-20 mA modules is 0 to 20 mA for a full scale Digital Display Span of 0 to 2000 counts. This will provide a digital display of 1000 counts with an input of only 10 mA which is  $(10 \div 16) = 62.5\%$  of the examples 16 mA signal span.
- 2 To scale down the Signal Span to 62.5% select the (Hi Range) Position on the Span Range Header and the 70% Signal Span position on the SPAN ADJUST Header (position 2).
- 3 Set the ZERO OFFSET RANGE Header to the center position (no offset). Apply 4 mA and adjust the SPAN pot until the display reads 250 . A 16 mA input would then read 1000 counts.
- 4 Set the ZERO OFFSET RANGE Header to the positive offset position. If the module has a ZERO ADJUST Header select the position that will provide a negative offset of  $\approx -250$  counts. Apply 4 mA and adjust the ZERO pot until the display reads 000. Apply 20 mA and check that the display reads 1000. Select decimal point 1XX.X to display 00.0 to 100.0.

## Case Dimensions



## Ordering Information

BASIC MODEL #	DISPLAY	POWER SUPPLY	INPUT MODULES	OPTIONS / ACCESSORIES
<b>BX-35</b>				<b>OA_____</b>

Add to the basic model number the order code suffix for each standard option required. The last suffix is to indicate how many different special options and/or accessories that you may require to be included with this product.

**Ordering Example: BX-35-DR-PS1-IA01-OA2, the 2 OA's are, CR-CHANGE and a 75-DMT96X24**

### ► BASIC MODEL NUMBER

**BX-35** . . . . 96x24mm, Lynx, 3.5 Digit

### Standard Options for this Model Number

Order Code Suffix	Description
-------------------	-------------

#### ► DISPLAY

**DR** . . .Red LED, 0.56 inch high  
**DB** . . .Super-bright Red LED, 0.56 inch high  
**DG** . . .Green LED, 0.56 inch high

#### ► POWER SUPPLY

**PS1** . . .85-265VAC/95-370VDC  
**PS2** . . .15-48VAC/10-72VDC

#### ► INPUT MODULES (Partial List. See [www.texmate.com](http://www.texmate.com))

Unless otherwise specified Texmate will ship all modules pre calibrated with factory preselected ranges and/or scalings as shown in **BOLD** type.

**IA01** . . .AC-Volts Scaled RMS, 200/**600V** AC  
**IA02** . . .AC-Volts Scaled RMS, 200mV/**2V**/20V AC  
**IA03** . . .AC-mA Scaled RMS, 2/**20**/200mA AC  
**IA04** . . .AC-Amps Scaled RMS, **0-1 Amp AC (0-100.00)**  
**IA05** . . .AC-Amps Scaled RMS, **0-5 Amp AC (0-100.00)**  
**IA06** . . .AC-Volts True RMS, 200/**600V** AC  
**IA07** . . .AC-Volts True RMS, 200mV/**2V**/20V AC  
**IA08** . . .AC-mA True RMS, 2/**20**/200mA AC  
**IA09** . . .AC-Amps True RMS, **0-1 Amp AC (0-100.00)**  
**IA10** . . .AC-Millivolt, Scaled RMS, **100mV** AC  
**IA11** . . .AC-Amps True RMS, **0-5 Amp AC (0-100.00)**  
**IA12** . . .AC-Millivolt, True RMS, **100mV** AC  
**ID01** . . .DC-Volts, 2/20/200V/Custom w/24V DC Exc  
**ID02** . . .DC-Millivolt, 20/50/**100**/200mV DC w/24V DC Exc  
**ID03** . . .DC-Milliamp, 2/20/200mA DC w/24V DC Exc  
**ID04** . . .DC-Amps, **5A DC**  
**ID05** . . .DC-Volts 2/20/200/Custom V DC w/Offset and 24V Exc  
**ID07** . . .DC-Milliamp, 2/20/200mA DC w/Offset and 24V Exc  
**ID09** . . .DC-Amps, **1A DC**  
**IF02** . . .Line Frequency, 50-500VAC, 199.9Hz, or optional 400Hz  
**IGYZ\*** . . .Universal Direct Pressure

\*View the IG- Ordering Code on page 5 to determine the value for Y & Z (IGAZ to IGKZ)

**IP01** . . .Process Loop, **4-20mA(0-100.00)**  
**IP02** . . .Process Loop, **4-20mA(0-100.00)** w/24VDC Exc  
**IP03** . . .Process Input, **1-5V DC(0-100.00)** w/Offset, 24V Exc  
**IP04** . . .Prototype Board for Custom Design  
**IR02** . . .3-Wire Potentiometer 1K $\Omega$  min (0-F.S.)  
**IR03** . . .Linear Potentiometer, 3-wire, 1K $\Omega$  min  
**IR04** . . .Resistance 2K $\Omega$   
**IS04** . . .Pressure Ext Exc., 20/2mV/V, **4/6-wire**  
**IS05** . . .Pressure/Load Cell 20/2mV/V, 5/10V Exc 4-wire  
**IS06** . . .Pressure/Load Cell Ext Exc., 20/2mV/V, 4-wire  
**IT03** . . .RTD, 100 $\Omega$  Pt. 2/3/4-wire **(-200 to 800°C)**  
**IT04** . . .RTD, 100 $\Omega$  Pt. 2/3/4-wire **(-200 to 1470°F)**  
**IT05** . . .RTD, 100 $\Omega$  Pt. 2/3/4-wire **(-190.0 to 199.0°F)**  
**IT06** . . .Thermocouple, J Type **(0-1400 °F)**  
**IT07** . . .Thermocouple, K Type **(0-1999°F)**  
**IT08** . . .Thermocouple, J Type **(0-760 °C)**  
**IT09** . . .Thermocouple, K Type **(0-1260°C)**  
**IT14** . . .RTD, 100 $\Omega$  Pt. 2/3/4-wire **(-199.0 to 199.0°C)**

### Special Options and Accessories (OA's)

Part Number	Description
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#### ► SPECIAL OPTIONS (Specify Input & Req. Reading)

**CR-CHANGE** . . . . .Calibrated Range Change to another Standard Range  
**CS-X/35** . . . . .Custom Scaling within any Stnd. or Custom Selectable Range  
**CSR-X/35** . . . . .Custom Selectable Range Installation or Modification  
**CSS-X/35** . . . . .Custom Special Scaling beyond the Standard Range

#### ► ACCESSORIES (Specify Serial # for Custom Artwork Installation)

**75-DMTC96X24** . . .Side Slide Brackets (2 pc) - extra set, extra strength  
**75-DBBZ96X24** . . .Extra Black Bezel for 96x24mm Case  
**ART-FS-S/D/C** . . .NRC for artwork & set-up Faceplate/Desc/Co.Logo  
**ART-FS-S/D** . . . . .NRC for artwork & set-up Faceplate/Desc  
**ART-FS-001** . . . . .Install Custom Faceplate per meter - 1 color  
**93-PLUG2P-DP** . . .Extra Screw Terminal Conn., 2 Pin Power Plug  
**93-PLUG2P-DR** . . .Extra Screw Terminal Conn., 2 Pin Plug  
**93-PLUG3P-DR** . . .Extra Screw Terminal Conn., 3 Pin Plug  
**93-PLUG4P-DR** . . .Extra Screw Terminal Conn., 4 Pin Plug  
**DN.CAS96X24L** . . .Extra Complete 96x24mm Case with bezel

Many other options and accessories are available. See full price list for more details.  
Prices subject to change without notice.

### WARRANTY

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