LYNX FAMILY

BX-B31-PROCESS

Lynx 4-20mA/0-10V Process Bargraph Meter

31 LED Segments in a 1/16 DIN Case

A versatile, modular bargraph with optional single or dual setpoints.

General Features

- 31 segment AC/DC powered modular compact bargraph.
- Ideal for Monitoring, FLow/Rate/Level:

  – 4-20mA

  IP01 : 4-20mA Process Loop

  IP02 : 4-20mA Process Loop with Excitation 24VDC@100mA

  – 0-10V

  ID01 : DC-Volts **2**/20/200V with 24V DC Exc

  ID05 : DC-Volts **2**/20/200V with offset and 24V DC Exc
- 1/16 DIN (96 x 24mm) case easily mounts in thin or thick panels (up to 2").
- Red (std), green (optional) or amber (optional) colors.
- Vertical or horizontal formats.
- 24 V DC excitation is available to power external transmitters.
- High voltage power supply (PS1) 85 - 265VAC / 95 - 300VDC, Low voltage power supply (PS2) 14 - 48VAC / 10 - 72VDC
- Optional single or dual setpoints with easy adjustment from the front.
- Dual 4A Form "A" relays or one 4A Form "A" and one 9A Form "C" relays.
- Easy configuration of relays as high or low setpoints.
- Proportional brightness mode for increased effective optical resolution.

Specifications

Input Specs: .....Series connection to 4-20mA process loop or Single ended 0-10V DC

A/D Converter: .....31 step flash converter

Accuracy: .....±(0.05% of reading + 3 counts)

Temp. Coeff.:.....100 ppm/°C (Typical)

Warm up time:.....2 minutes

Display:.....Thirty-one 0.2" x 0.06" (5.08 x 1.52mm) LED segments. Red display (std), green (opt) or amber (opt)

Power Supply:.....AC/DC Auto sensing wide range supply

PS1 (std) .....**85-265 VAC / 95-300 VDC @ 1.5W**

PS2 .....14-48 VAC / 10-72 VDC @ 4.0W

Operating Temp.:.....0 to 50° C

Storage Temp:.....-20° C to +70° C

Relative Humidity: ....95% (non condensing)

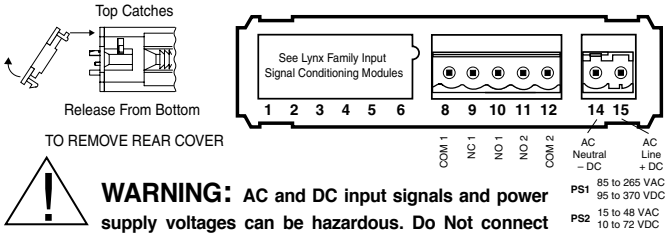
Case Dimensions: ....1/16 DIN, Bezel: 96x24mm(3.78"x0.95") Depth behind bezel 122.2 mm (4.83") Plus 12.7mm (0.5") for Right-angled connector.

Weight:.....198 gms (7 oz) 255 gms (9 oz) when packed

Index

Connector Pinouts

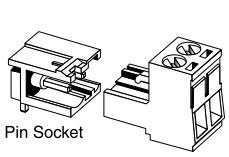
This meter comes standard with screw terminal plug connections.



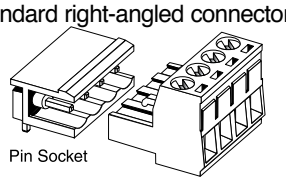
WARNING: AC and DC input signals and power supply voltages can be hazardous. Do Not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.

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.



Input Power
Screw Terminal Plug



Right-angled
Screw Terminal Plug

Pin Descriptions

Pins 1 to 6 - Input Module: See the individual pin out of the input signal conditioning module selected.

Pin 8 - Common of 9 Amp Form C or 4 Amp Form A SP1 Relay.

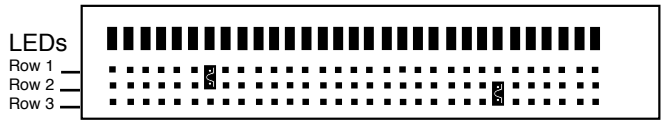
Pin 9 - Normally Closed Contact of 9 Amp Form C SP1 Relay.

Pin 10 - Normally Open Contact of 9 Amp Form C or 4 Amp Form A SP1 Relay.

Pin 11 & Pin 12- Normally Open Contacts of 5 Amp Form A SP2 Relay.

Pin 14 & Pin 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/95-300 VDC (PS1 Std). An optional isolated low voltage power supply that operates from 14-48 VAC/10-72 VDC (PS2) is also available.

Changing the Setpoints From the Front of the Meter

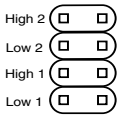


FRONT OF METER WITH BEZEL AND FILTER REMOVED

To adjust the setpoint on the BX-B31 with relays, remove the front bezel and faceplates. Use needlenose pliers to remove and reposition the setpoint jumper clips.

For Setpoint #1: Insert the jumper clip between Row #1 and Row #2, directly below the LED that you wish to activate.

For Setpoint #2: Insert the jumper clip between Row #2 and Row #3, directly below the LED that you wish to activate.



Relay Activation Select Header

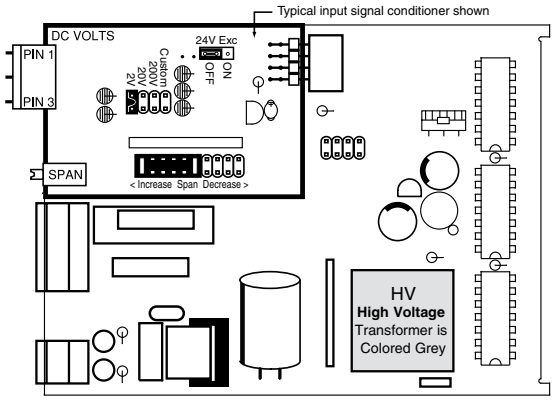
Select High to energize the relay when the setpoint is exceeded. Select Low to energize the relay when the display is below the setpoint.

Proportional Brightness Band Potentiometer

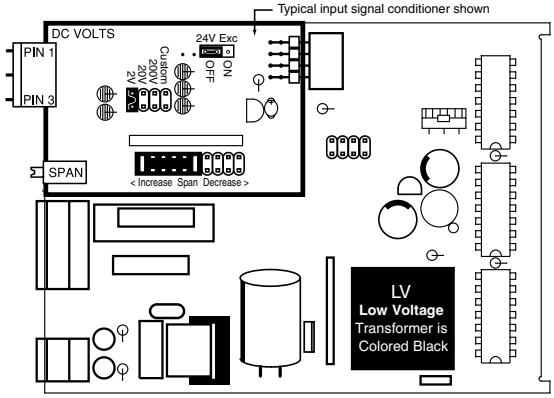
The Proportional Brightness Potentiometer superimposes a proportional brightness band to the leading edge of the bargraph which creates the optical appearance of a pointed arrow. This feature produces a display of infinite resolution. The position of the signal in relation to any two adjacent segments and the scale on the faceplate can be accurately ascertained to within 1%. When the amplitude of the proportional band is adjusted counterclockwise to zero, the smooth proportional advance of the display will be replaced by a step by step movement as each bar is either turned full on or full off.

Component Layout

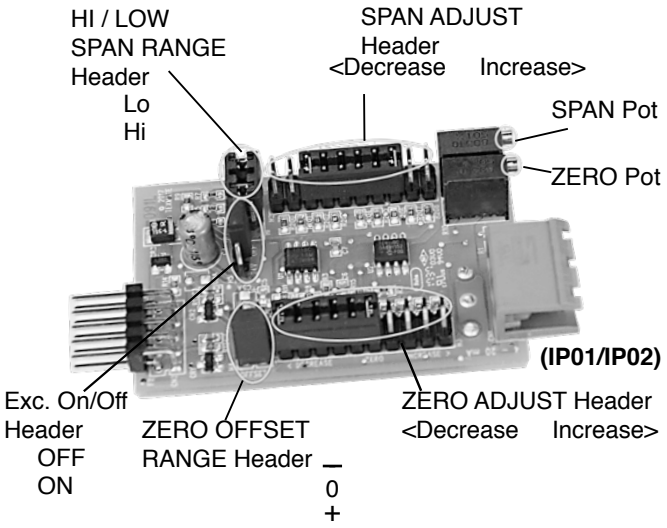
BX-B31-XX-PS1 (High Voltage)



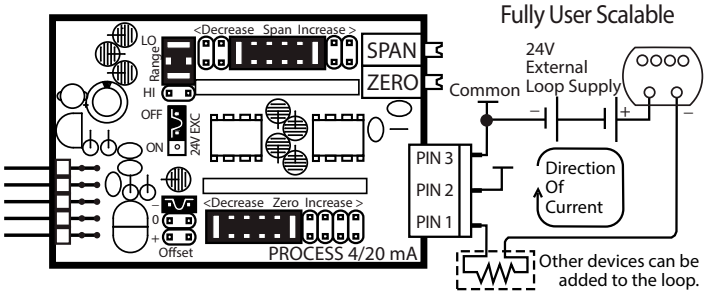
BX-B31-XX-PS2 (Low Voltage)



4-20mA INPUT MODULE

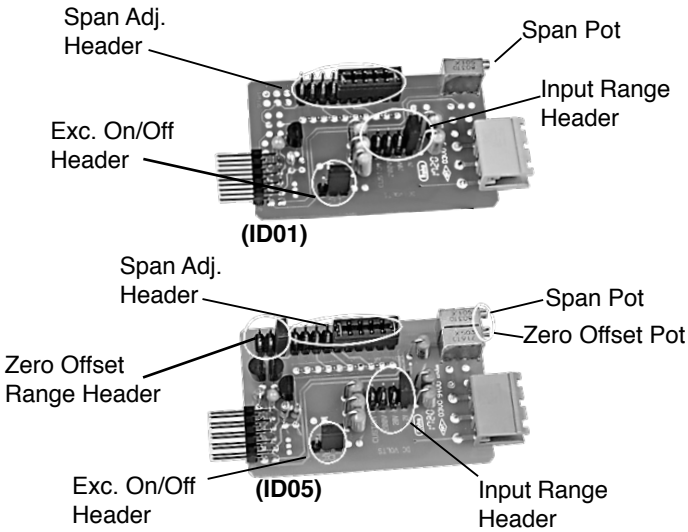


4 to 20mA Process Loop Measurement

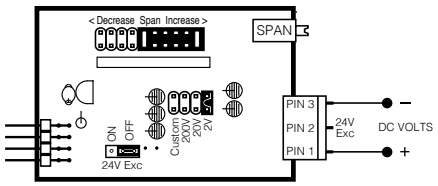


Order IP02, if you require the loop excitation voltage (24VDC@100mA) to be supplied by the meter.

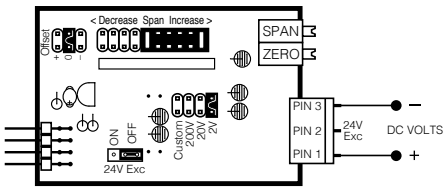
0-10V INPUT MODULE



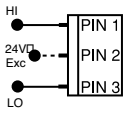
ID01: DC Volts, 2/20/200V/Custom w/24V DC Exc



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

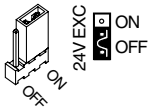


Input Module Component Glossary



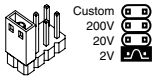
Input and Output Pins

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.



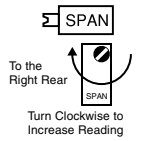
24V DC Output Header

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



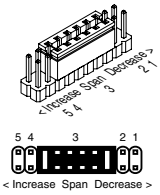
INPUT RANGE Header

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)

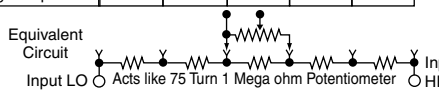
If provided, the 15 turn SPAN pot is always on the right side (as viewed from the rear of the meter). Typical adjustment is 20% of the input signal range.

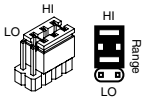


SPAN ADJUST Header

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 19999 counts to 0001 (one count).

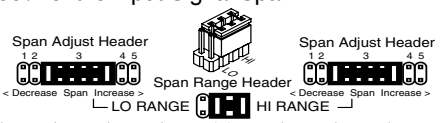
SPAN Adjust Header position	1	2	3	4	5
SPAN Pot %	20%	20%	20%	20%	20%
Signal Span %	20%	40%	60%	80%	100%



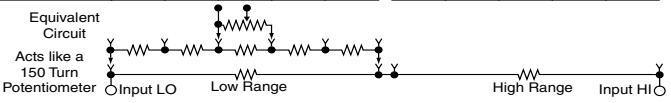


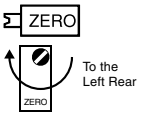
SPAN RANGE Header

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.



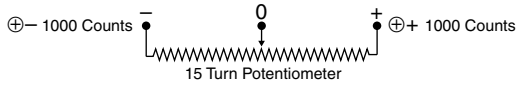
SPAN Adjust Header position	1	2	3	4	5	1	2	3	4	5
SPAN Pot %	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Signal Span %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%



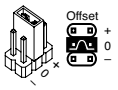


ZERO Potentiometer (Pot)

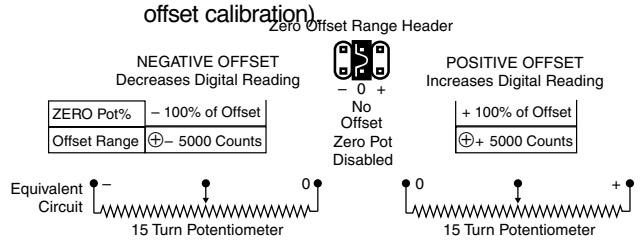
If provided, the ZERO pot is always to the left of the SPAN pot (as viewed from the rear of the meter). Typically it enables the input signal to be offset ±5% of full scale (-1000 to +1000 counts).



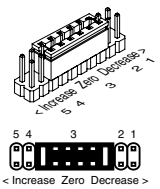
ZERO OFFSET RANGE Header



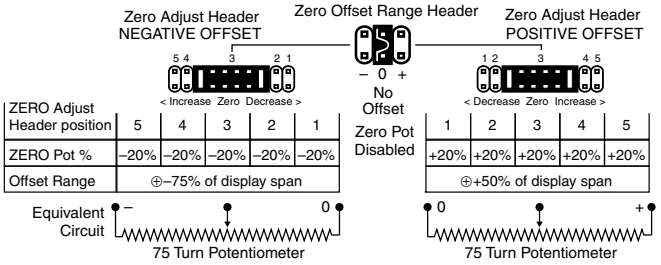
When provided, this three position header increases the ZERO pot's capability to offset the input signal, to ±25% of the digital display span. For example a Negative offset enables a 1 to 5V input to display 0 to full scale. The user can select negative offset, positive offset, or no offset (ZERO pot 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.

Note: I-Series modules with analog calibration and scaling capability can be interchanged between any compatible meter without recalibration. However, meters that also have software scaling and calibration capabilities such as meters in the Leopard and Tiger families or Lynx

Q-Series (Quickset programming), must have their software scaling set to unity gain.

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. The Lynx family of Q meters can accept negative signals also, and may be scaled for inputs from -50% to +100% of the range selected on the input signal conditioning module.

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

Input Module Calibration Procedures Continued

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 Display Span from full scale to the smallest viewable unit.

If the module has an INPUT RANGE Header, and the required full scale Display Span (digital counts or bargraph segments) 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 Display Span can be reached by calibration with the SPAN pot.

Example A: Using a BX-B31 bargraph meter

Input signal 0 to 10 V to read zero to full scale.

Signal Span = 10 V, Display Span = 30 segments

1 Select the 2 V INPUT RANGE Header position. The standard direct scaling will provide a display of 30 segments with an input of only 2 V which is (2÷10) =20% of the examples 10 V Signal Span.

2 To scale down the Signal Span to 20% 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 full scale.

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 Display Span.

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

Example B: Using a BX-B31 Bargraph meter.

Input signal 1 to 5 V to read zero to full scale.

Signal Span = 4 V, Display Span = 30 segments

1 If the module has an INPUT RANGE Header the 2 V position should be selected. This will provide a display of 30 segments for an input of 2 V which is (2 ÷ 4) = 50% of the examples 4 V signal span. To scale down the Signal Span to 50% select the next higher 60% Signal Span position on the SPAN ADJUST Header (position 3).

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 display of 30 segments for an input of 4 V which is 100% of the examples 4 V 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 8.5 segments . A 4 V input would then read 30 segments.

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 ≈ 25 segments. Apply 1 V and adjust the ZERO pot until the display reads zero. Apply 5 V and check that the display reads full scale.

Example C: Using a BX-B31 Bargraph meter

Input signal 4 to 20 mA to read zero to full scale

Signal Span = 16 mA, Display Span = 30 segments

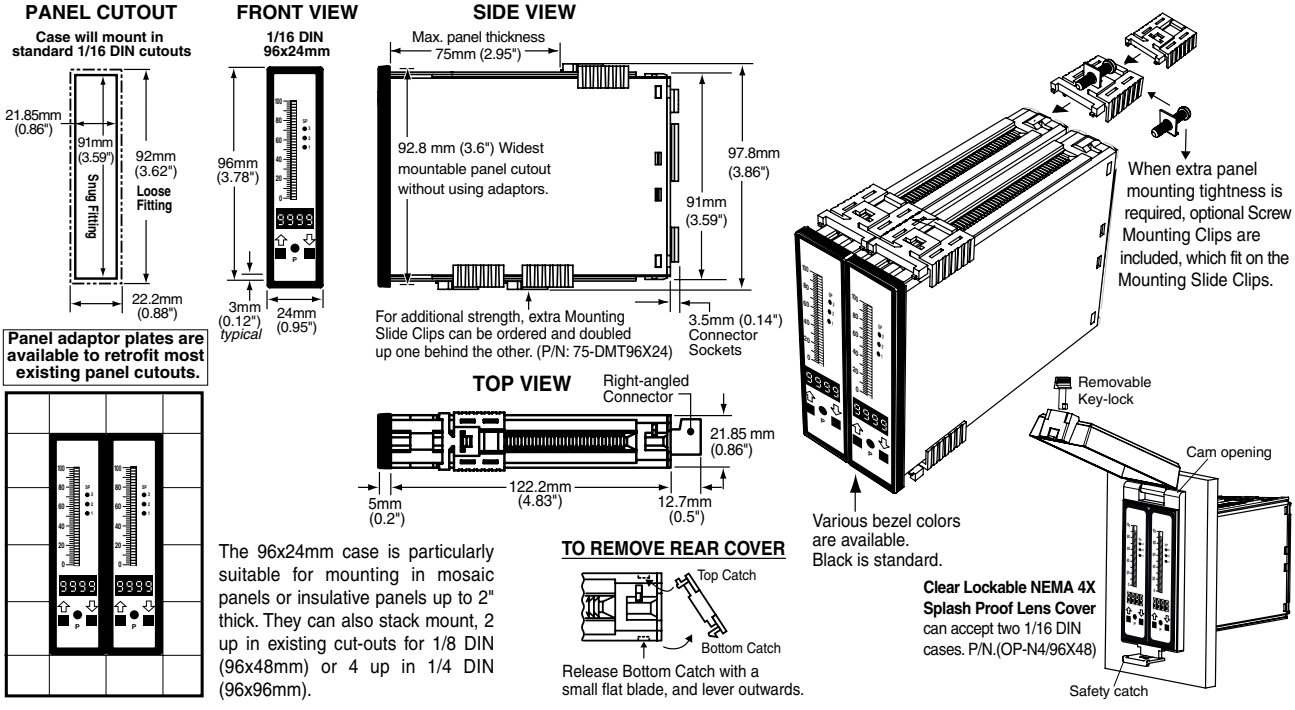
1 The full scale Signal Span of the Process Input 4-20 mA modules is 0 to 20 mA for a full scale Display Span of 0 to 30 segments.

2 Select the (Lo 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 8.5 segments. A 16 mA input would then read 30 segments.

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 ≈ –8.5 segments. Apply 4 mA and adjust the ZERO pot until the display reads zero. Apply 20 mA and check that the display reads full scale.

Case Dimensions



The 96x24mm case is particularly suitable for mounting in mosaic panels or insulative panels up to 2" thick. They can also stack mount, 2 up in existing cut-outs for 1/8 DIN (96x48mm) or 4 up in 1/4 DIN (96x96mm).

Ordering Information

BASIC MODEL #	DISPLAY	POWER SUPPLY	INPUT MODULES	RELAY OUTPUT	OPTIONS / ACCESSORIES
BX-B31-PROCESS	–	–	–	–	– OA____

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-B31-PROCESS-VR-PS1-IA01-OA2, the 2 OA's are, ZR and a 75-DMT96X24

▸BASIC MODEL NUMBER

BX-B31-PROCESS **96x24mm, Lynx, 31 Segment Bargraph. . . .**

Standard Options for this Model Number

Order Code Suffix *Description*

▸DISPLAY

HG. . .31 Segment Green LED Bargraph, Horizontal . . . . . .
HR. . .31 Segment Red LED Bargraph, Horizontal . . . . . .
VG. . .31 Segment Green LED Bargraph, Vertical. . . . . .
VR . . .31 Segment Red LED Bargraph, Vertical. . . . . .

▸POWER SUPPLY

PS1 . .85-265VAC/95-300VDC . . . . . .
PS2 . .14-48VAC/10-72VDC . . . . . .

▸INPUT MODULES

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

IP01 . .Process Loop, 4-20mA(0-100.00) . . . . . .
IP02 . .Process Loop, 4-20mA(0-100.00) w/24VDC Exc. . . . . .
ID01 . .DC-Volts, **2**/20/200V/Custom w/24V DC Exc . . . . . .
ID05 . .DC-Volts **2**/20/200/Custom V DC w/Offset and 24V Exc. .

▸RELAY OUTPUT

R1 . . .Single 5A Form A Relay . . . . . .
R2 . . .Dual 5A Form a Relays. . . . . .
R11 . .Single 10A Form C Relay . . . . . .
R16 . .Single 10A Form C & Single 5A Form C Relays. . . . .

Special Options and Accessories (OA's)

Part Number *Description* *List*

▸SPECIAL OPTIONS (Specify Input & Req. Reading)

ZR . . . . . Calibrated Range Change to another Standard Range . .

▸ACCESSORIES (Specify Serial # for Custom Artwork Installation)

75-DMT96X24. . Side Slide Brackets (2 pc) - extra set, extra strength
75-DBBZ96X24 Extra Black Bezel for 96x24mm Case
ART-NRC-DES . .NRC custom faceplate design. . . . . .
ART-FS1 . . . . . .Custom Faceplate - 1 color . . . . . .
ART-FS2 . . . . . .Custom Faceplate - 2 color . . . . . .
ART-FS3 . . . . . .Custom Faceplate - 3 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 Complete 96x24mm Case with bezel . . . . . .
OP-MTLCLIP . . . Screw Mounting Clips (2 pc) to screw tighten slide . . . . . brackets
75-DTP96X24 . . Black Metal Trim Plate (96x24mm Case) 1 Meter . . . . .
75-DTP2X9624 . Black Metal Trim Plate (96x24mm Case) 2 Meters . . . .
75-DTP3X9624 . Black Metal Trim Plate (96x24mm Case) 3 Meters . . . .
OP-PMA/SWB-2 Switch Board Panel Mounting Adapter, 1/8 DIN . . . . . (96x48mm) or two 1/16 DIN (96x24mm)
OP-PMA/SWB-3 Switch Board Panel Mounting Adapter, 1 of 1/8 DIN . . . . . (96x48mm) and 1 of 1/16 DIN or Three 1/16 DIN (96x24mm)

Many other options and accessories are available. See www.texmate.com for full options and accessories.

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