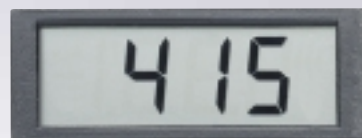
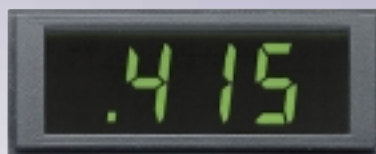
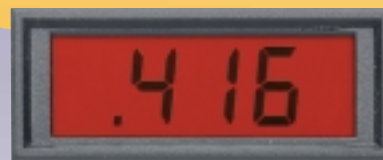
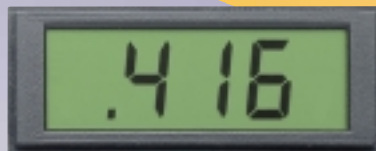


## BL Non-Isolated Power DPM Big Little Digital Panel Meters

MODUTEC

**BEST OF  
CLASS**



### Backlighting Options

- Positive Green Black on Green Background
- Negative Green Green on Black Background
- Positive Red Black on Red Background
- Negative Red Red on Black Background
- Non-Backlit LCD Black on Grey Background

*The MODUTEC BL Digital panel meter gives you all the functionality you need with none of the extras you don't need. That means simplicity, easy readability, small footprint, and a low cost.*

- Ultra compact form factor with optional flat back design on BL-176 or BL-177<sup>1</sup>
- Ideal for line monitoring
- Value priced
- Low power consumption
- Input signal can be used to power meter

*The MODUTEC BL is easy-to-read and provides a variety of indicators — all in a compact unit.*

- 3 ½ digit readout, full scale 1999 display
- ½" high digits on a high contrast LCD
- Auto-polarity (-) displayed

*Ease of assembly is one of the BL's most valuable benefits.*

- 13 pin connection, solder pad connections or terminal block
- Easy to install bezel mount

*The BL offers a variety of flexible features to meet your unique applications needs.*

- User selectable decimal points
- Choice of  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$ ,  $\pm 200\mu\text{A}$ ,  $\pm 2\text{mA}$ ,  $\pm 20\text{mA}$ , or  $\pm 200\text{mA}$  input as standard
- Choice of  $+5\text{VDC}$ ,  $\pm 5\text{VDC}$ ,  $10\text{-}24\text{VDC}$ ,  $115\text{VAC}$  or  $230\text{VAC}$  power options

<sup>1</sup> See our website for specifications.

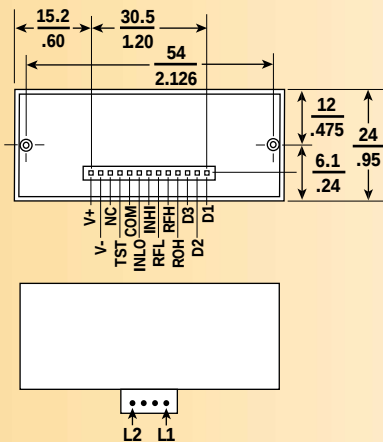
### Applications

- ▶ Telecommunications
- ▶ Water Purification
- ▶ Sewage Treatment
- ▶ Flow
- ▶ Process
- ▶ Desalinization
- ▶ DC Amps
- ▶ DC Volts

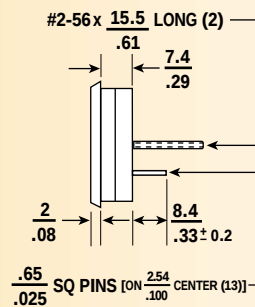
## BL Series 13 Pin Connector and Solder Pad Dimensional Drawings (mm/in)

BL Family 13 Pin Connector (Note: Do not solder to pins.)

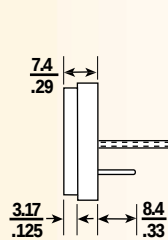
Dimensional Drawing



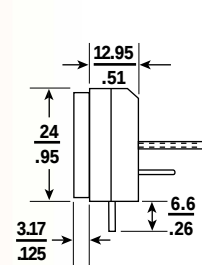
Bezel Mount Side View



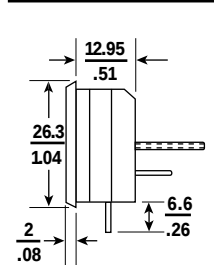
Window Mount Side View



Backlit Window Mount Side View

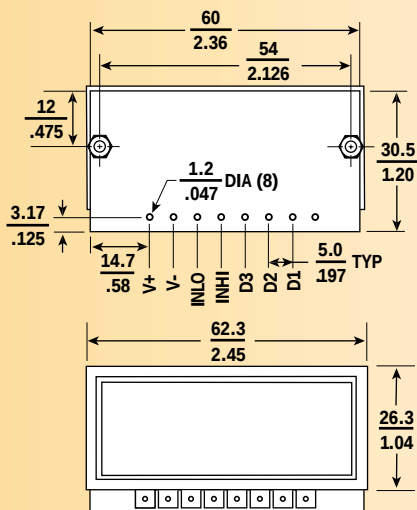


Backlit Bezel Mount Side View

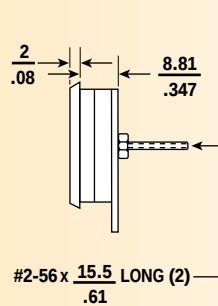


BL Family Solder Pads

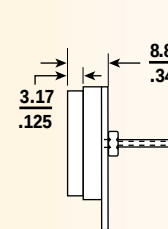
Dimensional Drawing



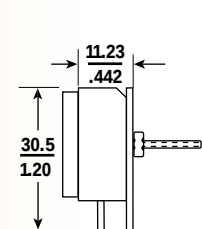
Bezel Mount Side View



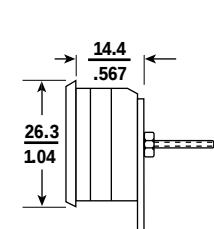
Window Mount Side View



Backlit Window Mount Side View



Backlit Bezel Mount Side View



## BL Series Specifications

### Display

**Digits:** 3 1/2 digits, 7 segments Backlit LCD (1999)

**Digit Height:** 0.5" (12.7 mm)

**Polarity:** Automatic (-) displayed

**Decimal Point:** Three positions, external selection

**Overload:** Three lower digits blank for readings greater than 1999 counts

### Performance

**Accuracy:**  $\pm(0.1\% \text{ rdg} + 2 \text{ count})$  with +5 and  $\pm 5\text{V}$  power

$\pm(0.1\% \text{ rdg} + 1 \text{ count})$  with 9V power 2.5 per second

**Conversion Rate:** 2.5 per second

**Common Mode Voltage Range:**  $\pm 1 \text{ V}$  maximum

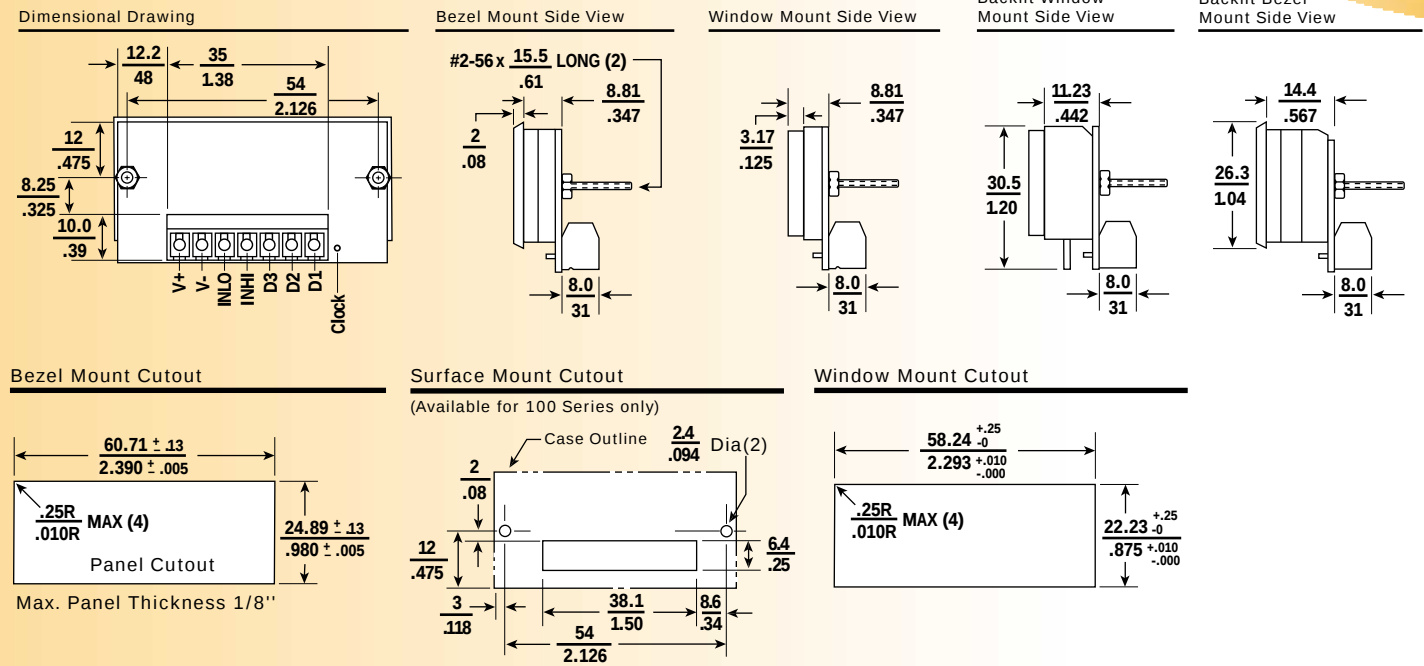
**Common Mode Rejection:** > 86 db

**Zero Adjust:** Automatic

**Tempco:** 100 PPM/ $^{\circ}\text{C}$  typical

## BL Series 13 Pin Connector and Solder Pad Dimensional Drawings (mm/in)

### BL Family Screw Terminal Block



## BL Series Specifications (continued)

### Standard Analog Inputs

**Full Scale Range:** Choice  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\mu\text{A}$ ,  $\pm 2\text{mA}$ ,  $\pm 20\text{mA}$ , or  $\pm 200\text{mA}$ . Special Ranges and engineering units available

**Configuration:** True differential input and references

**Ratiometric Operation:** Available on models BL-100, -130, -300, -330, -400, -430, -500, -530, -600, and -630

**Protection:** 250V DC or 150 V RMS continuous 300 V intermittent maximum

**Bias Current:** 1 pA typical, 10 pA maximum

### Standard Power Options

**+5V and -5VDC:**  $\pm 5\text{V} \pm 5\%$  at 150  $\mu\text{A}$

**+5VDC:** 5V  $\pm 5\%$  at 3 mA

### Connector Pin Designations

|                      |                                                                                                                                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>V+, V-</b>        | Positive & negative connections for power supply                                                                                                                                  |
| <b>NC:</b>           | Not Connected                                                                                                                                                                     |
| <b>TST:</b>          | Return for +5V power                                                                                                                                                              |
| <b>COM:</b>          | Internal reference voltage return. Input common for 9V units                                                                                                                      |
| <b>IN HI, IN LO:</b> | Signal inputs                                                                                                                                                                     |
| <b>RFL, RFH:</b>     | Differential reference inputs                                                                                                                                                     |
| <b>ROH, ROL:</b>     | On board reference terminals.                                                                                                                                                     |
| <b>D1, D2, D3:</b>   | Decimal point selection: Connect to V+ as follows:<br>D1=X.XXX<br>D2=XX.XX<br>D3=XXX.X                                                                                            |
| <b>L1, L2:</b>       | Backlighting power terminals: Connect as below.<br>Series 300, 400 (Green): L1 is negative input, L2 is positive.<br>Series 500, 600 (Red): L1 is positive input, L2 is negative. |

## How to Order

B L - **a** **b** **c** **d** **e** **f**  
**3** **3** **2** **3** **0 2** **0 1**

**a** Display  
**1 = Standard Reflective LCD**  
**3 = Positive Green**  
**4 = Negative Green**  
**5 = Negative Red**  
**6 = Positive Red**

**b** Mounting  
**0 = Window Mount**  
**3 = Bezel Mount**

**c** Terminals  
**0 = 13 Pins**  
**1 = Terminal Block**  
**2 = Solder Pads**

**d** DPM Power  
**1 = 9VDC**  
**2 = +5V and -5VDC**  
**3 = +5VDC**  
**6 = 10 to 30VDC<sup>1</sup>**

**e** Input  
**01 = 200mVDC**  
**02 = 2VDC**  
**03 = 20VDC**  
**04 = 200VDC<sup>1</sup>**  
**10 = 200 $\mu$ ADC<sup>1</sup>**  
**11 = 2mADC<sup>1</sup>**  
**12 = 20mADC<sup>1</sup>**  
**13 = 200mADC<sup>1</sup>**

**f** Backlit Power  
 (leave blank for all standard Reflective LCDs)  
**01 = 5VDC**  
**02 = 12VDC**  
**03 = 24VDC**

<sup>1</sup> Available only in X01, X02, X31 or X32 models

Example: BL-332302 01 is a positive green display, bezel mount DPM with solder pads, 5VDC DPM power, 2VDC input, and 5VDC backlight power.

## BL Series Specifications (continued)

### Backlighting Power Options — (Series 300, 400, 500 and 600 only)

| Power | Voltage Range     | Red Current <sup>1</sup>         | Green Current <sup>1</sup>      |
|-------|-------------------|----------------------------------|---------------------------------|
| 5VDC  | 4.7V to 5.25V max | 130mA to 200mADC (165mA nominal) | 75mA to 160mADC (115mA nominal) |
| 12VDC | 11V to 13V max    | 50mA to 100mADC (80mA nominal)   | 40mA to 80mADC (60mA nominal)   |
| 24VDC | 22V to 26V max    | 32mA to 50mADC (40mA nominal)    | 20 mA to 40mADC (30mA nominal)  |

<sup>1</sup> External resistor may be used to lower current requirements.

### Connectors

**Series BL-100, 130, 300, 330, 400, 430, 500, 530, 600, 630** 13 connector pins, 0.025" square

**Series BL-101, 131, 301, 331, 401, 431, 501, 531, 601, 631** 17 terminal connector block

**Series BL-102, 132, 302, 332, 402, 432, 502, 532, 602, 632** 7 solder pads

**Backlight power terminals:** 2 solder pads

### Environment

**Operating<sup>2</sup>:** 32°F to 122°F (0°C to +50°C)

**Storage:** -4°F to 158°F (-20°C to +70°C)

<sup>2</sup> Extended operating ranges available.

### Options:

- Female connector for BL-100, -130, -300, -330, -400, 430, -500, -530, -600, -630 series: Order 00-939033-091
- For display hold function add suffix "-H" to catalog number
- For coated board and solid front cover add suffix "-MI" to catalog number
- For special OEM requirements, other input ranges, wider operating temperature, or other features, contact factory.