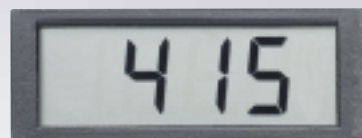
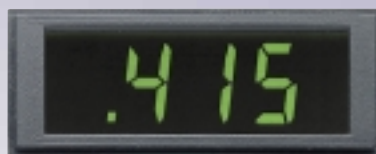
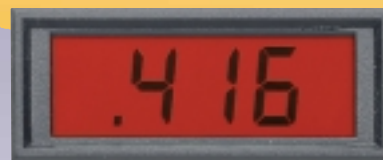
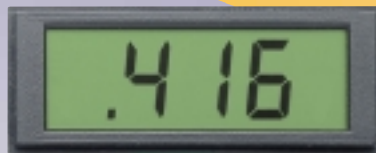


## BL Non-Isolated Power DPM Big Little Digital Panel Meters

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.

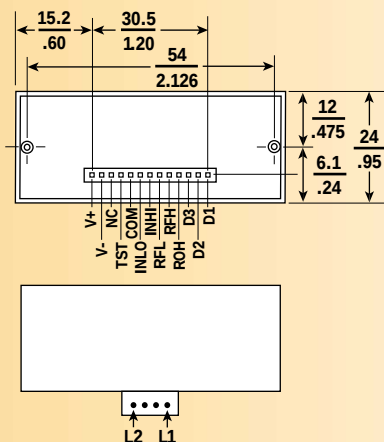
### Applications

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

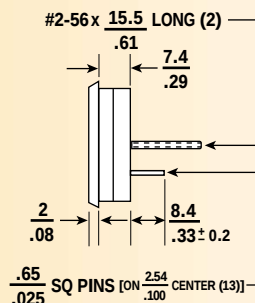
## BL Series 13 Pin Connector and Solder Pad Dimensional Drawings (mm/in)

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

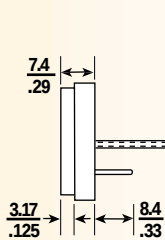
**Dimensional Drawing**



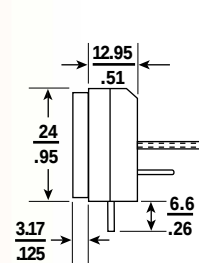
**Bezel Mount Side View**



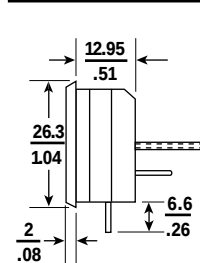
**Window Mount Side View**



**Backlit Window Mount Side View**

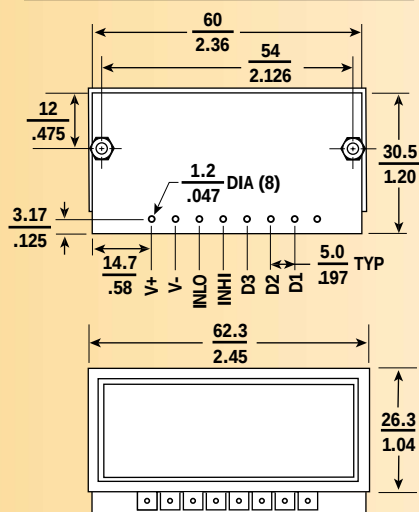


**Backlit Bezel Mount Side View**

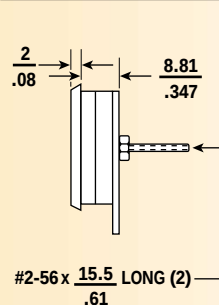


### BL Family Solder Pads

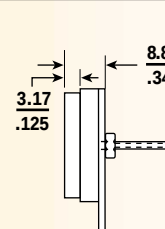
**Dimensional Drawing**



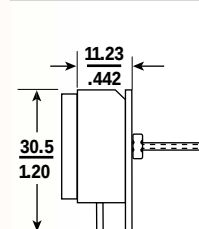
**Bezel Mount Side View**



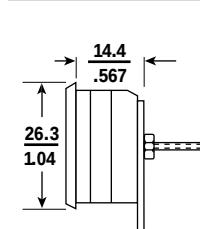
**Window Mount Side View**



**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:** ±(0.1% rdg + 2 count) with +5 and ±5V power

±(0.1% rdg + 1 count) with 9V power 2.5 per second

**Conversion Rate:** 2.5 per second

**Common Mode Voltage Range:** ±1 V maximum

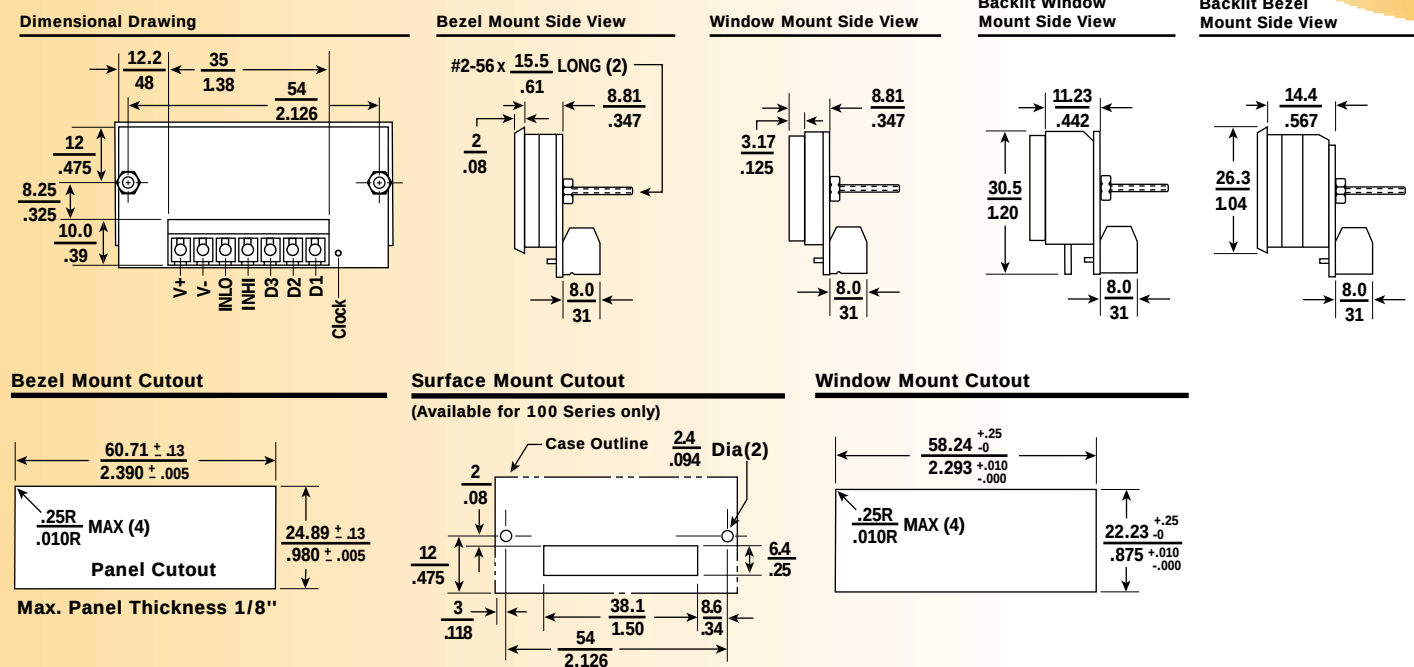
**Common Mode Rejection:** > 86 db

**Zero Adjust:** Automatic

**Tempco:** 100 PPM/°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

|               |                                                                                                                                                                                   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V+, V-        | Positive & negative connections for power supply                                                                                                                                  |
| NC:           | Not Connected                                                                                                                                                                     |
| TST:          | Return for +5V power                                                                                                                                                              |
| COM:          | Internal reference voltage return. Input common for 9V units                                                                                                                      |
| IN HI, IN LO: | Signal inputs                                                                                                                                                                     |
| RFL, RFH:     | Differential reference inputs                                                                                                                                                     |
| ROH, ROL:     | On board reference terminals.                                                                                                                                                     |
| D1, D2, D3:   | Decimal point selection: Connect to V+ as follows:<br>D1=X.XXX<br>D2=XX.XX<br>D3=XXX.X                                                                                            |
| L1, L2:       | 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.