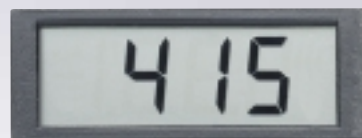
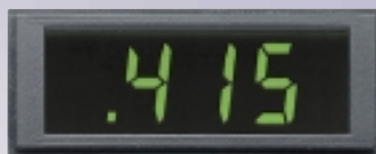
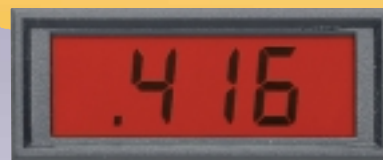
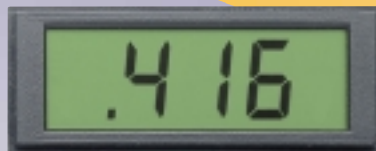


BL Non-Isolated Power DPM Big Little Digital Panel Meters

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-177¹
- 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 $+5\text{VDC}$, $\pm 5\text{VDC}$, $10\text{-}24\text{VDC}$, 115VAC or 230VAC power options

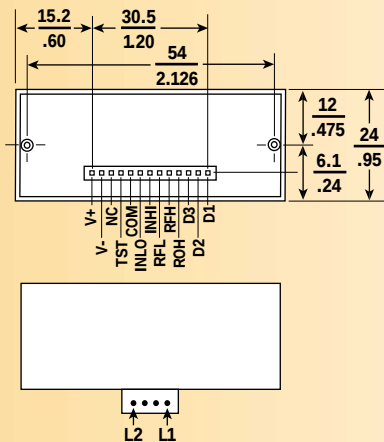
Applications

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

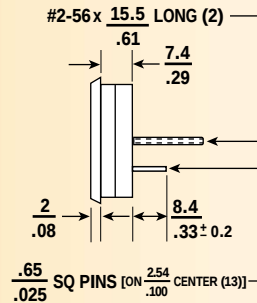
BL Series 13 Pin Connector and Solder Pad Dimensional Drawings (mm/in)

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

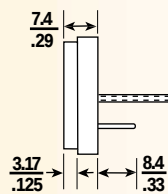
Dimensional Drawing



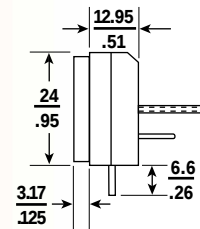
Bezel Mount Side View



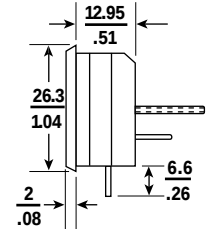
Window Mount Side View



Backlit Window Mount Side View

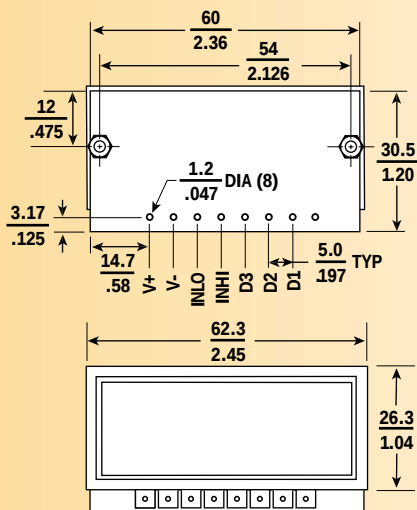


Backlit Bezel Mount Side View

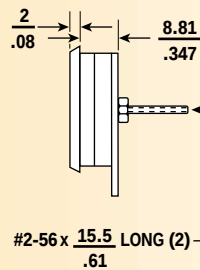


BL Family Solder Pads

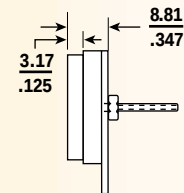
Dimensional Drawing



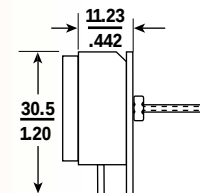
Bezel Mount Side View



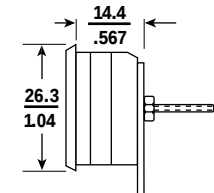
Window Mount Side View



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

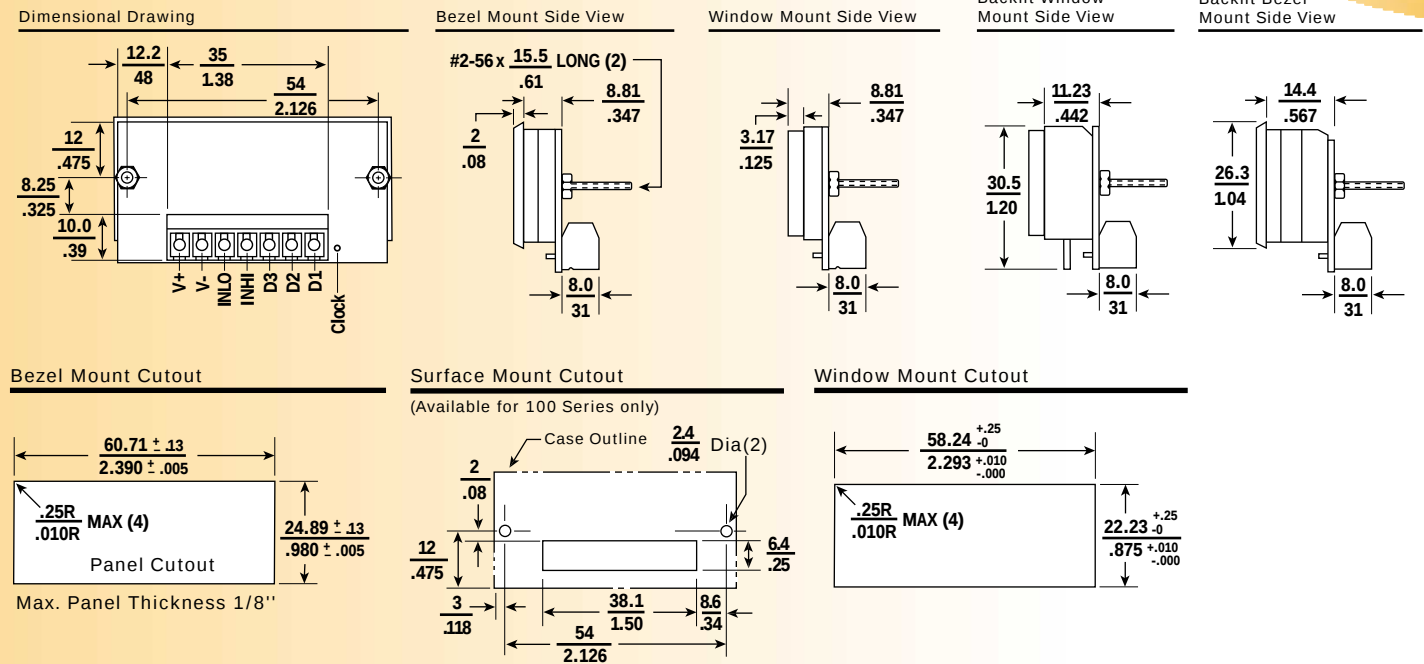
Common Mode Rejection: $> 86 \text{ db}$

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 μA

+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: D1=X.XXX D2=XX.XX D3=XXX.X
L1, L2:	Backlighting power terminals: Connect as below. Series 300, 400 (Green): L1 is negative input, L2 is positive. 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 30VDC¹

e Input
01 = 200mVDC
02 = 2VDC
03 = 20VDC
04 = 200VDC¹
10 = 200 μ ADC¹
11 = 2mADC¹
12 = 20mADC¹
13 = 200mADC¹

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

¹ 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 ¹	Green Current ¹
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)

¹ 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

Operating²: 32°F to 122°F (0°C to +50°C)

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

² 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.

For over 60 years, Jewell Instruments and our predecessor companies have provided high quality panel meter solutions for a wide range of aerospace, industrial and commercial applications. JEWELL and MODUTEC are some of the most trusted brands in the industry. They are known for:

- reliable, high quality, products
- superb applications knowledge
- custom designs for unique requirements
- “extended staff” relationships with customers
- creative engineering expertise

Jewell Instruments

The only panel meter manufacturer that offers a full spectrum of panel meters. Analog, digital. Any size, and shape. Surface mount, window mount, bezel mount. We have decades of broad-based experience resulting in our superior breadth of product — and our ability to meet your custom needs. Jewell Instruments can provide a proven, quick and cost-effective solution to your panel meter needs.

Analog panel meters can be either electrical or electronic. Application areas include:

Electrical

- **Field Strength Meters**
- **Power Generation**
- **Power Distribution Panel**
- **Control Panels**
- **Switchgear Panels**
- **Power Supplies**
- **Power Conditioners**
- **Voltage Regulators**
- **UPS Systems**
- **Automatic Transfer Switches**
- **Generator Paralleling Switchgear**

Electronic

- **Liquid Level**
- **Flow**
- **Pressure Monitors**
- **Volume Units**
- **Laboratory Equipment**
- **Test Equipment**
- **Broadcast Equipment**
- **Stereo Equipment**
- **Medical**
- **Temperature**
- **Battery Level**
- **Speed**
- **Tension Control**
- **Kilns**
- **Marine**
- **Chart Recorders**
- **Field Strength**

Digital panel meter applications include:

Digital

- **Telecommunications**
- **Welders**
- **Agricultural**
- **Water Purification**
- **Desalinization**

Digital Panel Meters

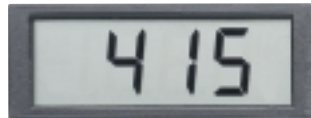
	Categories							
	BL Series	1000 Series	BGE Series	PMC Series	2000 Series	2100 Series	DW Series	1800 Series
Display								
LCD	•	•	•	•	•	•	•	•
Backlit LCD	•	•	•	•	•	•		
LED						•		•
Mounting								
Surface	•	•					•	
Window	•		•	•			•	
Bezel	•	•	•		•	•	•	•
Connections								
Pins	•	•	•					
Solder Pads	•							
Screw Terminal Connector	•			•	•	•		•
Banana Plugs				•				
Inputs								
DC Volt	•	•	•		•	•	•	•
DC AMP	•	•		•	•	•	•	•
AC Volt	•				•	•	•	
AC AMP	•				•	•	•	
Frequency	•				•	•		
RTD	•				•	•		•
Thermocouple	•				•	•		
DPM Power								
5 Volt DC	•	•	•				•	•
+/- 5 Volt DC	•	•						
9 Volt DC	•	•	•				•	
Loop Powered	•	•		•	•	•	•	
115 VAC	•				•	•	•	
230 VAC	•				•	•	•	
12 or 24 VDC (Isolated)	•				•	•		
10 to 28 VDC (Isolated)	•	•					•	
10 to 30 VDC (Isolated)	•							
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Digital Panel Meters are the appropriate choice for applications where exact measurement, and not relative change, is the required functionality. Jewell Instruments' series of digital panel meters deliver reliability, quality workmanship and competitive pricing for a variety of market applications. Combining unmatched performance with a high degree of dependability, our digital meters are the logical choice for many applications that require exact readings from their instrumentation.

Digital Panel Meters

BL Series — MODUTECH

The *BL Series* is a low-cost alternative to your digital panel meter needs. It has a 3.5 digit readout with full 1999 display. The *BL* has low power consumption making it ideal for battery operation — even in backlit applications. LO-BAT indicator available. Decimal point has 3 positions with extended selection.



1000 Series — MODUTECH

The *1000 Series* has everything you need in a digital panel meter application. Options include mounting style, green or red display, backlighting, all with low power consumption, low space requirements and low cost.



Digital Panel Meters