



BN-35I

24VDC Panel Meter
3 1/2 Digit 0.56" LED
in a 1/16 DIN Case



Isolated Power LED Voltmeter in a Compact DIN 96x24mm Case.

General Features

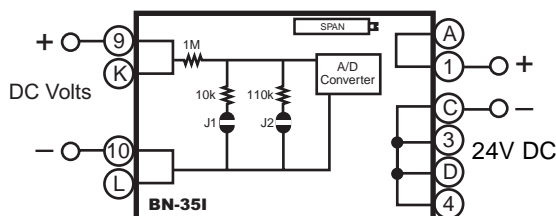
The BN-35I is a low cost pin for pin functional replacement for the Newport model 215, with many more features. It is a 3 1/2 digit voltmeter in a compact 96x24mm case with an internal isolated power supply. 5V, 12V, 15V or 24VDC power options are available. The case has a short depth of just 2.83 inches (72mm) behind the panel.

The meter has four user-selectable ranges of 200mV, 2V, 20V and 200V. The BN-35I may also be calibrated at the factory for these ranges or specially scaled for other ranges (see Ordering Information below). Provision to offset the zero is also available as an option for 4-20mA signals.

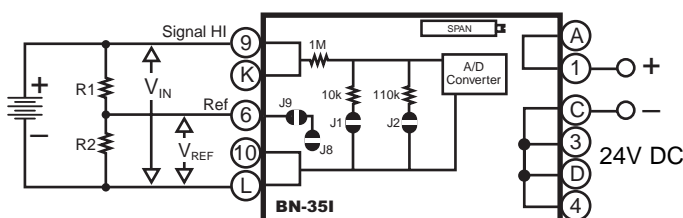
The display is shipped standard with red LEDs, but green LEDs or super bright LEDs for high ambient light environments are also offered. Display Segment Test, Display Blank and Hold Reading are standard features.

Typical Application Connections

DC Volts Single-ended measurement



Ratiometric Voltmeter with external reference.



For using the BN-35I as a ratiometric voltmeter with an external reference, open J8 and close J9 jumpers.

$$\text{Meter display} = \frac{V_{IN}}{V_{REF}} \times 1000$$

If Signal Low is common to the 24VDC Power Ground, remove resistor R307 and replace it with a jumper (i.e. short the resistor R307).

Compatibility

The BN-Series have a matching DIN case style that is complementary to the Lynx, Leopard and Tiger family of meters. BN-Meters are the OEM's choice for economical switchboard and process indication. For economy, each model is dedicated to a specific application and designed for quick and easy installation.



Specifications

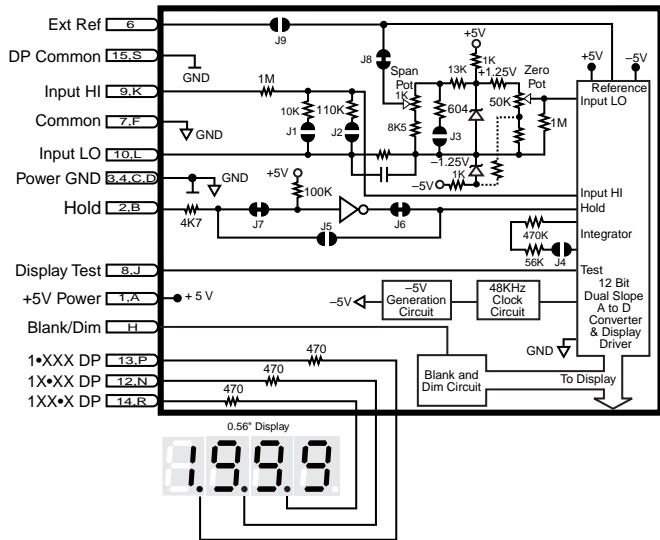
- Input Configuration:** True differential
- Full Scale Ranges:** ±199.9mVDC ±1.999VDC (standard)
±19.99VDC ±199.9VDC
- Input Impedance:** Exceeds 100MΩ on 200mV, 2V ranges.
1MΩ other ranges.
- Input Protection:** ±100V AC/DC for 200mV, 2V and 20V ranges.
±250VAC/DC for 200V range
- Conversion Rate:** 3 readings per second
- Common Mode:** 80dB at DC
- Normal Mode:** 60dB at 50/60Hz for 200mV and 2V ranges.
- Common mode voltage:** .. 100VDC between Signal Low and the Power Ground
- Accuracy:** ± (0.05% of reading + 1 digit)
- Tem. Coefficient:** 5ppm/°C in ratiometric mode 50ppm/°C in 200mV / 2V ranges
- Maximum Resolution:** 100μV in 200mV range.
- Zero Stability:** Autozeroed. 0.1 counts per °C
- Display:** 0.56" high red LEDs. Display Hold, Blank and Test provided.
- Overrange Indication:** The most significant digit "1" is displayed with all the other digits blanked.
- Power Supply:** 24VDC @ 90mA standard 5VDC @ 200 mA; 12VDC @ 160mA; 15VDC @ 120mA; depending on option
- Operating Temperature:** 0°C to 60°C
- Storage Temperature:** -40°C to 85°C
- Relative humidity:** 95% (non condensing)
- Case Dimensions:** Bezel: 96X24 mm (3.62" X 0.95")
Depth behind bezel: 56.5 mm (2.23")
Plus 27 mm (1.06") for Push-On connector or plus 17.5 mm (0.68") for Edge connector
- Weight:** 85 gms (3 oz)
125 gms (4.4 oz) when packed

BN-Series, For Those Applications Where Space Is A Premium

- BN-350.2/2/20/200V DC ranges, 3.5 digit, 5V DC Powered
- BN-35BCD Parallel or Multiplex BCD, 3.5 digit, 5V DC Powered
- BN-35CL4 to 20mA, Isolated 24V DC, 3.5 digit
- BN-35I0.2/2/20/200V DC ranges, Isolated 24V DC, 3.5 digit

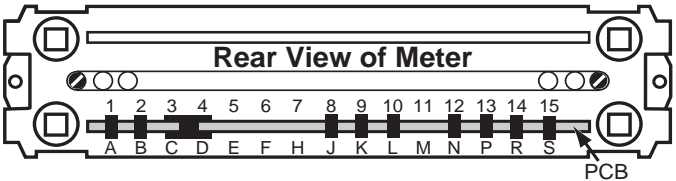
- BN-40BCD Parallel or Multiplex BCD, 4.0 digit, 5V DC Powered
- BN-452/20/200V DC ranges, 4.5 digit, 5V DC Powered
- BN-45I2/20/200V DC ranges, Isolated 24V DC, 3.5 digit

Functional Diagram



Connector Pinouts

The Texmate model BN-35I interconnects by means of a standard PC board edge connector having two rows of 15 pins, spaced on 0.156" centers. Texmate also offers a Push-On screw terminal connector that provides a great advantage in ease-of-use (see pg. four). Connectors are available from Texmate.



METER REAR WITH PCB EDGE CONNECTOR MOUNTED
(For mounting of screw terminal blocks see rear page)

COMPONENT SIDE PINS	SOLDER SIDE PINS
Positive DC Power Input - 1	A - Positive DC Power Input
Hold Reading - 2	B - Hold Reading
Negative DC Power Input - 3	C - Negative DC Power Input
Negative DC Power Input - 4	D - Negative DC Power Input
5	E
6	F
7	H
Display Test - 8	J - Display Test
Signal High Input - 9	K - Signal High Input
Signal Low Input - 10	L - Signal Low Input
11	M
Decimal Points - 12	N - Decimal Points
Decimal Points - 13	P - Decimal Points
Decimal Points - 14	R - Decimal Points
Decimal Select Common - 15	S - Hold/Test Common

SOLDER JUNCTION

Pins 1 & A - Positive DC Power Input: These pins are internally connected together. The positive end of the DC power is connected to these pins. The standard BN-35I meter is designed to be powered from a 24VDC power supply. Optional 5V, 12V, or 15VDC powered models are also available. Before using the meter, make sure that the appropriate power is being applied. The BN-35I meter generates a ±5V supply internally that is isolated from the applied DC power.

Pins 2 & B - Hold Reading: These pins are internally connected together. If these pins are left unconnected, the meter will operate in a free-running mode. When this pin is connected to the Hold/Test/Blank Common Pin 7, the meter will latch up. A/D conversions will continue, but the display will not be updated until Pins 2 & B are disconnected from Pin 7.

Pins 3, 4, C, and D - Negative DC Power Input: These pins are internally connected together. The negative end of the DC

power is connected to these pins. The standard BN-35I is designed to be powered from a 24VDC supply. Optional 5V, 12V, or 15VDC powered models are also available. Before using the meter, make sure that the appropriate power is being applied. The BN-35I meter generates a ±5V supply internally that is isolated from the applied DC power.

Pin 6 - External Reference Input: See page three for operating the meter with an external reference, as a ratiometric volt-meter.

Pin 7 - Hold/Test/Blank Common Pin: The Display Hold/Test/Blank pins have to be connected to this pin to be activated.

Pin H - Display Blank/Dim: If this pin is connected to Pin 7, the display will be blanked out. If a 5KΩ potentiometer is connected between this pin and Pin 7, the brightness of the display may be smoothly adjusted.

Pins 8 and J - Display Test: These pins are internally connected together. All numeric display segments will light up when this pin is connected to the Hold/Test Blank Common Pin 7.

Pins 9 and K - Signal High Input: These pins are internally connected together. Signal high input for the meter. The input voltage can range from 200mV to 200VDC. By closing some solder jumpers, the user can change from one range to another. See page three for range change information.

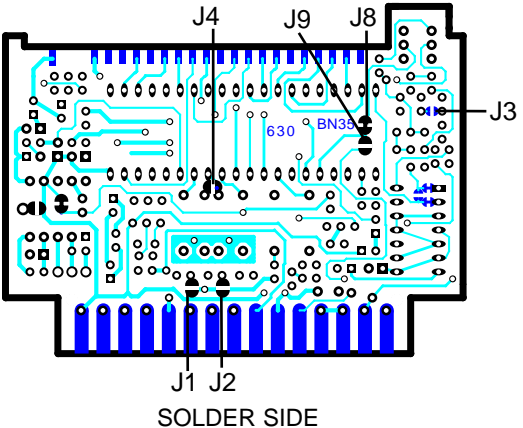
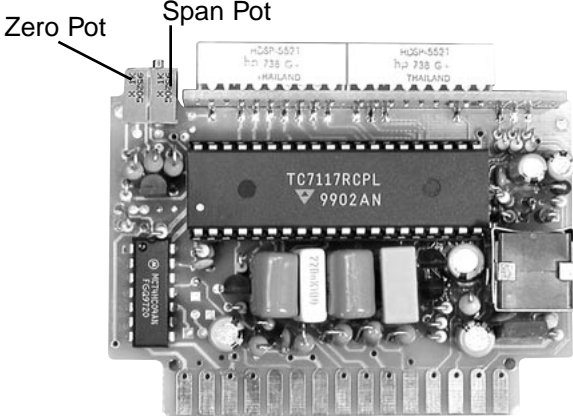
Pins 10 and L - Signal Low Input: These pins are internally connected together. Signal low input of the A/D Converter.

Pins 11 and M - Reserved Pins: These pins have been reserved for future new functions. Please do not use them as tie points for external wiring, as they are connected to internal circuit points.

Pins 12 & N, 13 & P and 14 & R - Decimal Points: These are the decimal point pins. Connecting any of these pins to the Decimal Select Common Pin makes that particular decimal point come on.

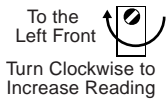
Pins 15 and S - Decimal Select Common: These pins are internally connected together. The decimal point pins must be connected to this pin to come on.

Component Layout



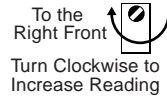
Signal Conditioning Component

ZERO Potentiometer (Pot)



The Optional ZERO pot when installed is always to the left of the SPAN pot (as viewed from the front of the meter). Typically it enables the displayed reading to be offset ± 1000 counts.

SPAN Potentiometer (Pot)



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

Input Range Selection

Changing the range to **200mV, 20V or 200V**. The BN-35I comes standard as a 2VDC meter. The factory can recalibrate the meter to a different range either when the meter is ordered or as an after sale service using part number VRC-DPM.

For the user to change the range, closing of some jumpers by soldering and opening other jumpers is required. Follow the chart below to achieve the required range. See the above component layout to find location of jumpers. Remember to recalibrate the meter after every range change.

Input Range	Open Jumper	Closed Jumper
200mV	J1 and J2	J3 and J4
2V	J1, J2, J3 and J4	—
20V	J1, J3, J4	J2
200V	J2, J3, J4	J1

Calibration Procedure

The BN-35I is calibrated at the factory with a precision source. Whenever the range is changed, the meter needs to be recalibrated. The Span Pot is accessible with the front cover of the meter removed for user calibration.

1. Make sure there is proper DC power and input.
2. Connect the power supply.
3. Apply a positive signal input equal to 95% of the full scale input.
4. Adjust Span Pot in the front of the meter so that the displayed reading agrees with the signal input.
5. The BN-35I is now calibrated and ready for use.

Power Supply

The BN-35I ships from the factory with an internally isolated 24VDC power supply. For applications where isolation between the power and signal grounds is not required, use the lower cost Texmate model BN-35. The BN-35 is powered from a non-isolated 5VDC power supply.

Front Bezel Descriptors

AC	Ω	kV	kVAR	m ³ /hr	Hz	RPM
V	mV	min	PF	°F	°C	Cos θ
DC	x10kN	μ A	PSIG	mS	kg/cm ²	psi
kW	W	KWH	pH	%	K	kPa
A	mbar	mA	MW	KA	RPS	MWH
mWs	μ m	kW/s	I	l/sec	ml	cm
ORP	mm/s	1/min	mm	kg/sec	lbs	kg/hr
FT	bars	min ¹	m/min	Mvars	μ V	dB

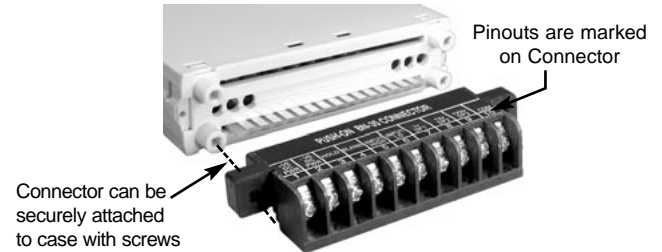
To customize the front bezel, each DU-meter is supplied with a white printed clear adhesive label containing various popular descriptors. Choose the descriptor desired, peel off the adhesive backing and align the descriptor in the center right of the faceplate.

Opening Back Panel

Unscrew the knurled collars, and remove the mounting clips. Snap out the rear plastic plate. The BN-35 printed circuit board can then be easily removed by sliding it out from the rear of the case.

Push-On Screw Terminals

They provide the greatest convenience and ease of use. Texmate's exclusive optional Push-On Connectors combine an edge card connector and a 10 position screw terminal block. Push-On Connectors are ordered preconfigured for each specific power supply voltage and each optional power supply available for the UM-Series.



Part Number: CN-PUSH/BN

Optional PCB Edge Connector

PCB Edge Connector

A standard 30-pin edge connector (two rows of 15 pins on 0.156" centers) may be used to connect the BN-35 meter. Order part no. CN-L15.



Custom Face Plates

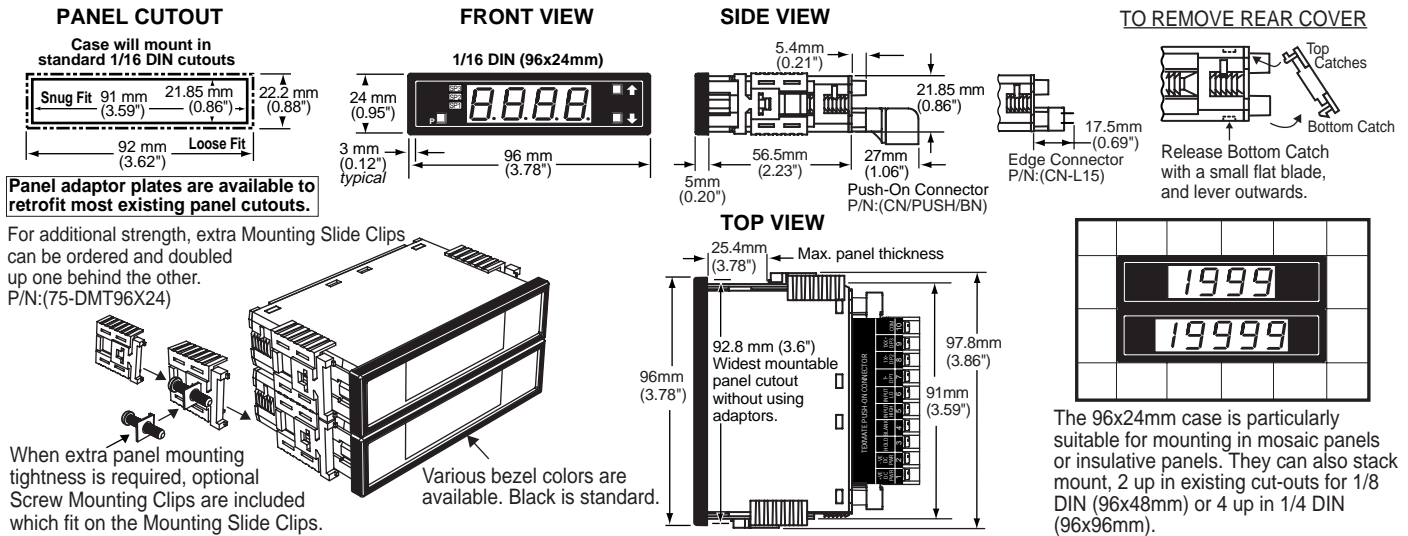


Texmate Produces Thousands of Custom OEM Face Plates

Have Texmate Design and Build a Custom Face Plate to Suit your Next project!

- Custom face plates have a non-recurring artwork charge. A serial number is then assigned to each artwork, to facilitate re-ordering.
- Small Run or One-Off custom face plates incur an installation charge, and are generally printed on a special plastic film, which is then laminated to custom faceplate blanks as required.
- Large Run (250 pieces min): custom face plates are production silk screened, issued a part number, and held in stock for free installation as required by customer orders.
- OEMs may also order Custom Meter Labels, Box Labels Custom Data Sheets and Instruction Manuals.

BN Case Dimensions and Panel Cutouts



Ordering Information

Standard Options for this Model Number

Part Number	Description
► BASIC MODEL NUMBER Includes standard display and standard power supply unless optional versions are ordered.	
BN-351	3.5 digit, Isolated 24V Power, 0.2/2/20/200V DC
► DISPLAY	
STANDARD	Red LEDs, 0.56 inch high
BN-GREEN	Green LED, 0.56 inch high
BN-BRIGHT	Super bright Red LEDs, 0.56 inch high
► POWER SUPPLY	
STANDARD	100/120 or 200/240VAC User selectable
V0-ISO/PS-09	Isolated 9V DC
V0-ISO/PS-12	Isolated 12V DC
V0-ISO/PS-15	Isolated 15V DC

► SPECIAL OPTIONS (Specify Inputs or Outputs & Req. Reading)

HD-CHANGE	Range change from the standard input as shown in BOLD type
V0-50K	Zero offset potentiometer 50k
VRC-DPM	Range change for BN-35/BN-351 listed ranges

VRC-4/20	Range change for BN-451, 4 to 20mA
CB-FS35	Non-Std Range and Scale Changes, 3.5 Digit Meters
CB-FS45	Non-Std Range and Scale Changes, 4.5 Digit Meters

Special Options and Accessories

Part Number	Description
► ACCESSORIES (Specify Serial # for Custom Artwork Installation)	
CN-L15	PCB Edge Connector, Solder Type, Dual Row 15 Pins
CN-PUSH/BN	BN Series Push-on Screw Terminal Block Connector
75-DMTC96X24	Side Slide Brackets, extra set (96x24mm only)
75-DBBZ96X24	Black Bezel for 96x24mm Case, BN and AM series
DN.CAS96X24	Din Case 96 X 24 Short Depth with Bezel

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

WARRANTY

Texmate warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment. Texmate's obligations under this warranty are limited to replacement or repair, at its option, at its factory, of any of the products which shall, within the applicable period after shipment, be returned to Texmate's facility, transportation charges pre-paid, and which are, after examination, disclosed to the satisfaction of Texmate to be thus defective. The warranty shall not apply to any equipment which shall have been repaired or altered, except by Texmate, or which shall have been subjected to misuse, negligence, or accident. In no case shall Texmate's liability exceed the original purchase price. The aforementioned provisions do not extend the original warranty period of any product which has been either repaired or replaced by Texmate.

USER'S RESPONSIBILITY

We are pleased to offer suggestions on the use of our various products either by way of printed matter or through direct contact with our sales/application engineering staff. However, since we have no control over the use of our products once they are shipped, **NO WARRANTY WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE** is made beyond the repair, replacement, or refund of purchase price at the sole discretion of Texmate. Users shall determine the suitability of the product for the intended application before using, and the users assume all risk and liability whatsoever in connection therewith, regardless of any of our suggestions or statements as to application or construction. In no event shall Texmate's liability, in law or otherwise, be in excess of the purchase price of the product.

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