





# UM-45MV

50mV DC Full Scale 4 1/2 DIGIT with 0.56" LEDs in a Traditional NEMA Style Case

Accepting DC signals as low as 50mV full scale, this meter can economically measure high DC Amps, using low voltage drop current shunts, or for other precision low DC mV measurements.

## General Features

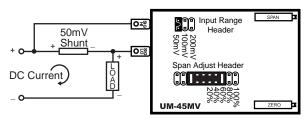
The UM-45MV is an economical, high resolution DC voltage measuring meter with three header selectable full scale ranges of 50mV, 100mV and 200mV. A five position Span Adjust header facilitates scaling in engineering units.

The meter is particularly suited for measuring DC current using 50mV standard current shunts. The ability to accurately measure shunts with even lower voltage drops can produce substantial energy savings, for example 10mV can display 5000 Amps. Display Hold and Display Test functions are also provided.

The standard meter has a high efficiency red LED display and user selectable AC power inputs of 100V AC to 120V AC or 200V AC to 240V AC are provided. An Optional 24V AC or an auto sensing isolated AC/DC 24V switching power supply can be ordered. (See ordering information)

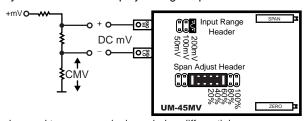
#### Typical Application Connections

**DC Current** measurement using 50mV Shunt. Easily User Scaled to Display Currents up to 19999 Amps.



Shunt may be in Hi or Lo side of Load.

**DC mV** measurement with a Resolution of 10 microVolts. Easily User Scaled to Display Voltages up to 199.99 mV.



Can be used to measure single-ended or differential inputs. Max CMV (common mode voltage) =  $50V^*$ 

#### Compatibility

The UM-Series NEMA case style is complementary to Texmate's Classic RP-Series. For economy, each UM model is dedicated to a specific application. UMs are ideal for upgrading or replacing the traditional USA NEMA case panel meters presently in use.

Traditional
NEMA
STYLE USA
CASE

#### **Specifications**

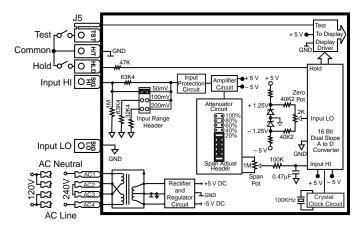
Specifications	
Input Configuration:	Single-ended, however isolated power supply enables differential measurements up to a maximum common mode of 50V.* A Zero Potentiometer is provided that can offset the displayed reading ±500 counts.
Full Scale Ranges:	Three header selectable ranges of $\pm 50 \text{mV}$ DC, $\pm 100 \text{mV}$ DC & $\pm 200 \text{mV}$ DC full scale
Input Impedance:	50KΩ/100KΩ/65KΩ in 50/100/200mV ranges
A/D Converter:	16 bit dual slope
Accuracy:	± (0.05% of reading + 3 digits)
Temp. Coefficient:	100ppm/° C (Typical)
Warm Up Time:	2 minutes to specified accuracy
Conversion Rate:	3 readings per second
Display:	0.56" high efficiency LED
	Display Hold and Test Function
Polarity:	Bipolar. Assumed +, displays -
Decimal Selection:	Header under face plate, X•X•X•X•
Overload Indication:	When input exceeds the full scale on any range being used, the meter displays flashing "0000"
Power Supply (std):	120/240V AC, 50/60 Hz. approx 2.5W.
(Optn) VO-DC/ISO	Isolated Switcher. 9 to 36V DC/12 to 24V AC
(Optn) VO-24V	Isolated Transformer 24V AC ±10%
(Optn) VO-5V DC	Non-isolated 5V DC ±10%
Operating Temp.:	–10 to 50°C
Storage Temperature:	–20 to 70 °C.
Relative Humidity:	95% (non condensing)
Case Dimensions:	Bezel 4.06"Wx1.89"H (102.7Wx47.9Hmm) Depth behind bezel 3.64" (92.22 mm) Plus 0.5 to .9" (12.7 to 22.8mm) depending on connector used.

Weight:.....10 oz., 13 oz when packed.

# UM-Series low cost utility meters for switchboard and process indication

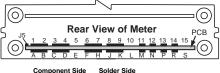
UM-35CLProcess 4 to 20mA (100.0), easily user scalable, 3.5 digit
UM-35CLEProcess 4 to 20mA (100.0) with 24V DC excitation, easily user scalable in
engineering units anywhere from -1999 to +1999. 3.5 digit
UM-45CLProcess 4 to 20mA (100.00), easily user scalable, 4.5 digit
UM-35PPressure, strain gage and load cell, 4 and 6 wire, 5V DC excitation,
Header Selectable Sensitivity 2mV/V, 5mV/V, 10mV/V, 20mV/V, 3.5 digit
UM-35J/KJ or K thermocouple input, 1° resolution, order °C or °F, 3.5 digit
<b>UM-35RTD</b> 100 $\Omega$ platinum RTD, 3 or 4 wire, order °C or °F and 0.1° or 1°, 3.5 digit

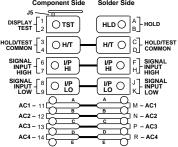
#### Functional Diagram



#### **Connector Pinouts**

UM-Series are connectable using the TB-KIT screw terminal blocks provided with the meter. For greatest convenience, order a Texmate Push-On screw terminal connector. Alternatively, a pcb edge connector can be used.(see connector options)





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.

Pins 1 & 2 - Display Test: All numeric display segments will light up when this pin is connected to the H/T Common Pin. When a TB-KIT Screw Terminal is used the Display Test function will operate unless J5 is cut which cancels test and enables the Hold function.

Pins 3, 4, C & D - H/T Common Pin: The Hold and Display Test pins have to be connected to this pin to activate their respective functions.

Pins A & B - Hold Reading: When this pin is connected to the H/T Common pin, A/D conversions will continue, but the display will not be updated until Pins A & B are disconnected from the H/T Common pin. When using a Texmate TB-KIT Screw Terminal, J5 has to be opened to disconnect the Test function and enable the Hold function. If both hold and test functions need to be accessed, a Push-On Screw Terminal can be used. Pins 6, 7, F & H - Signal High Input: Signal high input for the meter. Full-scale ranges of 50mV, 100mV or 200mV can be selected on the Range Select Header.

Pins 8, 9, J & K - Signal Low Input: Signal low input of the A/D Converter.

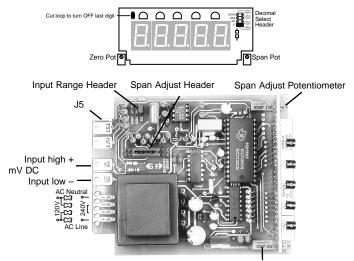
Pins 11 & M - AC1 - Live AC Power Input:

Pins 12 & N - AC2 - 110/220V AC Power Select: See below for connections Pins 13 & P - AC3 - 110/220V AC Power Select:

Pins 14 & R - AC4 - Neutral AC Power Input:

200 to 240V AC & Optional 24V 100 to 120V AC Optional VO-DISO 9-26V DC/12-24V AC TR-KIT Screw Terminals PCB Edge

## Component Layout



**UM-45MV** Zero Adjust Potentiometer

#### Signal Conditioning Components



#### INPUT RANGE Header

(a) 50 Range values are marked on the PCB. Three positions are provided. After selecting a new range with the single jumper clip, recalibration is required.

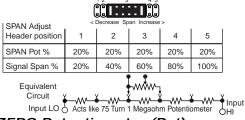
#### SPAN SPAN Potentiometer (Pot) To the

The 15 turn SPAN pot is always on the right side Right Front (as viewed from the front of the meter). Typical Turn Clockwise to adjustment is 20% of the input signal range. Increase Reading



#### 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 (40000 counts) to 0001 (one count).





Increase Reading

## 」 **ZERO Potentiometer (Pot)**

The ZERO pot is 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.

#### Calibration Procedure

- Select the required full scale voltage range by repositioning the jumper clip on the Range Select Header. A range of 50mV, 100mV or 200mV full scale may be selected.
- 2. Select the required span adjust setting (% of display range) by repositioning the jumper clip on the Span Adjust Header.
- Apply an input of 0 volts. Adjust the Zero Offset Pot until the meter reads 0000.
- Apply a known high input signal that is within the full scale voltage range selected.
- Adjust the Span Pot until the meter displays the required reading for the signal being applied.
- The UM-45MV is now calibrated and ready for use. (Whenever a new range is selected, re-calibration is required to meet the specified accuracy).

#### **Decimal Point Selection**



Remove faceplate by inserting a screwdriver blade in the slot at the bottom center of the faceplate. Press blade in to release catch and gently pry face plate outward from the bottom. (see also Case Dimension drawing)



Decimal selection is made on the front of the display board by moving the jumper clip to the desired position on the header.

# **TB-Kit Screw Connectors**

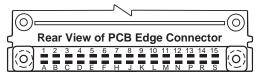
Six Screw Terminals included Free with each UM Series meter



A TB-KIT consists of 3 insulated Quick Connects and 3 of Texmate's patented individual screw terminal blocks which attach directly to PCB inputs. These provide a Quick Connect tab and screw clamp termination. When using the TB-KIT screw terminal blocks, it is possible to

select between 120V AC and 240V AC power, the optional low voltage switching power supply or the 24V AC power supply by connecting the screw terminals as shown in the diagrams below.

#### **Optional PCB Edge Connector**

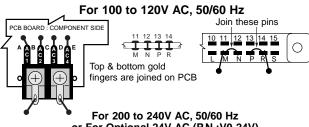


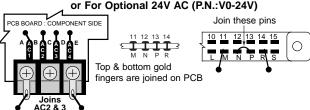
A standard 30 pin edge connector (two rows of 15 pins on 0.156" centers) may also be used to connect the UM-Series. Order part no. CN-L15. For different power supply voltage connection details, see pin connections below.

#### Selecting Power Supply Voltages

#### With TB-KIT Screw Terminals

With Optional PCB Edge Connector





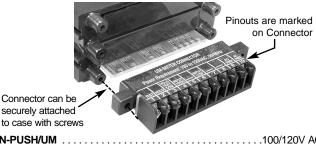


fingers are joined on PCB

#### Push-On Screw Terminals

They provide the greatest convenience and ease of use

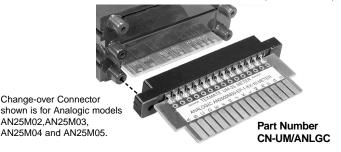
Texmate's exclusive optional Push-On Connectors combine an edge card connector and a 10 position screw terminal block. Push-On Connectors are ordered preconfigured for each specific power supply voltage and each optional power supply available for the UM-Series.



CN-PUSH/UM	100/120V AC
CN-PUSH/UM01	200/240V AC
CN-PUSH/UM02	Switch Selectable 120/240V AC
CN-PUSH/UM03	24V AC
CN-PUSH/UM04	9-36V DC/12-24V AC
CN-PUSH/UM05	5V DC

#### Pinout Change-Over Connectors

To replace DPMs in existing panels where matching pinouts are required, Texmate can provide custom pinout Change-over Connectors, either with PCB gold finger terminations, (shown below) or customized versions of Push-On Screw Terminals. (shown above)

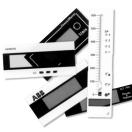


#### Face Plate Descriptors

Volts AC Volts DC Hz RPM
Amps AC Amps DC DCµA
Milliamps AC Milliamps DC °C
Millivolts AC Millivolts DC °F
Kilowatts Watts % pH Ω
kg/cm <sup>2</sup> Kilovolts AC psi
kWH kVAR Power Factor
kΩ CosØ M/min m³/hr

To customize the face plate, each UM-meter is supplied with a white printed clear adhesive label containing various popular descriptors. Choose the descriptor, peel off the adhesive backing and align the descriptor in the lower right corner of the standard face plate.

#### Custom Face Plates

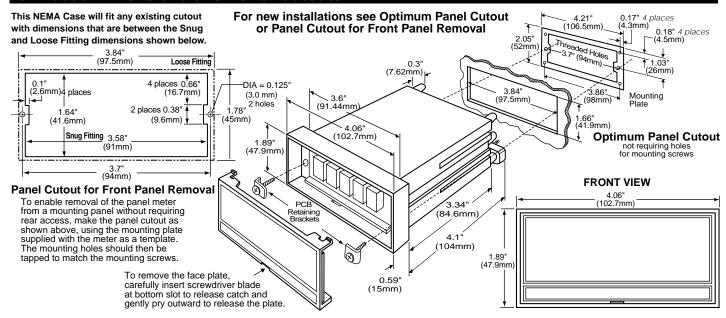


# Texmate Produces Thousands of Custom OEM Face Plates

Have Texmate Design and produce a Custom Face Plate for your next project!

- Custom face plates have a nonrecurring artwork charge. A serial number is then assigned to each artwork to facilitate reordering.
- 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.

#### **UM Case Dimensions and Panel Cutouts**



### Ordering Information

#### Standard Options for this Model Number

Part Number	Description	List
and standard power sup	UMBER Includes 2 TB-KITs, sta opply unless optional versions are nV, ±50 mV, ±100mV, or ±200mV Header Select	ordered.
UM-BRIGHT4Display: 0	Red LEDs	\$25
V0-DC/ISOIsolated a V0-24VIsolated tr	O or 200/240VAC User selectable uto-sensing AC/DC 9 to 36V DC/12 to 24 ransformer 12V AC or 24V AC user select- ited 5V DC only	IV AC \$35 able \$15

► SPECIAL OPTIONS (Specify Inputs or Outputs & Req. Reading) HD-CHANGE .......Range change from the standard input as shown in **BOLD** type..\$7 CB-FS45 ......Non-Std Range and Scale changes for UM-45s....\$20

Part Number Description List

75-RPCLEAR Replacement Clear Lens for meter \$2 75-RPFILTER Replacement Red Lens for meter \$2 CN-L15 Connector: Dual Row, 30 Pin Edge Conn., 0.156" ctr \$4 CN-PUSH/UM Connector: Push-on Terminal Block, 120V AC Pwr \$18 CN-PUSH/UM01 Connector: Push-on Terminal Block, 200-240V AC Pwr \$18 CN-PUSH/UM02 Connector: Push-on Terminal Block, 200-240V AC Pwr \$18 CN-PUSH/UM03 Connector: Push-on Terminal Block, 24V AC pwr \$18 CN-PUSH/UM04 Connector: Push-on Terminal Block, 24V AC pwr \$18 CN-PUSH/UM05 Connector: Push-on Terminal Block, 5V DC \$18 CN-PUSH/UM06 Connector: Push-on Terminal Block, 5V DC \$18 CN-UM/ANLGC Connector: Pinout Changer to match Analogic AN20M02 etc \$30 OP-N4SEAL/UM NEMA 4 Iens cover for UM Series meters \$50 RP • CASE Case: Replacement with Mounting Hardware. \$10 TB-KIT Connector: extra Screw Terminal Blocks ( 3 sets=1 kit) \$1 ART-FS-S/D. NRC for Artwork & set-up Custom Faceplate and or Descriptor \$35 ART-FS-S/D/C NRC for Artwork & set-up Custom Faceplate and Custom Logo. \$75 ART-FS-001 Produce & Install Custom Faceplate per meter - 1 color no-min \$10 ART-FS-002 Produce & Install Custom Faceplate per meter - 2 color no-min \$20 ART-FUM-001 Custom Faceplate, 100 piece Min. (\$3.00 each) - 1 color . \$30 ART-FUM-002 Custom Faceplate, 100 piece Min. (\$4.20 each) - 2 color . \$426	
ART-FUM-001 Custom Faceplate, 100 piece Min. (\$3.00 each) - 1 color \$300 ART-FUM-002 Custom Faceplate, 100 piece Min. (\$4.20 each) - 2 color \$420 ART-FUM-003 Custom Faceplate, 100 piece Min. (\$5.40 each) - 3 color \$540	)

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

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# For product details visit www.texmate.com

Local Distributor Address

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