



• Optional Green LED Display

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.

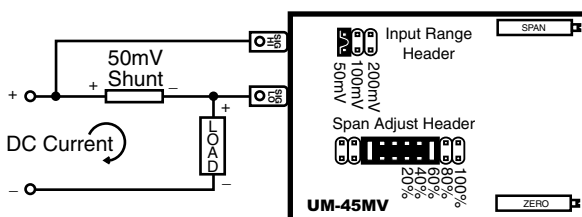
The meter is particularly suited for measuring DC current using 50mV standard current shunts. The ability to accurately measure shunts with even lower voltage drops can produce substantial energy savings, for example 10mV can display 5000 Amps. Display Hold and Display Test functions are also provided.

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.

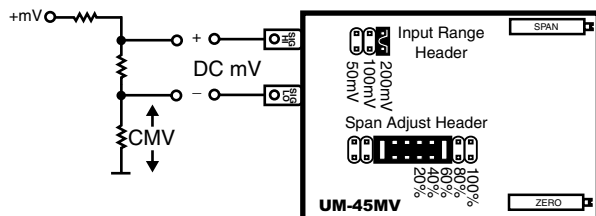
Easily User Scaled to Display Currents up to 19999 Amps.



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

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 ± 50 mV DC, ± 100 mV DC & ± 200 mV DC full scale

Input Impedance:.....50K Ω /100K Ω /65K Ω in 50/100/200mV ranges

A/D Converter:.....16 bit dual slope

Accuracy:..... $\pm (0.05\%$ of reading + 3 digits)

Temp. Coefficient:.....100ppm/ $^{\circ}$ 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 $\pm 10\%$

Operating Temp.:.....-10 to 50 $^{\circ}$ C

Storage Temperature:.....-20 to 70 $^{\circ}$ C.

Relative Humidity:.....95% (non condensing)

Case Dimensions:.....Bezel 3.78"Wx1.89"H (96Wx48Hmm)
Depth behind bezel 3.67" (93.1 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-35AC11/5.....AC amps, Scaled RMS, (1 or 5 Amp internal shunt), 3.5 digit

UM-35AC.....AC volts, Scaled RMS. 199.9V AC/700V AC Header Selectable Ranges, 3.5 digit

UM-40AC.....AC volts, Scaled RMS. 700.0V AC full scale, high resolution 4 digit

UM-35HZ.....15Hz to 199.9Hz or optionally 40Hz to 500Hz up to 500V AC input, 3.5 digit

UM-35.....DC Volts $\pm 2/20$ V DC Header selectable or optionally $\pm 2/200$ V DC, 3.5 digit

UM-35MV.....DC mV ± 50 mV and ± 100 mV select inputs to suit DC current shunts, 3.5 digit

UM-45.....DC Volts $\pm 2V/\pm 20V/\pm 200$ V DC Header selectable ranges 4.5 digit

UM-45MV.....DC mV ± 50 mV, ± 100 mV, or ± 200 mV selectable inputs to suit DC current shunts, 4.5 digit

UM-35CL.....Process 4 to 20mA (100.0), easily user scalable, 3.5 digit

UM-35CLE.....Process 4 to 20mA (100.0) with 24V DC excitation, easily user scalable in engineering units anywhere from -1999 to +1999. 3.5 digit

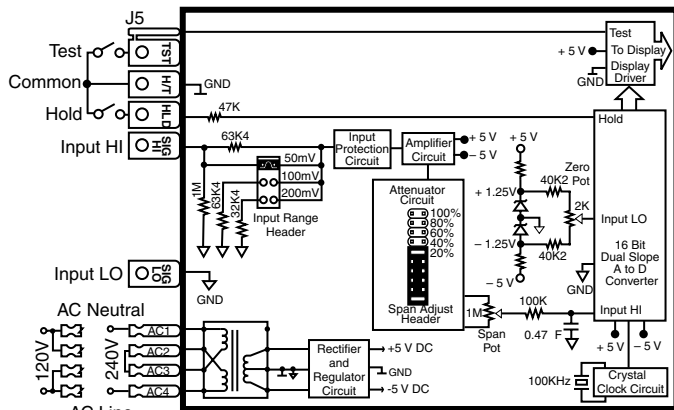
UM-45CL.....Process 4 to 20mA (100.00), easily user scalable, 4.5 digit

UM-35P.....Pressure, 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/K.....J or K thermocouple input, 1 $^{\circ}$ resolution, order $^{\circ}$ C or $^{\circ}$ F, 3.5 digit

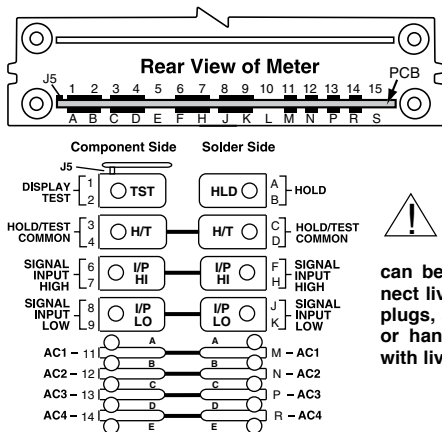
UM-35RTD.....100 Ω platinum RTD, 3 or 4 wire, order $^{\circ}$ C or $^{\circ}$ F and 0.1 $^{\circ}$ or 1 $^{\circ}$, 3.5 digit

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)



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.

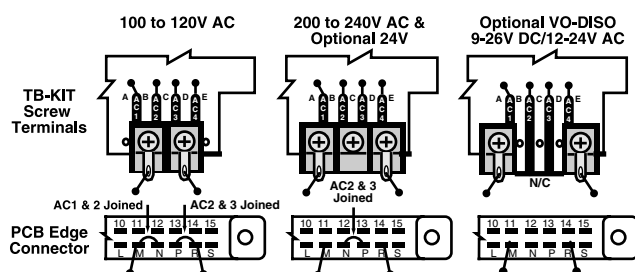
Pins 11 & M - AC1 - Live AC Power Input:

Pins 12 & N - AC2 - 110/220V AC Power Select:

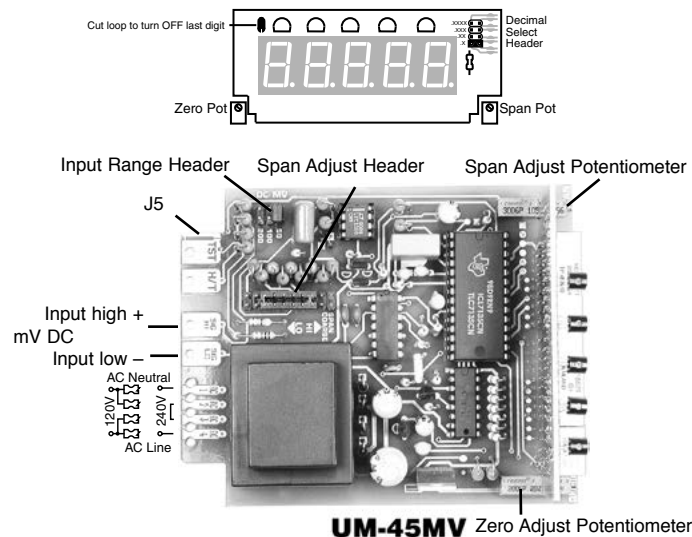
Pins 13 & P - AC3 - 110/220V AC Power Select:

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

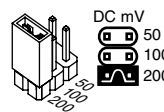
See below for connections



Component Layout

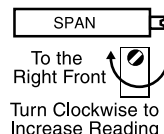


Signal Conditioning Components



INPUT RANGE Header

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



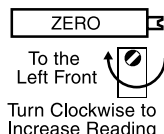
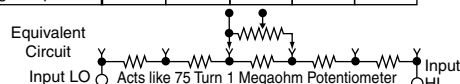
SPAN Potentiometer (Pot)

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.

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).

SPAN Adjust Header position	1	2	3	4	5
SPAN Pot %	20%	20%	20%	20%	20%
Signal Span %	20%	40%	60%	80%	100%



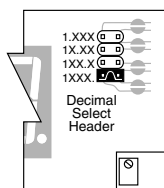
ZERO Potentiometer (Pot)

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.
- 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

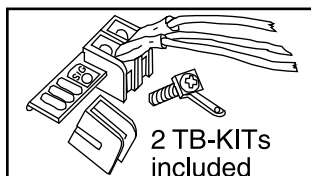


Remove faceplate by inserting a screwdriver blade in the slot at the side of the faceplate. Press blade in to release catch and gently pry face plate outward from the side. (see also Case Dimension drawing)

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

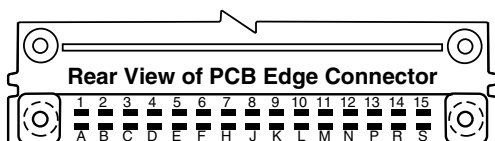
Six Screw Terminals included Free with each UM Series meter



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



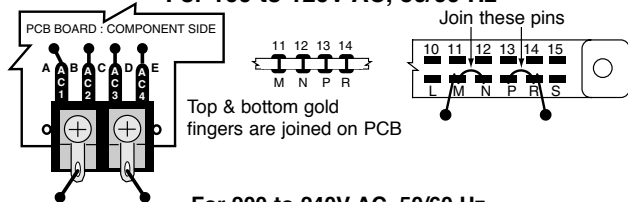
A standard 30 pin edge connector (two rows of 15 pins on 0.156" centers) may also be used to connect the UM-Series. Order part no. CN-L15. For different power supply voltage connection details, see pin connections below.

Selecting Power Supply Voltages

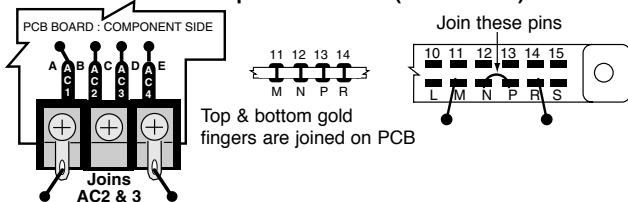
With TB-KIT
Screw Terminals

With Optional
PCB Edge Connector

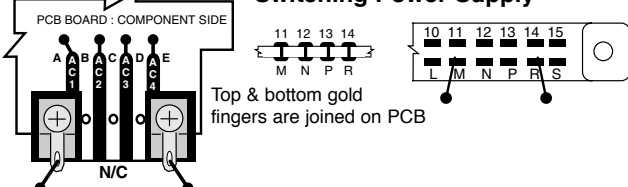
For 100 to 120V AC, 50/60 Hz



For 200 to 240V AC, 50/60 Hz
or For Optional 24V AC (P.N.:V0-24V)



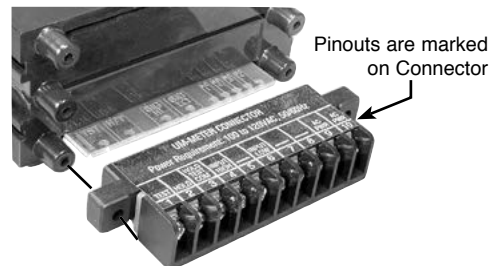
For Isolated 9-36V DC/12-24V AC, 50/60 Hz
Switching Power Supply



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.

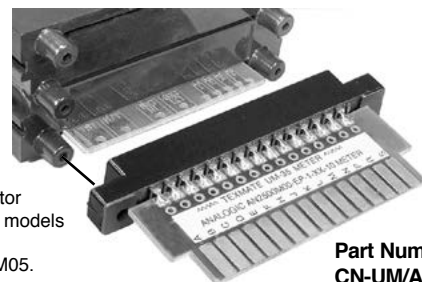


Connector can be
securely attached
to case with
screws

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)



Change-over Connector
shown is for Analogic models
AN25M02, AN25M03,
AN25M04 and AN25M05.

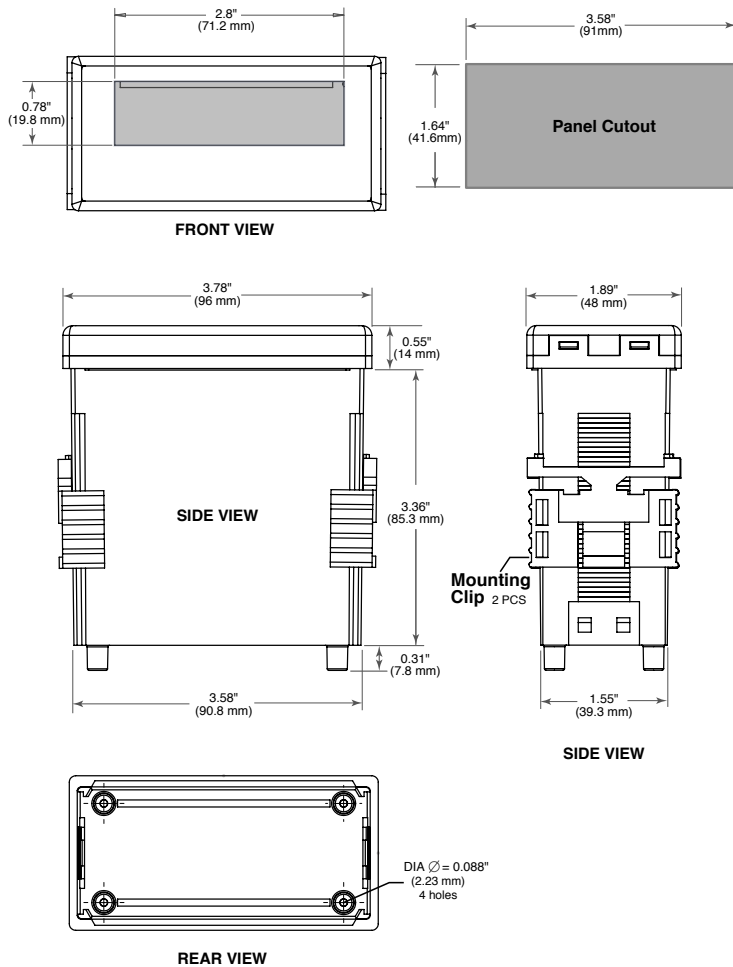
Part Number
CN-UM/ANLGC

Face Plate Descriptors



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.

UM Case Dimensions and Panel Cutouts



Ordering Information

Standard Options for this Model Number

Part Number	Description	List
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► **BASIC MODEL NUMBER** Includes 2 TB-KITs, standard display and standard power supply unless optional versions are ordered.

UM-45MV..... DPM, DCmV, ± 50 mV, ± 100 mV, or ± 200 mV Header Selectable..

► DISPLAY

STANDARD **0.56" Red LEDs**

UM-BRIGHT4... Display: .56 inch, Super bright Red LEDs

UM-GREEN4... Display: .56 inch, Green LEDs

► POWER SUPPLY

STANDARD **100/120 or 200/240VAC** User selectable.....

V0-DC/ISO Isolated auto-sensing AC/DC 9 to 36V DC/12 to 24V AC.

V0-24V Isolated transformer 12V AC or 24V AC userselectable

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

HD-CHANGE... Range change from the standard input as shown in **BOLD** type

CB-FS45 Non-standard range and scaling.....

V0-50K Zero offset Potentiometer 50K

Special Options and Accessories

Part Number	Description	List
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► ACCESSORIES

CN-L15 Connector: Dual Row, 30 Pin Edge Conn., 0.156" ctr.

CN-PUSH/UM Connector: Push-on Terminal Block, 120V AC Pwr

CN-PUSH/UM01 Connector: Push-on Terminal Block, 200-240V AC Pwr

CN-PUSH/UM02 Connector: Push-on Terminal Block, 120/240V AC select

CN-PUSH/UM03 Connector: Push-on Terminal Block, 24V AC pwr

CN-PUSH/UM04 Connector: Push-on Terminal Block, 9 to 36VDC/12 to 24 V AC ..

CN-PUSH/UM05 Connector: Push-on Terminal Block, 5V DC.....

OP-N4X/96X48 96x48 clear lockable front cover - NEMA 4X, Splash proof

TB-KIT Connector: xtra Screw Terminal Blocks (3 sets=1 kit)

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 proDXcts 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 proDXcts 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 proDXct which has been either repaired or replaced by Texmate.

USER'S RESPONSIBILITY

We are pleased to offer suggestions on the use of our various proDXcts 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 proDXcts 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 proDXct 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 proDXct.

Texmate cannot assume responsibility for any circuitry described. No circuit patent or software licenses are implied. Texmate reserves the right to change circuitry, operating software, specifications, and prices without notice at any time.

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