

UM-35MV

50mV DC Full Scale Meter
3 1/2 DIGIT with 0.56" or 0.8" LEDs
in a Traditional NEMA Style Case

Measuring DC signals as low as 50mV full scale, this meter is ideal for high DC current measurement using low voltage drop current shunts, or for other precision low DC mV measurements.



General Features

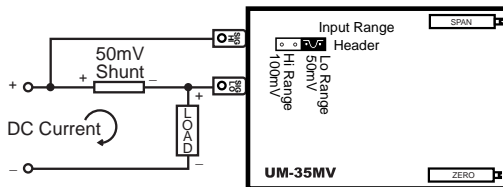
The UM-35MV is an economical, low DC voltage measuring meter with two header selectable full scale ranges of 50mV and 100mV which facilitate scaling in engineering units. The meter is particularly suited for measuring DC current using 50mV standard current shunts.

An economical option is the dummy (non-functional) right-hand-side zero which allows the UM-35MV to display readings from -19990 to +19990 without going to the expense of a 4.5 digit meter. The apparent resolution with the dummy zero option would be 10 counts.

The standard meter is provided with TB-KIT screw terminal blocks and insulated quick-disconnects. For the greatest convenience and ease of use, order the optional preconfigured Push-On screw terminal connectors. (see Push-On Screw Terminals and Ordering Information)

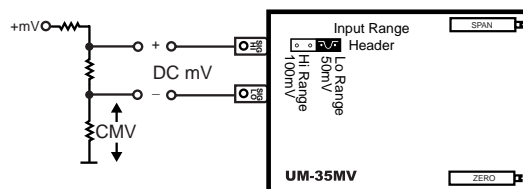
Typical Application Connections

DC Current measurement using 50mV Shunt.
Easily User Scaled to Display Currents up to 1999 Amps.



Shunt may be in Hi or Lo side of Load.

DC mV measurement with a Resolution of 100 microVolts.
Easily User Scaled to Display Voltages up to 199.9 mV.



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

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

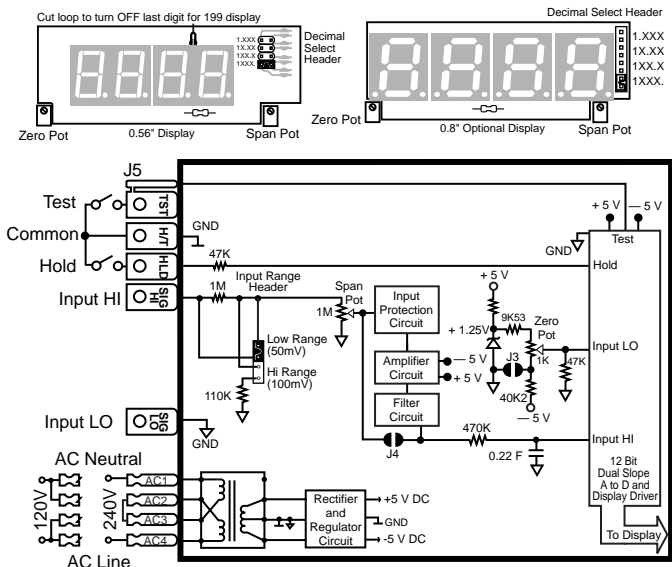
- Input Configuration:**Single-ended, however isolated power supply enables differential measurements up to a maximum common mode of 50V.* A Zero Potentiometer is provided that can offset the displayed reading ± 500 counts.
- Full Scale Ranges:**Two header selectable ranges of ± 50 mV DC and ± 100 mV DC
- Input Impedance:**50K Ω /100K Ω in 50mV/100mV ranges
- A/D Converter:**12 Bit Dual Slope
- Accuracy:** $\pm(0.05\%$ of reading + 2 counts)
- Temperature Coefficient:** 100 ppm/ $^{\circ}$ C (Typical)
- Warm Up Time:**2 minutes to specified accuracy
- Conversion Rate:**3 conversions per second (Typical)
- Display:**3 1/2 digit 0.56" Red LED display (std), (optn) Green or Super Bright Red, 0.8" Red or Green. Range 0 to 1999 counts.
- Decimal Selection:**Header under face plate, X*X*X*X*
- Over-range Indication:**1 (MSD) displayed all other digits blank
- Power Supply (std):**120/240V AC, 50/60/400 Hz. approx 1.5W.
(Optn) VO-DC/ISOIsolated Switcher. 9 to 36V DC/12 to 24V AC
(Optn) VO-24VIsolated Transformer 24V AC $\pm 10\%$
(Optn) VO-5V DCNon-isolated 5V DC $\pm 10\%$
- Operating Temperature:** ..-10 to 50 $^{\circ}$ C
- Storage Temperature:**-20 to 70 $^{\circ}$ 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:**10oz., 13oz. when packed.

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

- UM-35AC1/5 AC amps, Scaled RMS, (1 or 5 Amp internal shunt), 3.5 digit
- UM-35ACAC volts, Scaled RMS. 199.9V AC/500V AC Header Selectable Ranges, 3.5 digit
- UM-40ACAC volts, Scaled RMS. 500.0V AC full scale, high resolution 4 digit
- UM-35HZ15Hz to 199.9Hz or optionally 40Hz to 500Hz up to 500V AC input, 3.5 digit
- UM-35DC Volts $\pm 2/20$ V DC Header selectable or optionally $\pm 2/200$ V DC, 3.5 digit
- UM-35MVDC mV ± 50 mV and ± 100 mV select inputs to suit DC current shunts, 3.5 digit
- UM-45DC Volts ± 2 V/ ± 20 V/ ± 200 V DC Header selectable ranges 4.5 digit
- UM-45MVDC mV ± 50 mV, ± 100 mV, or ± 200 mV selectable inputs to suit DC current shunts, 4.5 digit

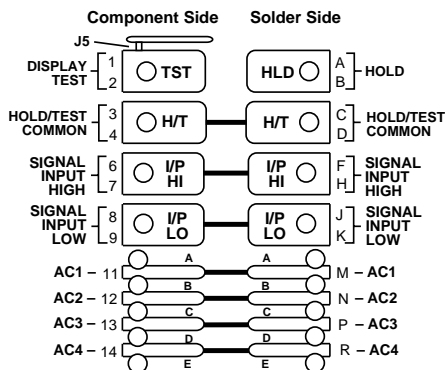
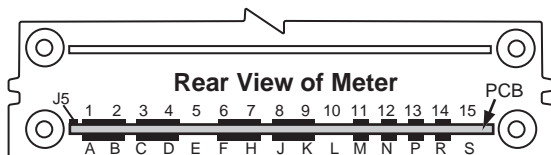
- UM-35CLProcess 4 to 20mA (100.0), easily user scalable, 3.5 digit
- UM-35CLEProcess 4 to 20mA (100.0) with 24V DC excitation, easily user scalable in engineering units anywhere from -1999 to +1999. 3.5 digit
- UM-45CLProcess 4 to 20mA (100.0), easily user scalable, 4.5 digit
- UM-35PPressure, strain 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 $^{\circ}$ resolution, order $^{\circ}$ C or $^{\circ}$ F, 3.5 digit
- UM-35RTD100 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)



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. A Texmate TB-KIT Screw Terminal Clip can be used to access the Display Test 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: If this Pin is left unconnected, the meter will operate in a free-running mode. When this pin is connected to the H/T Common pin, the meter will latch up. A/D conversions will continue, but the display will not be updated until Pins A & B are disconnected from the H/T Common pin. If this function is to be accessed through a Texmate TB-KIT Screw Terminal Clip, then jumper J5 will have to be opened to disconnect the Test function. If both hold and test functions need to be accessed, a PCB edge connector (part no. CN-L15) should be used.

Pins 6, 7, F & H - Signal High Input: Signal high input for the meter. Full-scale ranges of 50mV or 100mV can be selected on the Range Select Header.

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

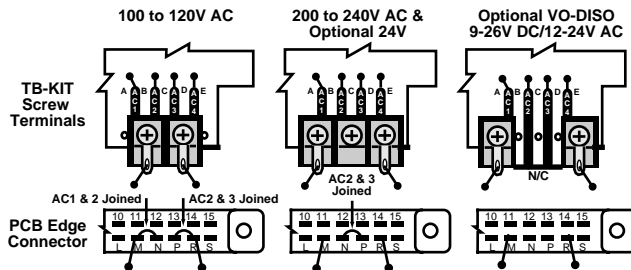
Pins 11 & M - AC1 - Live AC Power Input:

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

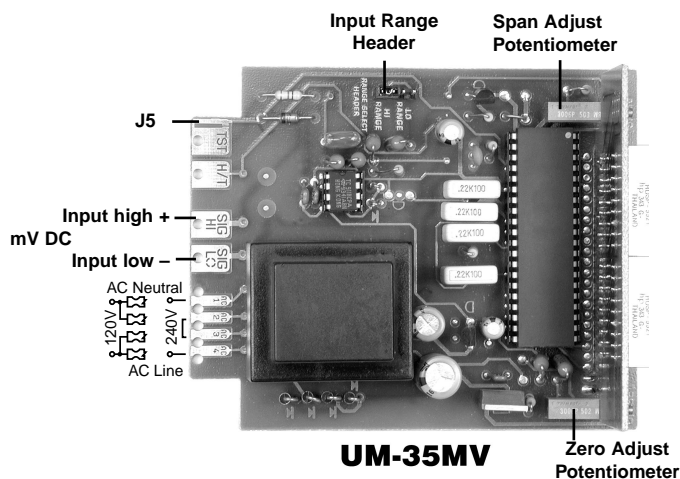
See below for connections

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

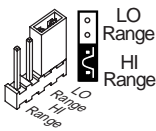
Pins 14 & R - AC4 - Neutral AC Power Input:



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 100% of the input signal range.



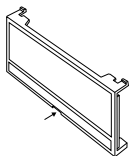
ZERO Potentiometer (Pot)

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 ± 500 counts.

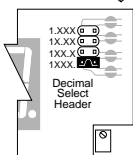
Calibration Procedure

1. Apply an input of 0V DC to the meter by shorting the inputs. Adjust the Zero Offset Pot until the meter reads 000.
2. Apply a known high input signal that is within the full scale voltage range selected.
3. Adjust the Span Pot until the meter displays the required reading for the signal being applied.
4. The UM-35MV 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



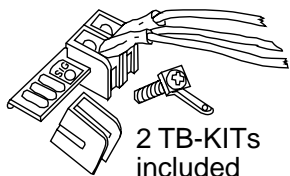
Remove faceplate by inserting a screwdriver blade in the slot at the bottom center of the faceplate. Press blade in to release catch and gently pry face plate outward from the bottom. (see also Case Dimension drawing)



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

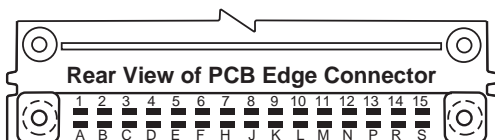


2 TB-KITs included

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



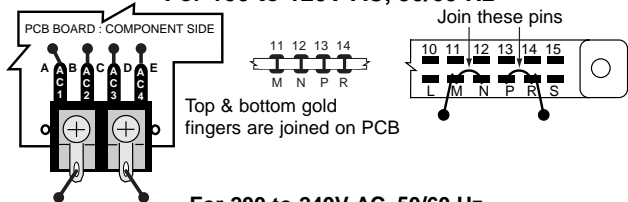
A standard 30 pin edge connector (two rows of 15 pins on 0.156" centers) may also be used to connect the UM-Series. Order part no. CN-L15. For different power supply voltage connection details, see pin connections below.

Selecting Power Supply Voltages

With TB-KIT Screw Terminals

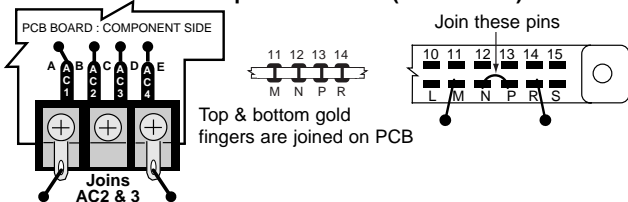
With Optional PCB Edge Connector

For 100 to 120V AC, 50/60 Hz



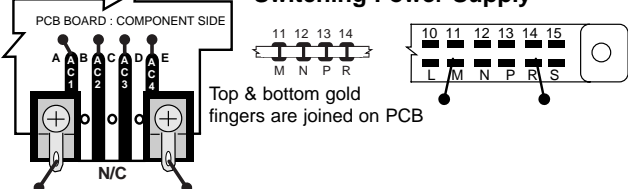
Top & bottom gold fingers are joined on PCB

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



Top & bottom gold fingers are joined on PCB

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

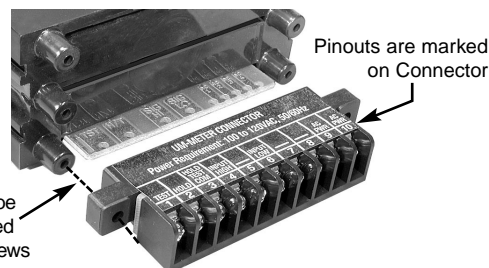


Top & bottom gold fingers are joined on PCB

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.

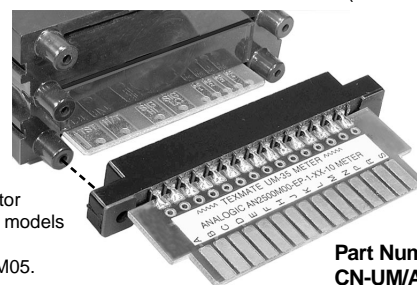


Connector can be securely attached to case with screws

CN-PUSH/UM	100/120V AC
CN-PUSH/UM01	200/240V AC
CN-PUSH/UM02	Switch Selectable 120/240V AC
CN-PUSH/UM0324V AC
CN-PUSH/UM049-36V DC/12-24V AC
CN-PUSH/UM055V 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 Analog models AN25M02, AN25M03, AN25M04 and AN25M05.

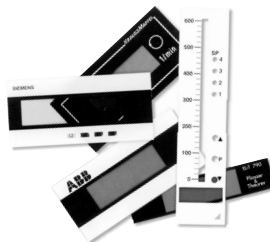
Part Number CN-UM/ANLGC

Face Plate Descriptors

Volts AC	Volts DC	Hz	RPM
Amps AC	Amps DC	DCuA	
Milliamps AC	Milliamps DC	°C	
Millivolts AC	Millivolts DC	°F	
Kilowatts	Watts	%	pH
kg/cm ²	Kilovolts AC	psi	
kWH	kVAR	Power Factor	
k	CosØ	M/min	m ³ /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 non-recurring artwork charge. A serial number is then assigned to each artwork to facilitate reordering.

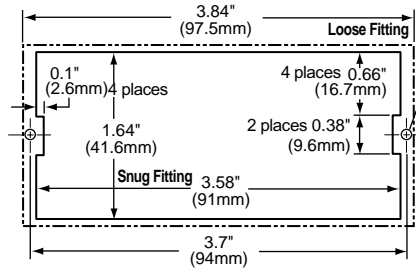
- Small Run or One-Off custom face plates incur an installation charge, and are generally printed on a special plastic film, which is then laminated to custom faceplate blanks as required.

- 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

This NEMA Case will fit any existing cutout with dimensions that are between the Snug and Loose Fitting dimensions shown below.

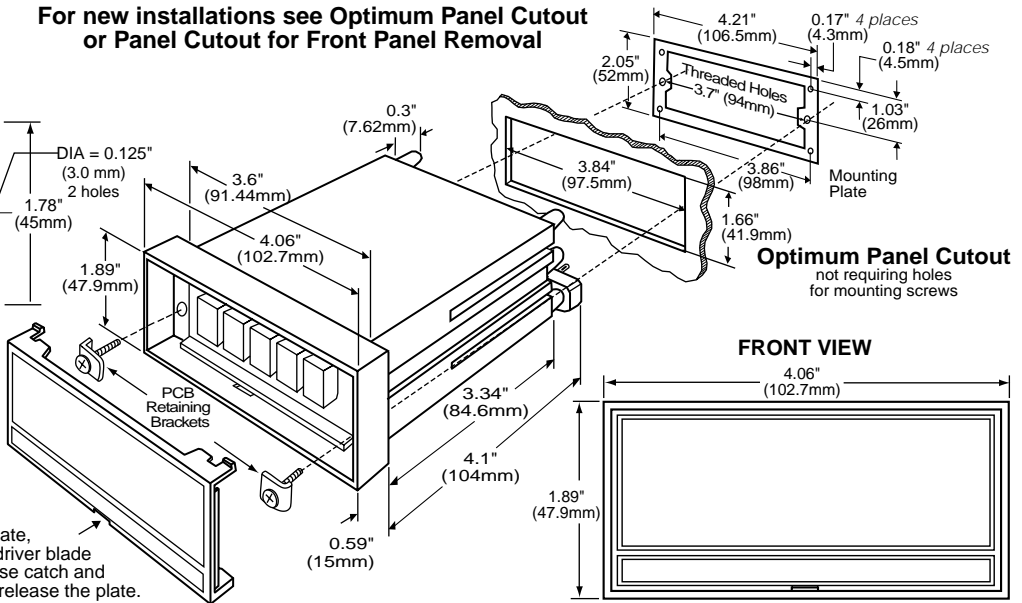


Panel Cutout for Front Panel Removal

To enable removal of the panel meter from a mounting panel without requiring rear access, make the panel cutout as shown above, using the mounting plate supplied with the meter as a template. The mounting holes should then be tapped to match the mounting screws.

To remove the face plate, carefully insert screwdriver blade at bottom slot to release catch and gently pry outward to release the plate.

For new installations see Optimum Panel Cutout or Panel Cutout for Front Panel Removal



Ordering Information

Standard Options for this Model Number

Part Number	Description	List
► BASIC MODEL NUMBER Includes 2 TB-KITs, standard display and standard power supply unless optional versions are ordered.		
UM-35MV	DPM, DCmV, 50mV or 100mV selectable input ranges	
► DISPLAY		
STANDARD	0.56" Red LEDs	N/C
UM-BRIGHT	Super bright Red LEDs, 0.56 inch high	
UM-GREEN	Green LEDs, 0.56 inch high	
UM-GREEN4.5	Green LEDs, 0.56 inch high Dummy Zero Option for UM-35s	
UM-LARGE/GRN	Green LEDs, 0.8 inch high for UM-35 Series	
UM-LARGE/RED	Red LEDs, 0.8 inch high for UM-35 Series	
UM-RED4.5	Red LEDs, 0.56 inch high Dummy Zero Option for UM-35s	
► POWER SUPPLY		
STANDARD	100/120 or 200/240V AC User selectable	N/C
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 user selectable	
V0-5V DC	Non-isolated 5V DC only	
► SPECIAL OPTIONS (Specify Inputs or Outputs & Req. Reading)		
HD-CHANGE	Range change from the standard input as shown in BOLD type	
CB-FS35	Non-Std Range and Scale changes for UM-35 meters	

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.

Special Options and Accessories

Part Number	Description	List
► ACCESSORIES (Specify Serial # for Custom Artwork Installation)		
75-RPCLEAR	Replacement Clear Lens for meter	
75-RPFILTER	Replacement Red Lens for meter	
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 36V DC/12 to 24V AC	
CN-PUSH/UM05	Connector: Push-on Terminal Block, 5V DC	
CN-UM/ANLGC	Connector: Pinout Changer to match Analogic AN20M02 etc	
OP-N4SEAL/UM	NEMA 4 lens cover for UM Series meters	
RP-CASE	Case: Replacement with Mounting Hardware	
TB-KIT	Connector: Extra Screw Terminal Blocks (3 sets=1 kit)	
ART-FS-S/D	NRC for Artwork & set-up Custom Faceplate and or Descriptor	
ART-FS-S/D/C	NRC for Artwork & set-up Custom Faceplate and Custom Logo	
ART-FS-001	Produce & Install Custom Faceplate per meter - 1 color no-min	
ART-FS-002	Produce & Install Custom Faceplate per meter - 2 color no-min	
ART-FS-003	Produce & Install Custom Faceplate per meter - 3 color no-min	
ART-FUM-001	Custom Faceplate, 100 piece Min. - 1 color	
ART-FUM-002	Custom Faceplate, 100 piece Min. - 2 color	
ART-FUM-003	Custom Faceplate, 100 piece Min. - 3 color	

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

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.

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.



995 Park Center Drive • Vista, CA 92081-8397
Tel: 1-760-598-9899 • USA 1-800-839-6283 • That's 1-800-TEXMATE
Fax: 1-760-598-9828 • Email: sales@texmate.com • Web: www.texmate.com

Texmate has facilities in Japan, New Zealand, Taiwan, and Thailand. We also have authorized distributors throughout the USA and in 28 other countries.

For product details visit www.texmate.com

Local Distributor Address