



UM-45

2V DC to 200V DC Meter
4 1/2 DIGIT with 0.56" LEDs
in a Traditional NEMA Style Case



A utility meter, for high resolution single or differential DC voltage measurement, that can be easily scaled to any process engineering units of measure.

General Features

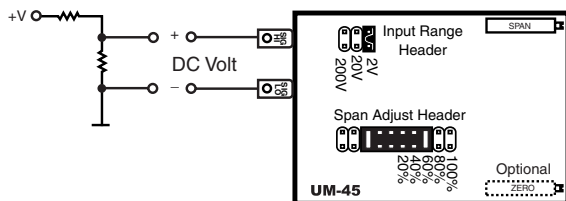
The UM-45 is an economical, high resolution DC voltage measuring meter with three header selectable full scale ranges of 2V, 20V and 200V. A five position Span Adjust header facilitates scaling to almost any process engineering unit of measure.

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.

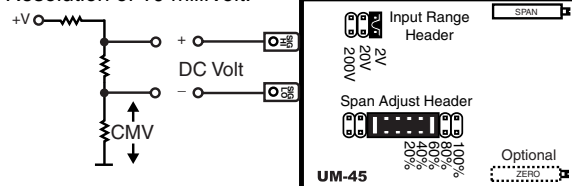
The standard meter is provided with TB-KIT screw terminal blocks and insulated quick-disconnects. For the greatest convenience and ease of use, order the optional preconfigured Push-On screw terminal connectors. (see Push-On Screw Terminals and Ordering Information)

Typical Application Connections

DC Volts Single-ended measurement with a Resolution of 10 millivolt.



DC Volts Differential measurement with a Resolution of 10 millivolt.



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 the isolated power supply enables differential measurements up to a maximum common mode of 50V.*
Provision for optional zero pot to offset the reading displayed. (See Ordering Information)

Full Scale Ranges: Three built in header selectable ranges of $\pm 2V$ DC, $\pm 20V$ DC & $\pm 200V$ DC FS

Input Impedance: 1M Ω minimum

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 $\pm 10\%$
 (Optn) VO-5V DC Non-isolated 5V DC $\pm 10\%$

Operating Temp.: -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.

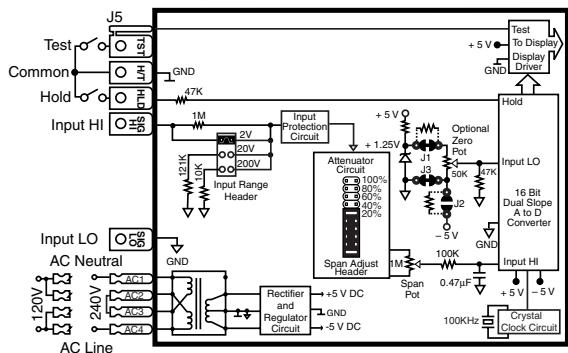
Weight: 10oz., 13oz. when packed.

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

- UM-35AC11/5** AC amps, Scaled RMS, (1 or 5 Amp internal shunt), 3.5 digit
- UM-35AC**AC volts, Scaled RMS. **199.9V AC/500V AC** Header Selectable Ranges, 3.5 digit
- UM-40AC**AC volts, Scaled RMS. **500.0V 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 $\pm 2/20V$ DC Header selectable or optionally $\pm 2/200V$ DC, 3.5 digit
- UM-35MV**DC mV $\pm 50mV$ and $\pm 100mV$ select inputs to suit DC current shunts, 3.5 digit
- UM-45**DC Volts $\pm 2V/\pm 20V/\pm 200V$ DC Header selectable ranges 4.5 digit
- UM-45MV**DC mV $\pm 50 mV, \pm 100mV, \text{ or } \pm 200mV$ selectable inputs to suit DC current shunts, 4.5 digit

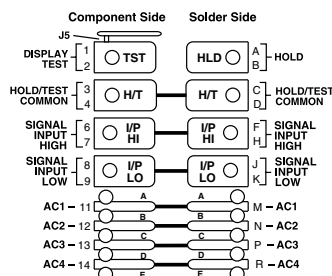
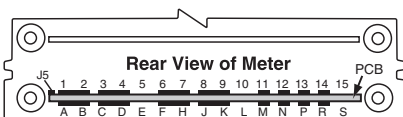
- UM-35CL**Process 4 to 20mA (**100.0**), easily user scalable, 3.5 digit
- UM-35CLE**Process 4 to 20mA (**100.0**) with 24V DC excitation, easily user scalable in engineering units anywhere from -1999 to +1999. 3.5 digit
- UM-45CL**Process 4 to 20mA (**100.00**), easily user scalable, 4.5 digit
- UM-35P**Pressure, 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)



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 2V, 20V or 200V can be selected on the Range Select Header.

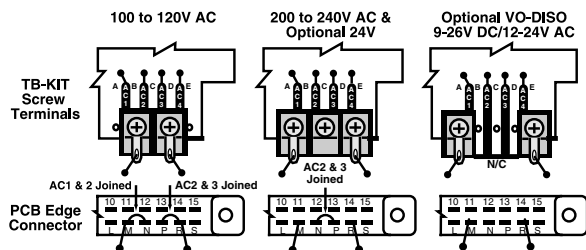
Pins 8, 9, J & K - Signal Low Input: Signal low input of the A/D Converter.

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

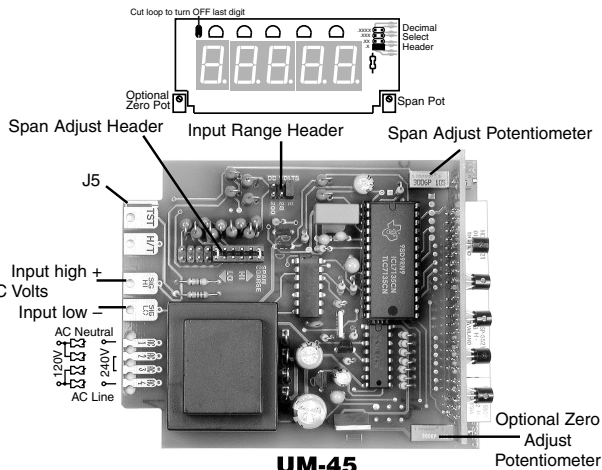
Pins 12 & N - AC2 - 110/220V AC Power Select: See below for connections

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

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

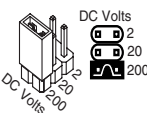


Component Layout



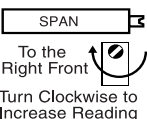
UM-45

Signal Conditioning Components



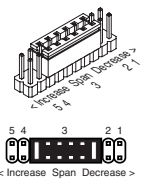
INPUT RANGE Header

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)

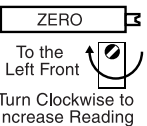
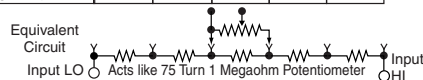
The 15 turn SPAN pot is always on the right side (as viewed from the front of the meter). Typical adjustment is 20% of the input signal range.



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%



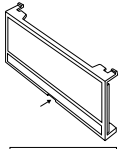
ZERO Potentiometer (Pot)

The Optional ZERO pot when installed 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.

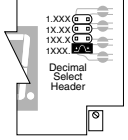
Calibration Procedure

1. Select the required full scale voltage range by repositioning the jumper clip on the Range Select Header. A range of 2V, 20V or 200V 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.
3. Apply an input of 0 volts. The meter will autozero and display 0000. If the zero needs to be offset use the optional Zero Offset pot.
4. Apply a known high input signal that is within the full scale voltage range selected.
5. Adjust the Span Pot until the meter displays the required reading for the signal being applied.
6. The UM-45 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



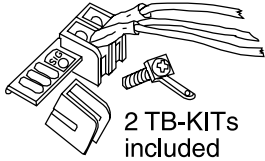
Remove faceplate by inserting a screwdriver blade in the slot at the bottom center of the faceplate. Press blade in to release catch and gently pry face plate outward from the bottom. (see also Case Dimension drawing)



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

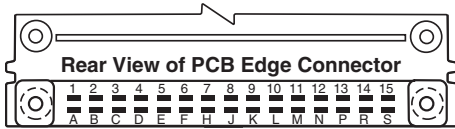


2 TB-KITs included

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



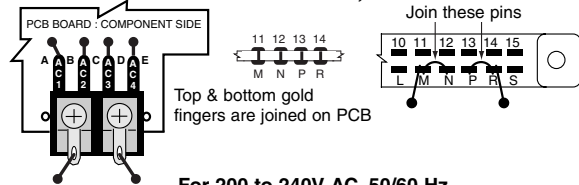
A standard 30 pin edge connector (two rows of 15 pins on 0.156" centers) may also be used to connect the UM-Series. Order part no. CN-L15. For different power supply voltage connection details, see pin connections below.

Selecting Power Supply Voltages

With TB-KIT Screw Terminals

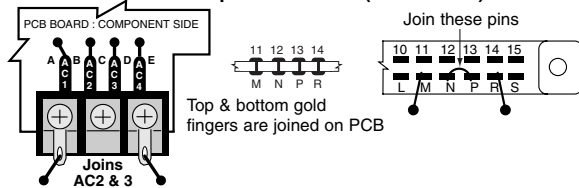
With Optional PCB Edge Connector

For 100 to 120V AC, 50/60 Hz



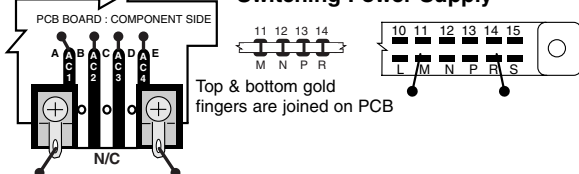
Top & bottom gold fingers are joined on PCB

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

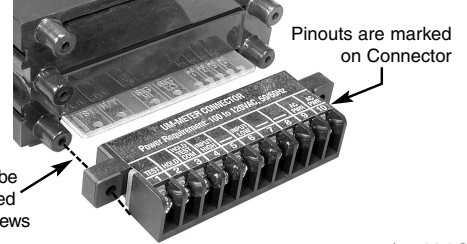


Top & bottom gold fingers are joined on PCB

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.

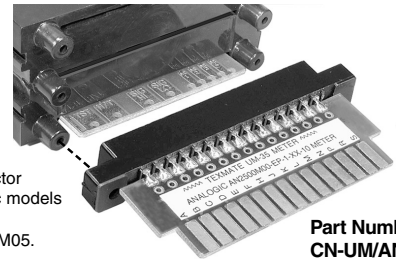


Connector can be securely attached to case with screws

CN-PUSH/UM100/120V AC
CN-PUSH/UM01200/240V AC
CN-PUSH/UM02Switch 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 Analogic models AN25M02, AN25M03, AN25M04 and AN25M05.

Part Number CN-UM/ANLGC

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 ²	Kilovolts AC	psi	
kWH	kVAR	Power Factor	
kΩ	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

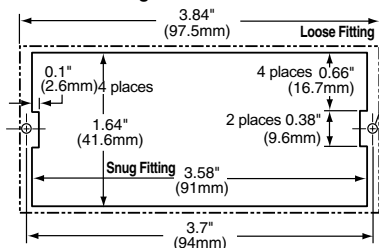
Have Texmate Design and produce a Custom Face Plate for your next project!

• 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.

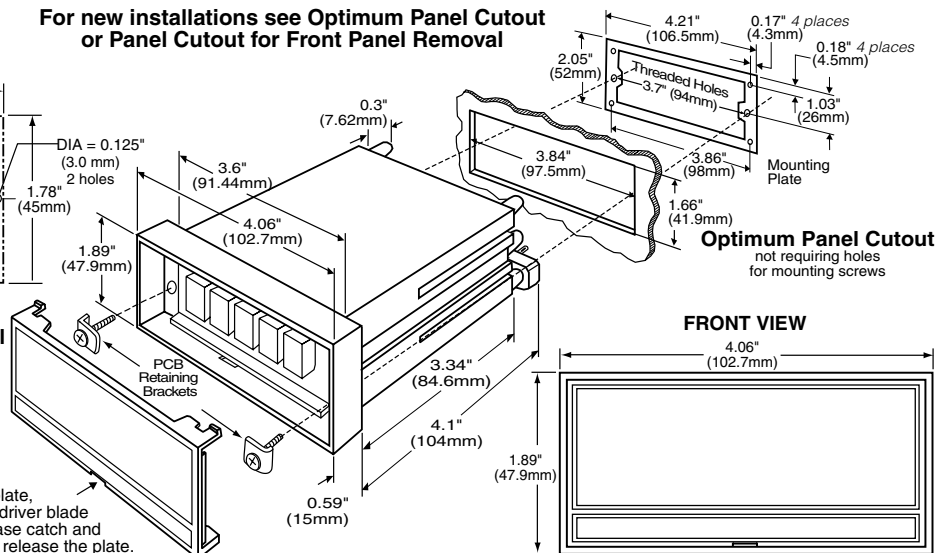


Panel Cutout for Front Panel Removal

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



FRONT VIEW

Ordering Information

Standard Options for this Model Number

Part Number	Description
► BASIC MODEL NUMBER Includes 2 TB-KITs, standard display and standard power supply unless optional versions are ordered.	
UM-45	DPM, DC Volts, $\pm 2V/\pm 20V/\pm 200V$ DC Header selectable ranges
► DISPLAY	
STANDARD0.56" Red LEDs	
UM-BRIGHT4	Display: .56 inch, Super bright Red LEDs
UM-GREEN4	Display: .56 inch, Green LEDs
► POWER SUPPLY	
STANDARD100/120 or 200/240VAC User selectable	
VO-DC/ISO	Isolated auto-sensing AC/DC 9 to 36V DC/12 to 24V AC
VO-24V	Isolated transformer 12V AC or 24V AC user selectable
VO-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
VO-50K	Zero offset Potentiometer 50K
CB-FS45	Non-Std Range and Scale changes for UM-45s

Special Options and Accessories

Part Number	Description
► 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. (\$3.00 each) - 1 color
ART-FUM-002	Custom Faceplate, 100 piece Min. (\$4.20 each) - 2 color
ART-FUM-003	Custom Faceplate, 100 piece Min. (\$5.40 each) - 3 color

Many other options and accessories are available.

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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For product details visit www.texmate.com

Local Distributor Address