



0.56" LEDs



## UM-35HZ

AC Line Frequency Meter  
3 1/2 DIGIT with 0.56" or 0.8" LEDs  
in a Traditional NEMA Style Case



0.8" LEDs



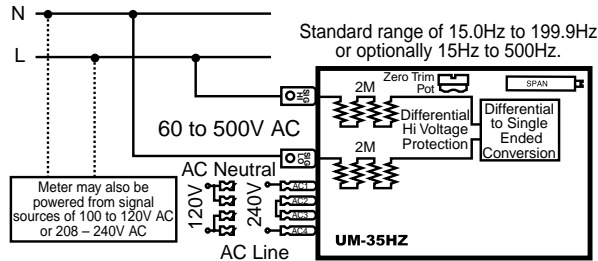
A low cost utility meter for 50Hz, 60Hz, or 400Hz AC line frequency measurement.

### General Features

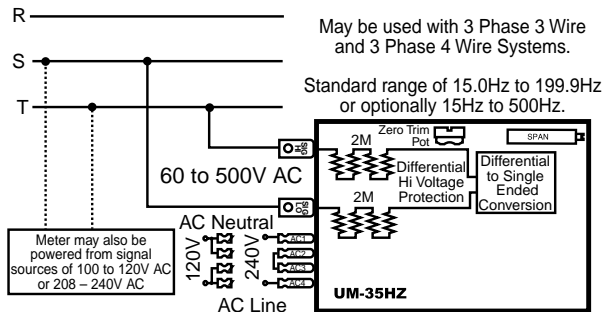
The UM-35HZ is a low-cost, utility, AC line frequency measuring meter with a standard range of 15.0Hz to 199.9Hz or an optional range of 199.9Hz or 500Hz. The unique resistively isolated differential input structure allows safe phase to phase line frequency measurements in multi phase systems. The standard 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

#### AC Line Frequency measurement in Single-phase Systems.



#### AC Phase to Phase Line Frequency measurement in Multi-phase Systems.



The unique differential input allows safe phase to phase AC line frequency measurements.

### 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  $\pm 50mV$ ,  $\pm 100mV$ , or  $\pm 200mV$  selectable inputs to suit DC current shunts, 4.5 digit

### Compatibility

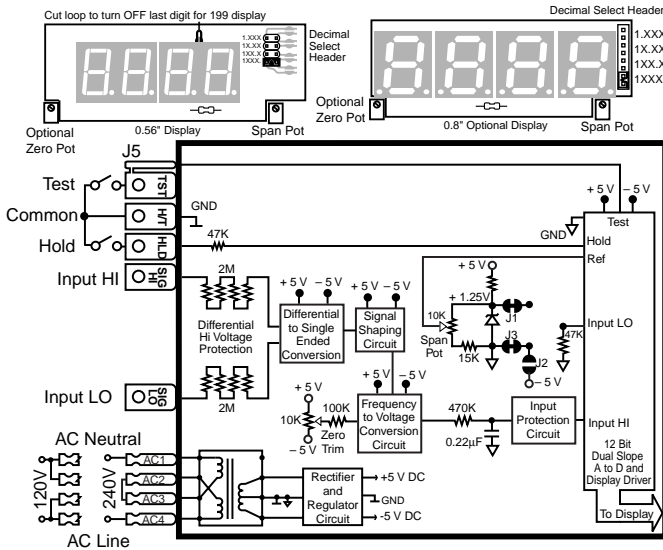
The UM-Series NEMA case style is complementary to Texmate's Classic RP-Series. For economy, each UM model is dedicated to a specific application. UMs are ideal for upgrading or replacing the traditional USA NEMA case panel meters presently in use.

Traditional  
**NEMA**  
STYLE USA  
**CASE**

### Specifications

- Input Configuration:** .....Differential input. Inputs resistively isolated to 1400V from internal ground of meter by 1.94M $\Omega$ , so that phase to phase measurements up to 500V AC can be safely made.
- Full Scale Ranges:** .....15.0Hz to 199.9Hz or optionally 15Hz to 500Hz
- Input Impedance:** .....4M $\Omega$
- 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
- Overrange Indication:** .....1 (MSD) displayed with all other digits blank
- Power Supply (std):** .....120/240V AC, 50/60/400 Hz. approx 1.5W.  
(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 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.

## Functional Diagram



**Pins 6, 7, F & H - Signal High Input:** The meter accepts voltage from 60V to 500V AC. The standard range is 15.0Hz to 199.9Hz. Optional factory installed range of 15Hz to 500Hz is available.

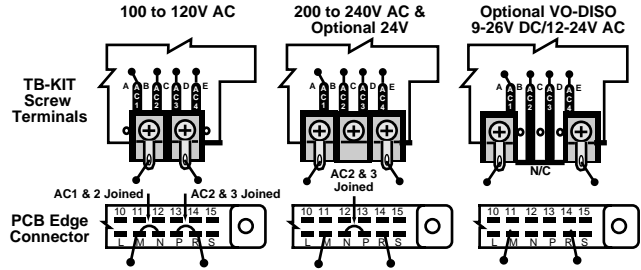
**Pins 8, 9, J & K - Signal Low Input:** Signal low input of the A/D Converter.

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

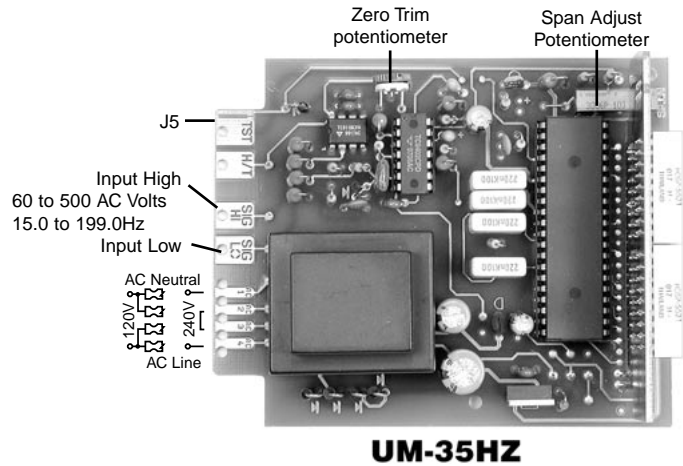
**Pins 12 & N - AC2 - 110/220V AC Power Select:** See below for connections

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

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



## Component Layout



**UM-35HZ**

## Signal Conditioning Components

**SPAN** **SPAN Potentiometer (Pot)**

To the Right Front 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. Turn Clockwise to Increase Reading



**ZERO TRIM potentiometer**

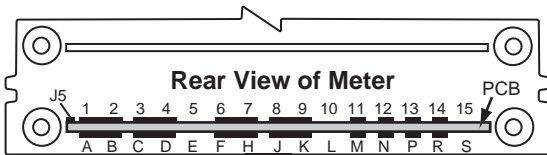
The single turn Zero Trim Pot is accessed by removing the meter from the case. It is adjusted at the factory and usually does not need to be readjusted.

## Calibration Procedure

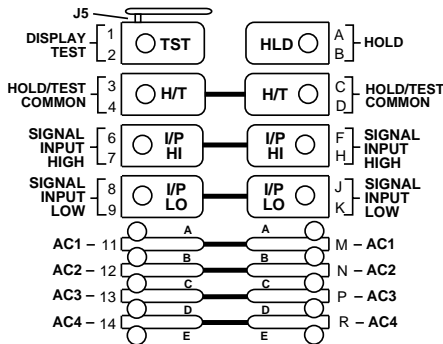
1. Apply a zero input by shorting the inputs to the meter. Adjust the zero trim pot until the meter reads 000.
2. Apply an AC voltage from 60V to 500V AC, of a known frequency greater than 15.0Hz.
3. Adjust the Span Pot until the meter displays the known frequency being applied.
4. The UM-35HZ is now calibrated and ready for use.

## 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)



**Component Side**      **Solder Side**



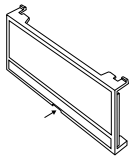
**WARNING:** AC and DC input signals and power supply voltages can be hazardous. Do not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.

**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.

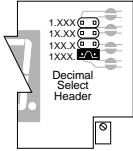
**Pins 3, 4, C & D - H/T Common Pin:** The Hold and Display Test pins have to be connected to this pin to activate their respective functions.

**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.

## Decimal Point Selection



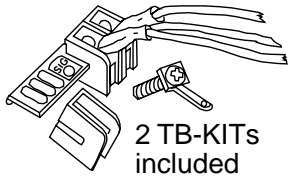
Remove faceplate by inserting a screwdriver blade in the slot at the bottom center of the faceplate. Press blade in to release catch and gently pry face plate outward from the bottom. (see also Case Dimension drawing)



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

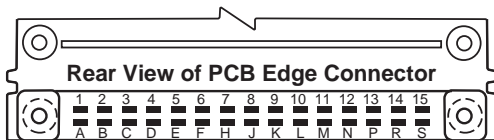


2 TB-KITs included

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



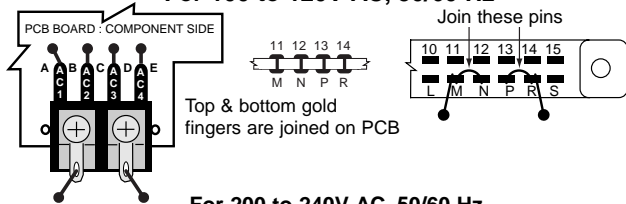
A standard 30 pin edge connector (two rows of 15 pins on 0.156" centers) may also be used to connect the UM-Series. Order part no. CN-L15. For different power supply voltage connection details, see pin connections below.

## Selecting Power Supply Voltages

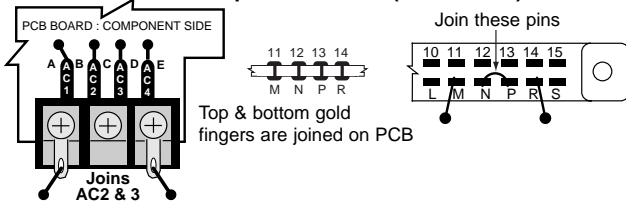
With TB-KIT Screw Terminals

With Optional PCB Edge Connector

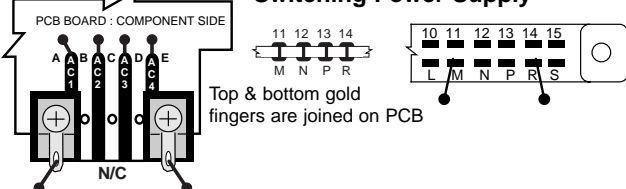
For 100 to 120V AC, 50/60 Hz



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



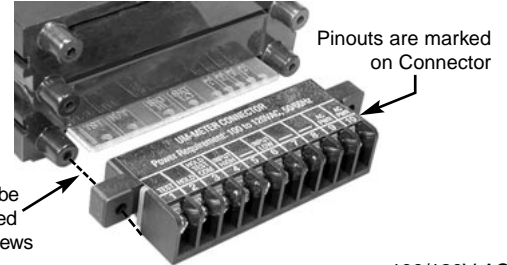
For Isolated 9-36V DC/12-24V AC, 50/60 Hz  
Switching Power Supply



## 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.



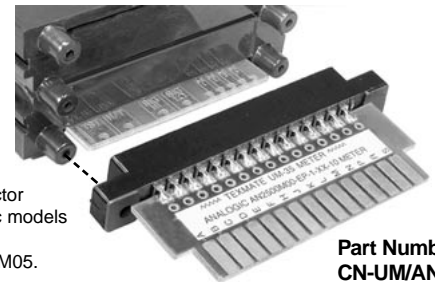
Connector can be securely attached to case with screws

Pinouts are marked on Connector

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

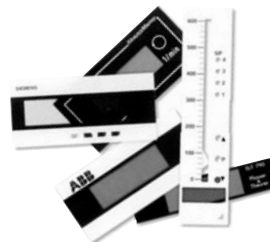
Part Number  
**CN-UM/ANLGC**

## Face Plate Descriptors

Volts AC	Volts DC	Hz	RPM
Amps AC	Amps DC	DC $\mu$ A	
Milliamps AC	Milliamps DC	$^{\circ}$ C	
Millivolts AC	Millivolts DC	$^{\circ}$ F	
Kilowatts	Watts	%	pH
kg/cm $^2$	Kilovolts AC	psi	
kWH	kVAR	Power Factor	
k	Cos $\phi$	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.

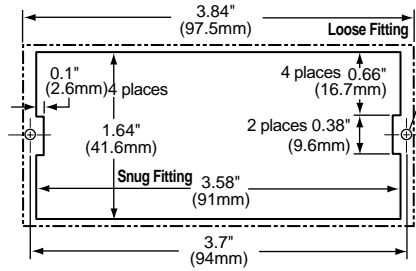
- Small Run or One-Off custom face plates incur an installation charge, and are generally printed on a special plastic film, which is then laminated to custom faceplate blanks as required.

- 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.

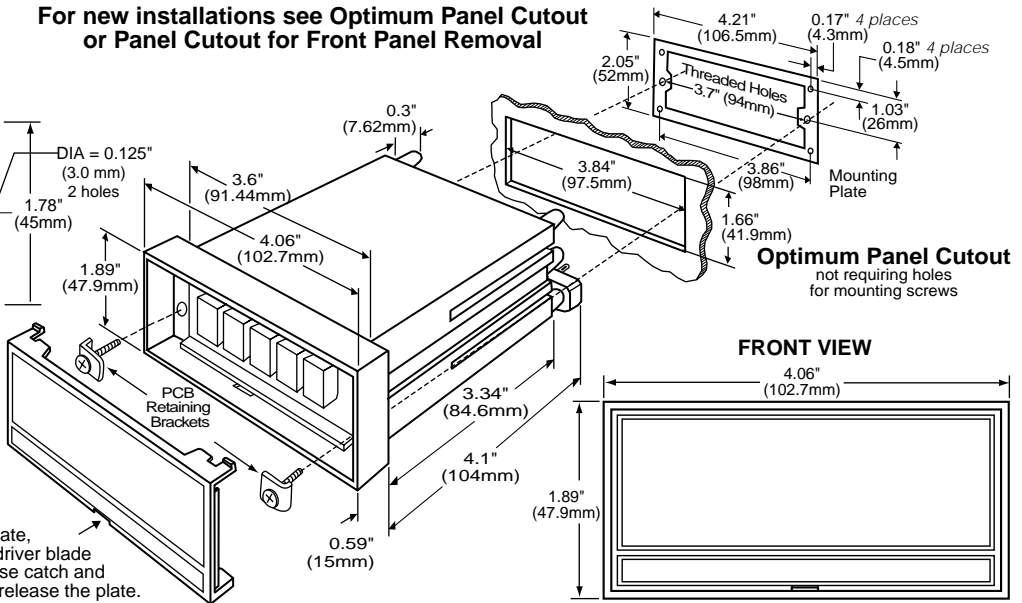


## Panel Cutout for Front Panel Removal

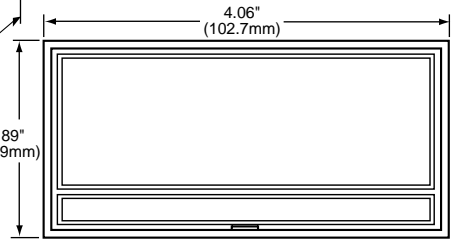
To enable removal of the panel meter from a mounting panel without requiring rear access, make the panel cutout as shown above, using the mounting plate supplied with the meter as a template. The mounting holes should then be tapped to match the mounting screws.

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	List
<b>► BASIC MODEL NUMBER</b> Includes 2 TB-KITs, standard display and standard power supply unless optional versions are ordered.		
UM-35HZ	DPM, AC Line Frequency, 15.0Hz to 199.9Hz	\$99
<b>► DISPLAY</b>		
STANDARD	0.56" Red LEDs	N/C
UM-BRIGHT	Super bright Red LEDs, 0.56 inch high	\$20
UM-GREEN	Green LEDs, 0.56 inch high	\$10
UM-GREEN4.5	Green LEDs, 0.56 inch high Dummy Zero Option for UM-35s	\$25
UM-LARGE/GRN	Green LEDs, 0.8 inch high for UM-35 Series	\$35
UM-LARGE/RED	Red LEDs, 0.8 inch high for UM-35 Series	\$25
UM-RED4.5	Red LEDs, 0.56 inch high Dummy Zero Option for UM-35s	\$25
<b>► POWER SUPPLY</b>		
STANDARD	100/120 or 200/240VAC User selectable	N/C
V0-DC/ISO	Isolated auto-sensing AC/DC 9 to 36V DC/12 to 24V AC	\$35
V0-24V	Isolated transformer 12V AC or 24V AC user selectable	\$15
V0-5V DC	Non-isolated 5V DC only	\$10
<b>► SPECIAL OPTIONS (Specify Inputs or Outputs &amp; Req. Reading)</b>		
V0-50K	Zero offset Potentiometer 50K	\$5
CB-FS35	Non-Std Range and Scale changes for UM-35 meters	\$10
VRC-DPM	Range change to 15Hz to 500Hz	\$10

## Special Options and Accessories

Part Number	Description	List
<b>► ACCESSORIES (Specify Serial # for Custom Artwork Installation)</b>		
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, 120/240V AC select	\$20
CN-PUSH/UM03	Connector: Push-on Terminal Block, 24V AC pwr	\$18
CN-PUSH/UM04	Connector: Push-on Terminal Block, 9 to 36V DC/12 to 24V AC	\$18
CN-PUSH/UM05	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 lens cover for UM Series meters	\$50
RP•CASE	Case: Replacement with Mounting Hardware	\$10
TB-KIT	Connector: xtra 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-FS-003	Produce & Install Custom Faceplate per meter - 3 color no-min	\$30
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

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](http://www.texmate.com)

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