



0.56" LEDs
UM-Series
FUNCTION
SELECTABLES



0.8" LEDs



UM-35CL

4-20mA Process Loop

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

Easily user scaled, this meter is ideal for indication of 4-20mA process loop signals in any engineering unit.

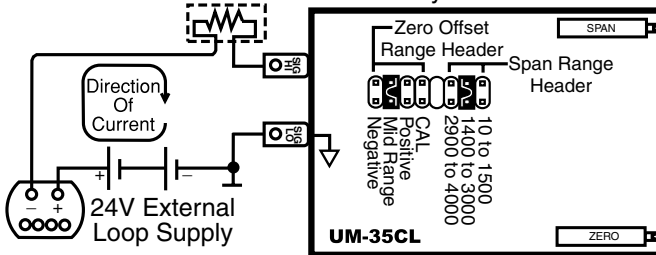
General Features

The UM-35CL is an economical 4-20mA process loop measuring meter. It is easily user adjustable to any reading between -1999 and +1999 with header selectable signal conditioning.

Typical Application Connections

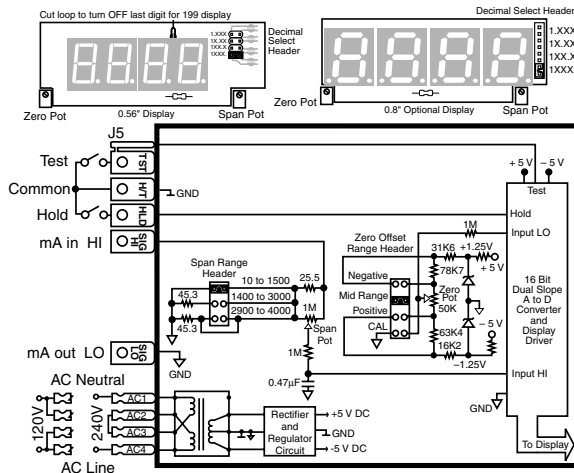
4 to 20mA Process Loop Measurement

Other devices can also be added to the loop. Fully User Scalable



Order the UM-35CLE, if you require the loop excitation voltage to be supplied by the meter.

Functional Diagram



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:Series connection to 4-20mA process loop.

Full Scale Ranges:User adjustable to any scaling between -1999 to +1999.

Input Impedance:70Ω. Maximum 1.4V drop

A/D Converter:12 bit dual slope

Accuracy:±(0.05% of reading + 2 counts)

Temperature Coefficient: 100 ppm/°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.

Polarity:Bipolar. Assumed positive displays negative.

Decimal Selection:Header under face plate, X•X•X•X•

Overrange 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 ±10%

(Optn) VO-5V DCNon-isolated 5V DC ±10%

Operating Temperature:-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.

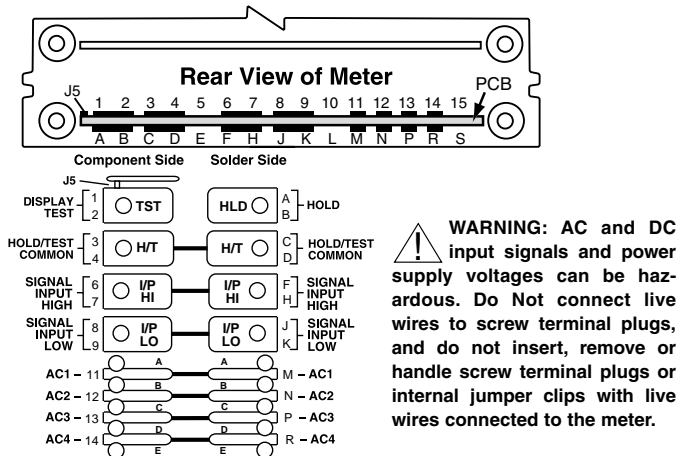
UM-Series low cost utility meters for switchboard and process indication

- UM-35AC11/5 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 ±2/20V DC Header selectable or optionally ±2/200V DC, 3.5 digit
- UM-35MVDC mV ±50mV and ±100mV select inputs to suit DC current shunts, 3.5 digit
- UM-45DC Volts ±2V/±20V/±200V DC Header selectable ranges 4.5 digit
- UM-45MVDC mV ±50 mV, ±100mV, or ±200mV 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 (100.00), 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
- UM-35RTD100Ω platinum RTD, 3 or 4 wire, order °C or °F and 0.1° or 1°, 3.5 digit

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. 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: 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 are needed, a Push-On Screw Terminal can be used.

Pins 5 & E - CAL: Signal high input for the meter when the built-in 24V is not being used to excite the loop.

Pins 6, 7, F & H - Signal High Input: Signal high input for the meter when the built-in 24V is being used to excite the loop.

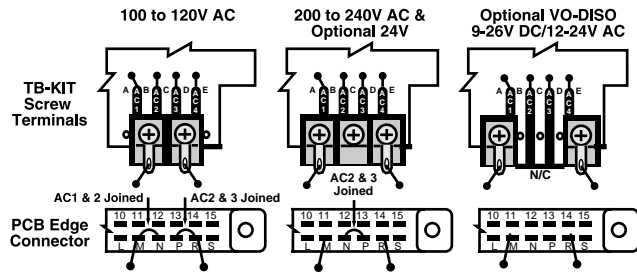
Pins 8, 9, J & K - Signal Low Input: Signal low input of the A/D Converter.

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

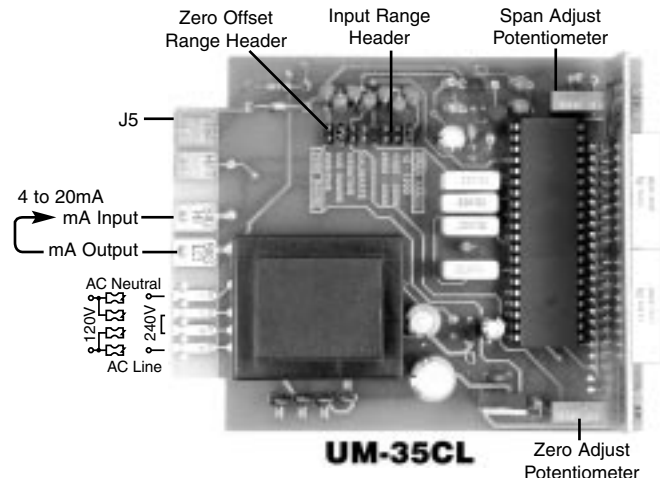
Pins 12 & N - AC2 - 110/220V AC Power Select: See below for connections

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

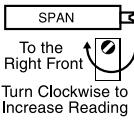
Pins 14 & R - AC4 - Neutral AC Power Input:



Component Layout



Signal Conditioning Components

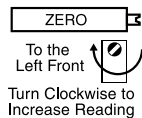
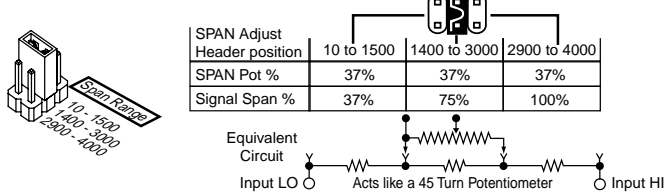


SPAN Potentiometer (Pot)

The 15 turn SPAN Pot is always on the right side (as viewed from the front of the meter). Typical adjustment is 37% of the input signal range.

SPAN ADJUST Header

This three position header enables the SPAN Pot, in three equal overlapping 37% steps, to precisely scale down the input Signal Span, to provide any required Digital Display Span. Without any scaling or offset, a 4mA to 20mA input would produce a digital output of 1000 to 5000, which is a Digital Display Span of 4000 counts.

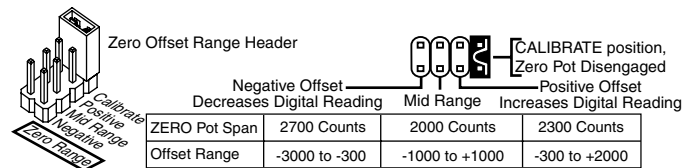


ZERO Potentiometer (Pot)

The ZERO Pot is to the left of the SPAN Pot. It enables the Digital Display Span to be offset 2000 to 2700 counts, depending on the Zero Offset Range Header position selected.

ZERO OFFSET RANGE Header

This four position header enables the ZERO Pot to offset the Digital Display Span -3000 to +2000 counts with a user selectable Negative offset, Mid-range (- & + offset), Positive offset, and a Calibrate position (ZERO Pot disengaged). The Calibrate position facilitates a simple two step calibration with no interaction between Span and Offset.



Calibration Procedure

The first step is to disengage the ZERO Pot and scale down the Signal Span input to produce the desired Digital Display Span output.

Signal Span is defined as the total change of signal input that would be required for a specific change of the Digital Display. The largest Signal Span that can be specified with a 4 to 20mA input is 16mA. A 4mA Signal Span proportionately scaled can meet full scale display accuracy.

Digital Display Span is defined as the exact total in counts, that the display would change within a specific Signal Span. The largest Digital Display Span that can be displayed is -1999 to +1999 (4000 counts). 16mA can not display +4000, so instead 4mA can be scaled to +1000.

The second step is to select a Zero Offset Range and offset the Digital Display Span with the ZERO Pot, until the desired reading is displayed.

Maximum offset is -3000 to +2000 counts. A Digital Display Span of 4000 counts requires an offset of -3000 to display -1999 to +1999.

For example: A 4 to 20mA input to read -40.0°C to +199.9°C
Signal Span = 16mA, Digital Display Span = 2400 counts.

1. Remove the meter from its case and set the Zero Offset Range Header to the Calibrate position. Select the 1400 - 3000 position on the Span Adjust Header and slide the meter back into the case.
2. Connect power to the meter and apply 4mA (25% of 16mA). Adjust the SPAN Pot until the display reads +600 (25% of 2400). The meter is now scaled for a Signal Span of 16mA and a Digital Display Span of 2400 counts. In the example 4mA should read -400 and 20mA read 1999, therefore the Digital Display Span should be offset by -1000.
3. Disconnect power and remove the meter from the case, select the Negative offset position on the ZERO OFFSET RANGE Header, and slide the meter back into the case.
4. Connect power to the meter, apply 4mA and adjust the ZERO Pot until the display reads -400. With the Digital Display Span now offset by -1000 counts, the meter will read -400 for a 4mA input, and read +1999 for a 20mA input. Select decimal point 1XX.X to display -40.0 to +199.9. Then apply the self adhesive °C symbol (from the Face Plate Descriptor sheet provided) to complete the calibration.

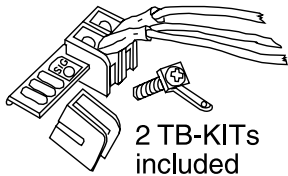
Decimal Point Selection

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

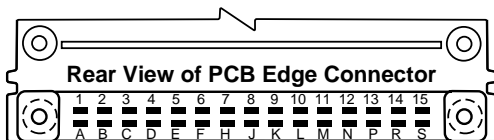
Six Screw Terminals included Free with each UM Series meter



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



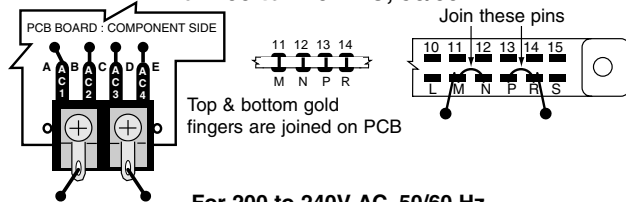
A standard 30 pin edge connector (two rows of 15 pins on 0.156" centers) may also be used to connect the UM-Series. Order part no. CN-L15. For different power supply voltage connection details, see pin connections below.

Selecting Power Supply Voltages

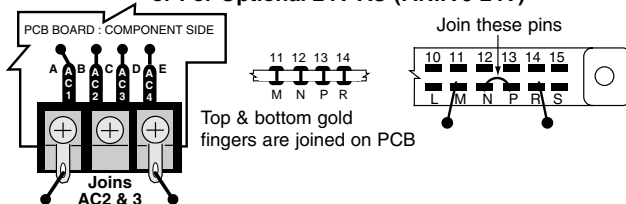
With TB-KIT Screw Terminals

With Optional PCB Edge Connector

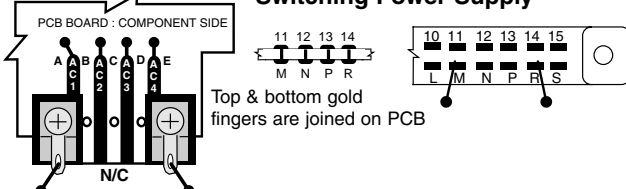
For 100 to 120V AC, 50/60 Hz



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



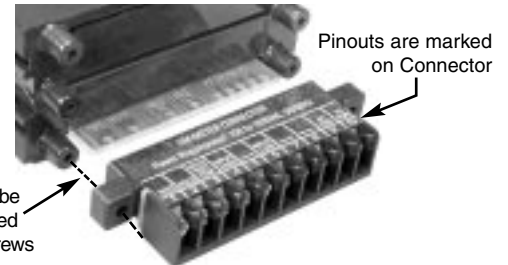
For Isolated 9-36V DC/12-24V AC, 50/60 Hz
Switching Power Supply



Push-On Screw Terminals

They provide the greatest convenience and ease of use

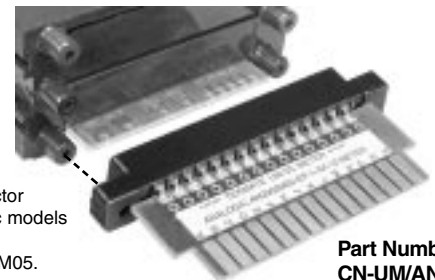
Texmate's exclusive optional Push-On Connectors combine an edge card connector and a 10 position screw terminal block. Push-On Connectors are ordered preconfigured for each specific power supply voltage and each optional power supply available for the UM-Series.



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)

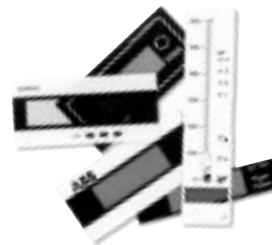


Face Plate Descriptors

Volts AC	Volts DC	Hz	RPM
Amps AC	Amps DC	DC μ 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 ϕ	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.

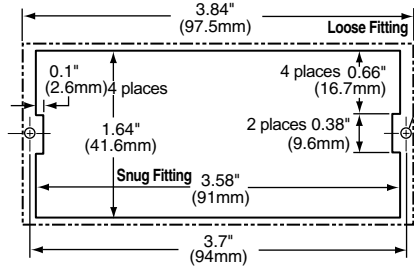
- Small Run or One-Off custom face plates incur an installation charge, and are generally printed on a special plastic film, which is then laminated to custom faceplate blanks as required.

- 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.

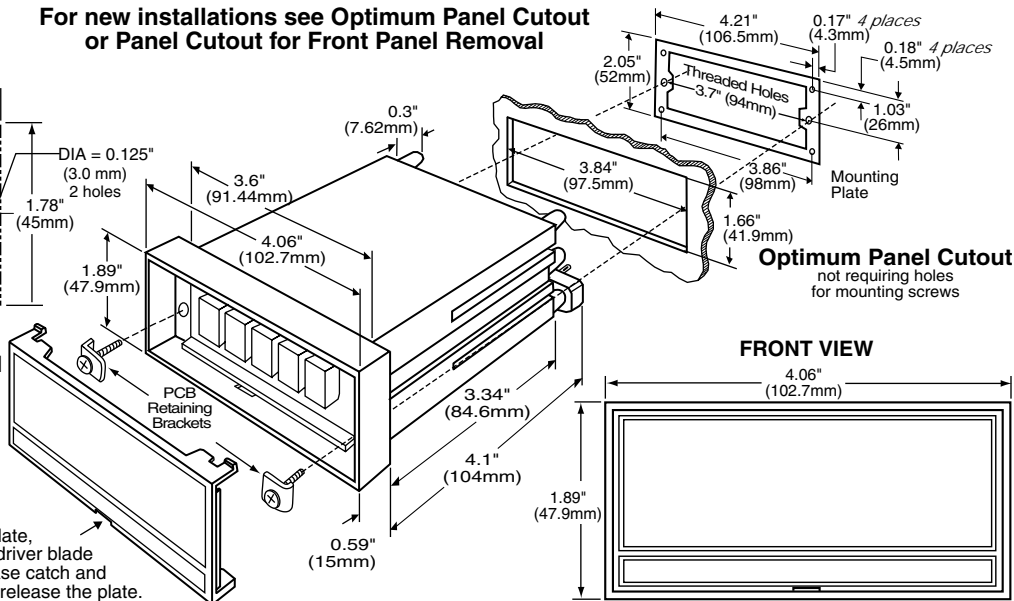


Panel Cutout for Front Panel Removal

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



Optimum Panel Cutout
not requiring holes for mounting screws

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-35CL	.....DPM, Process 4-20mA
► DISPLAY	
STANDARD ....0.56" Red LEDs	
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 200/240VAC 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 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

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: xtra 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. See full price list for more details.

WARRANTY

Textmate 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. Textmate'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 Textmate's facility, transportation charges pre-paid, and which are, after examination, disclosed to the satisfaction of Textmate to be thus defective. The warranty shall not apply to any equipment which shall have been repaired or altered, except by Textmate, or which shall have been subjected to misuse, negligence, or accident. In no case shall Textmate'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 Textmate.

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 Textmate. 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 Textmate's liability, in law or otherwise, be in excess of the purchase price of the product.

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Textmate 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.textmate.com

Local Distributor Address