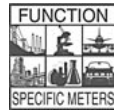# TEXMATE

DU-35RTD

100ΩPt RTD Temperature Meter
## 3 1/2 Digit with 0.56" LEDs
in a 1/8 DIN Case

Economical, 3 Wire or 4 Wire 100Ω Platinum RTD Temperature Meter.

General Features

The DU-35RTD is a versatile and economical temperature meter, designed to accept 3 wire or 4 wire 100Ω Platinum RTD sensors. The meter is ordered factory calibrated for either a °C or °F read-out, and a 0.1° or a 1° resolution and is shipped in the 3 wire mode. The 4 wire mode may be header selected by the user. If required in the future, the user can re-calibrate the meter on-site without any component changes by following the instructions on page 2 of this data sheet and utilizing the internal °C or °F and 0.1° or 1° header. A special option P/N: DU-C/F can be ordered that provides a header on the display front to select between ˚C or ˚F without the need for re-calibration. (See Ordering Information)
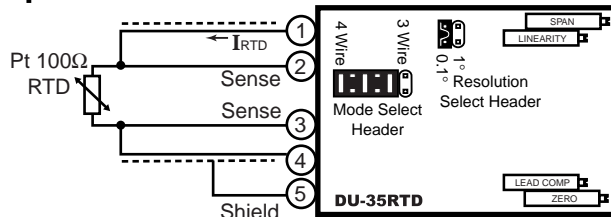
Typical Application Connections

Temperature Measurement with 3 Wire RTD
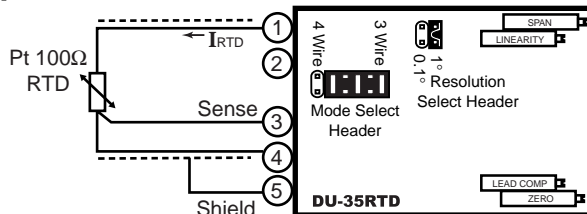
Temperature Measurement with 4 Wire RTD
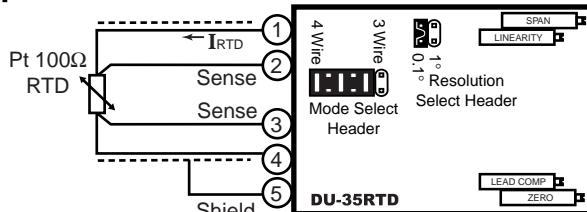
Temperature Measurement with 2 Wire RTD

Sense input leads should be joined to the I_RTD leads as close as possible to the sensor element because, on 2 wire RTDs, the single lead length resistance from the sensor to these joints will produce uncompensatable errors.

Compatibility

The DU-Series have a matching DIN case style that is complementary to the Lynx, Leopard and Tiger family of meters. DU-Meters are the OEM's choice for economical switchboard and process indication. For economy, each model is dedicated to a specific application and designed for quick and easy installation.

INTERNATIONAL
DIN
CASES
1/32 **1/8**
1/32

Specifications

Input Configuration: ....3-Wire or 4-Wire (0.00385Ω/Ω/˚C)
Input Ranges:....................−190.0°C to +199.9°C (0.1°C resolution)
　　　　　　　　　　　　−190°C to +800°C (1°C resolution)
　　　　　　　　　　　　−199.9°F to +199.9°F (0.1°F resolution)
　　　　　　　　　　　　−199°F to +1470°F (1°F resolution)
Lead Imbalance Error:.....2.8°C per ohm of imbalance
Lead Resistance: ....Up to 50Ω of resistance in each lead can be automatically compensated
Input Protection: ....25V AC/DC
A/D Converter: ....12 Bit Dual Slope
Accuracy: ....±(0.3% + 1 digit)
Temperature Coefficient: 100ppm/˚C (Typical)
Warm Up Time:.................One minute to specified accuracy
Conversion Rate: ....3 readings per second
Display:.............................0.56" hi efficiency Red or optional Green LEDs. Display Hold & Display Test are provided.
Polarity: ....Bipolar. Assumed positive, displays negative
Decimal Selection:...........Header under face plate, X•X•X•X•
Over-range: ....Most significant "1" digit is displayed with all other digits blanked
Power Supply (std): ....120/240V AC, 50/60 Hz. approx 2.5W.
　(Optn) VO-DC/ISO.........Isolated Swtr. 9 to 36V DC/12 to 24V AC
　(Optn) VO-24V...............Isolated Transformer 24V AC ±10%
　(Optn) VO-5V DC ....Non-isolated 5V DC ±10%
Operating Temperature: ..–10 to 50 °C
Storage Temperature:......–20 to 70 °C
Relative Humidity: ....95% (non-condensing)
Case Dimensions: ....1/8 DIN, Bezel: 96x48mm (3.78"x1.89") Depth behind bezel 117 mm (4.61") plus 11.8mm (0.47") for Right-angled Connector or 20mm (0.79") for Straight-through Connectors.
Weight:..............................11 oz., 14 oz when packed

DU-Series, the OEMs choice for switchboard and process indication

DU-35ACI1/5 ....AC amps, Scaled RMS. (**1 or 5 Amp** Internal shunt), 3.5 digit
DU-35ACIRMS1/5 ..AC amps, True RMS. (1 or 5 Amp Internal shunt), 3.5 digit
DU-40ACI1-5 ....AC amps, Scaled RMS. (1 or 5 Amp Internal shunt), 4 digit
DU-35AC ....AC volts, Scaled RMS. 199.9/700V AC Header Selectable Ranges, 3.5 digit
DU-35ACRMS ....AC volts, True RMS 199.9/700V AC Header Selectable Ranges, 3.5 digit
DU-40AC ....AC volts, Scaled RMS. **700.0V AC** full scale, 4 digit
DU-35HZ ....15.0Hz to 199.9Hz or 15/500Hz. Up to 700V AC input, 3.5 digit
DU-35 ....DC volts ±**2V**/±20V/±200V Header Selectable Ranges, 3.5 digit
DU-35MV........................DC mV ±**50mV**, ±100mV, ±200mV Header Selectable Ranges, 3.5 digit

DU-45 ....DC volts ±**2V**/±20V/±200V Header Selectable Ranges, 4.5 digit
DU-45MV........................DC mV ±**50mV**/±100mV/±200mV Header Selectable Ranges, 4.5 digit
DU-35CL ....Process 4 to 20mA **(100.0)**, easily user scalable, 3.5 digit
DU-35CLE ....Process 4 to 20mA **(100.0)** with 24V DC excitation, scalable, 3.5 digit
DU-45CL ....Process 4 to 20mA **(100.00)**, easily user scalable, 4.5 digit
DU-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
DU-35J/K..................Order **J** or **K** Thermocouple and °C or °F, 3.5 digit
DU-35RTD.....................100Ω platinum RTD, 3 or 4 wire, order °**C** or °**F** and **0.1°** or **1°**, 3.5 digit

Functional Diagram
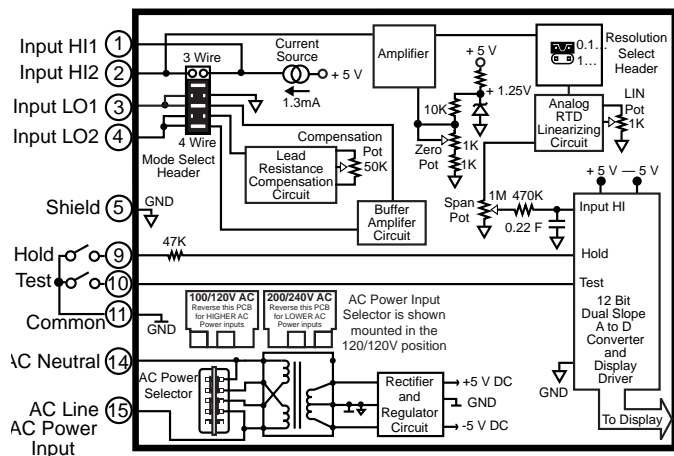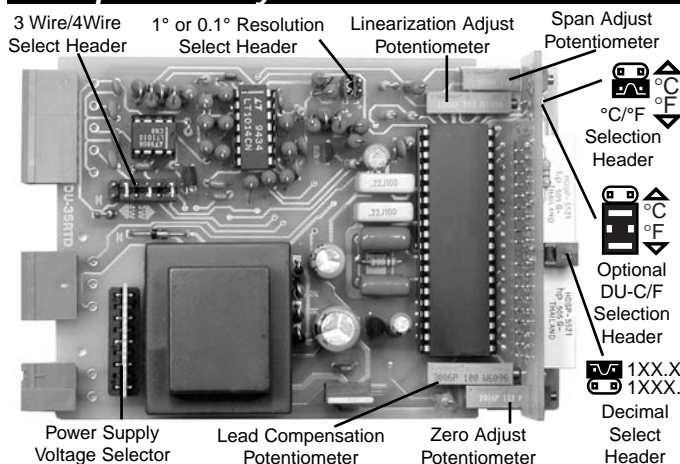

Connector Pinouts Functional Diagram

This meter is supplied with plug-in type screw terminal connectors. The power supply pins (14 & 15) have a unique plug and socket outline to prevent cross connection. (see DU Connectors)
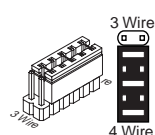

REAR VIEW OF METER
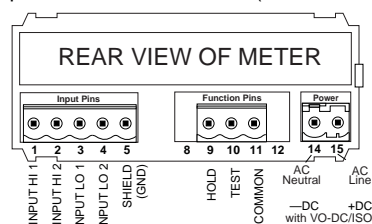
WARNING: AC and DC input signals and power supply voltages can be hazardous. Do Not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.

Pin 1 - Input Hi 1: Input from 3 wire/4 wire RTD.
Pin 2 - Input Hi 2: Input for 4 wire RTDs. When sensor is a 3 wire RTD, this pin is not used.
Pin 3 - Input Lo 1: Input for 3 wire/4 wire RTDs.
Pin 4 - Input Lo 2: Input for 3 wire/4 wire RTDs.
Pin 5 - Shield: This pin is internally connected to the ground of the internal power supply.
Pin 9 - Hold Reading: If this Pin is left unconnected, the meter will operate in a free-running mode. When this pin is connected to the Hold/Test Common Pin 11, the meter will latch up. A/D conversions will continue, but the display will not be updated until Pin 9 is disconnected from the Hold/Test Common pin 11.
Pin 10 - Display Test: All numeric display segments will light up when this pin is connected to the Hold/Test Common Pin 11.
Pin 11 - Hold/Test Common: The Hold and Display Test Pins have to be connected to this pin to activate their respective functions.
Pins 14 & 15 - AC Power Input: These pins are the Power Input pins for the meter. All DU-Series meters sold in North America are pre-configured at the factory for 100/120V AC operation. To re-configure for 200/240V AC operation, simply pull out the AC Power Voltage Selector located directly behind the transformer, turn it around and re-insert it into the socket so that "200/240V AC" is visible. Various other AC/DC power options are available. See Ordering Information for details.

Component Layout

3 Wire/4Wire Select Header — 1° or 0.1° Resolution Select Header — Linearization Adjust Potentiometer — Span Adjust Potentiometer — °C/°F Selection Header — Optional DU-C/F Selection Header — Decimal Select Header — Zero Adjust Potentiometer — Lead Compensation Potentiometer — Power Supply Voltage Selector
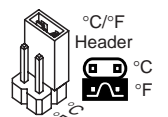
Signal Conditioning Components

3 WIRE/4 WIRE SELECT Header

This header enables selection of a 3 Wire or 4 Wire RTD input configuration.
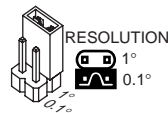
RESOLUTION Select Header

A resolution of 0.1° or 1° is selected by positioning the jumper clip on the Resolution header. Re-calibration is required after any reselection.
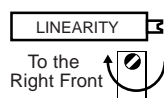
°C/°F Select Header

°C or °F may be selected by positioning the jumper clip on the header. Re-calibration is required after any reselection.

SPAN Potentiometer (Pot)

To the Right Front
Turn Clockwise to Increase Reading
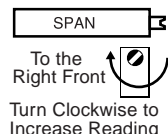
The SPAN pot is on the right side of the display. Typical adjustment is 20% of the input signal range.

LINEARITY Potentiometer (Pot)

To the Right Front

The LINEARITY pot is to the right of the SPAN pot and is used for top end linearity calibration.

ZERO Potentiometer (Pot)

To the Left Front
Turn Clockwise to Increase Reading
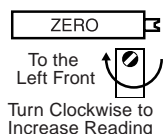
The ZERO pot is on the left side of the display. Typically it enables the display reading to be offset ±500 count.

Calibration Procedure

1. Select a resolution of 0.1˚ or 1˚ on the Resolution Select Header. Select the appropriate decimal point on the Decimal Select Header. Select a display of ˚C or ˚F on the °C/°F Select Header. Select a 3 or 4 wire input configuration, with the 3 wire/4 wire Select Header. Note: Lead Compensation can only be calibrated in the 3 wire positioning. After calibration, the 4 wire mode can be selected without further calibration.

2. Connect an RTD Simulator to the input of the DU-35RTD and calibrate according to the Calibration Table below..

Calibration Table	0.1°C	1°C	0.1°F	1°F
3. Adjust Zero Pot so display matches RTD simulator with output set to:	0.0°C	0°C	0.0°F	0°F
4. Adjust Span Pot so display matches RTD simulator with output set to:	-190.0°C	-190°C	-190.0°F	-190°F
5. Adjust Linearity Pot so display matches RTD simulator with output set to: Repeat Step 4 and 5 until both readings remain constant.	190.0°C	800°C	190.0°F	1470°F
6. Introduce an equal resistance of not more than 50Ω between each input of the RTD simulator and the meter. Adjust the Lead Compensation Pot so display matches RTD simulator with output set to:	The Lead Compensation is calibrated at the factory for lead resistances up to 50Ω each, and usually does not need to be re-calibrated.			
	190.0˚C	800˚C	190.0˚F	1470˚F

7. The DU-35RTD meter is now calibrated and ready for use.

Decimal Point Selection
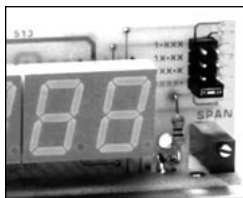
Decimal selection is made on the front of the display board by moving the jumper to the indicated position on the header for the decimal required.

Rear Selection of Decimal Points

An optional output board is available that provides access to all decimal points via a rear PCB edge connector.

Opening Back Panel

To open back panel, insert a flat screwdriver or similar instrument in both slots on the top of the case and pry open. The DU-Series meters slide out from the rear of the case as a complete assembly.

Selecting Power Supply Voltage

This unique voltage selector PCB displays the operating voltage selected. To change the voltage, disconnect power to the meter. Remove the selector, reverse the selector and fully re-insert it in the socket. This selector is not required for optional power supplies.
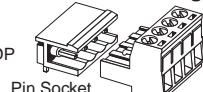
DU-Series Connector Options

Plug-in Screw Terminal Connectors are Provided
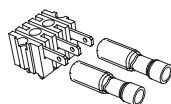
Input Power Screw Terminal Plug
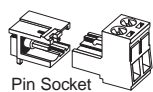
Part Number: 93-PLUG2P-DP

Pin Socket

Right-angled Screw Terminal Plug

Pin Socket

Part Numbers:
93-PLUG2P-DR.....2 pins
93-PLUG3P-DR.....3 pins
93-PLUG4P-DR.....4 pins
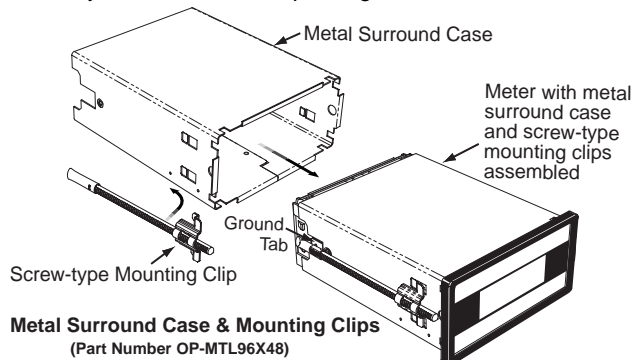93-PLUG5P-DR.....5 pins
93-PLUG6P-DR.....6 pins

Spade Lug pinouts and insulated quick disconnects may still be ordered as an option. P/N.:CN-SPADE.

Metal Surround Case Option

The meter's plastic case is made from fire retardant polycarbonate. A metal surround case can be ordered to enhance the meter's fire retardant capabilities and also provide shielding against electromagnetic interference (EMI). The metal case slides over the polycarbonate case and is held firmly in place by spring-type non-return clips. The Metal Surround Case must be factory installed on the polycarbonate case and once installed, it cannot be removed in the field.

With the metal case in place, the meter's standard ratchet-type mounting clips can not be used. Instead a pair of screw-type DIN standard mounting clips are provided, which clip into holes on the side of the metal case and tighten against the rear of the panel. A ground tab on the metal case enables the metal case to be easily connected to the panel ground.

Metal Surround Case

Meter with metal surround case and screw-type mounting clips assembled

Ground Tab

Screw-type Mounting Clip

Metal Surround Case & Mounting Clips
(Part Number OP-MTL96X48)

Face Plate Descriptors

AC	Ω	kV	kVAR	m³/hr	Hz	RPM
V	mV	min	PF	°F	°C	CosØ
DC	x10kN	µA	PSIG	mS	kg/cm²	psi
kW	W	kWH	pH	%	K	kPa
A	mbar	mA	MW	kA	RPS	MWH
mWs	µm	kW/s	I	I/sec	ml	cm
ORP	mm/s	1/min	mm	kg/sec	lbs	kg/hr
FT	bars	min¹	m/min	Mvars	µV	dB

To customize the face plate, each DU-meter is supplied with a white printed clear adhesive label containing various popular descriptors. Choose the descriptor desired, peel off the adhesive backing and align the descriptor in the center right of the faceplate.

Custom Face Plates

Texmate Produces Thousands of Custom OEM Face Plates

Have Texmate Design and Build a Custom Face Plate to Suit your Next project!

• Custom face plates have a non-recurring artwork charge. A serial number is then assigned to each artwork, to facilitate re-ordering.

• 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.

Optional Display Styles

DU Series Above-Center Display Option

0.8" LED Options available in Lynx Family

To match all display styles, DU-Meters have an optional display and faceplate with the digits positioned above center. (see Display Options)

For 0.8" LEDs in 1/8 DIN cases order Lynx family DX-35 and DX-40 w/ LR or LG displays and input modules that match DU-Series inputs.

Clear Lockable Water-proof Cover

The clear lockable cover is designed to be dust and water proof to NEMA-4X, IP65 standards. The assembly consists of a base and cover with a cam hinge and key-lock fastening mechanism. An O-ring, or neoprene gasket forms a seal between the base and the panel. The cam hinge prevents the cover from closing when opened until pushed closed. The cover has a tapered recess that, when closed, forms a seal with a tapered spigot on the base. A key-lock employs a cam locking device to force the spigot into the recess, ensuring seal integrity. A safety catch keeps the cover closed even when the key is removed, and the keyhole can be used to attach a safety seal clip, preventing unauthorized opening.

O-ring Gasket

Base

Cover

Removable Key-lock

Safety Catch

NEMA-4X, IP65 Lockable Cover
(Part Number OP-N4X/96X48)

DU Case Dimensions and Panel Cutouts

PANEL CUTOUT
Case will mount in standard 1/8 DIN cutouts ★

4mm (0.16") 8 places
Mosaic Fitting 87.4mm (3.45") ★
40.8mm (1.61") ★
43.4mm (1.71")
45 mm (1.77")
3mm (0.12") 8 places
91.6mm (3.6")
Snug Fitting
Loose Fitting
92 mm (3.62")
1/8 DIN Cutout spacers

★ These dimensions are increased by 1.6mm (0.06") when the **metal surround case** is installed.

Metal Surround Case
P/N:(OP-MTL96X48) uses Metal Screw Mount Clips and has a max. panel thickness mounting of 15.5 mm (0.61").

NOTE: The Metal Surround Case is pre-installed at the factory and cannot be removed without damage to the case.

Clear Lockable NEMA 4X Splash Proof Cover
P/N:(OP-N4/96x48)

Safety Catch
Cam Opening
Removable Key-lock

FRONT VIEW
1/8 DIN 96x48mm

48 mm (1.89")
`19999`
3.9 mm (0.15") typical
96 mm (3.78")

For extra strength in portable applications, the 8 DIN spacers should be snipped off and the **Mosaic fitting** cutout used. Alternatively, the **High Strength Panel Mounting Kit** (Part # OP-PMA96X48) can be used.

When extra panel mounting tightness is required, order the optional **screw mount clip**. P/N:(OP-MTLCLIP)

SIDE VIEW

3.7mm (0.15")
43.4mm (1.71") DIN Cutout spacers
40.8mm (1.61")
5.3 mm (0.21")
117 mm (4.61")
Straight-thru Connector for meters with output board 20mm (0.79")
Right-angled Connector 11.8mm (0.47")

TOP VIEW

50mm (1.97")
Max. panel thickness
91.6mm (3.6") DIN Cutout Spacer
To open rear cover, use a small flat bladescrew driver. Press down lightly to release catch on top or bottom of case and leaver outwards.
95.4mm (3.77")
87.4mm (3.45") ★ mosaic fitting
96 mm (3.78")
4.7mm (0.19") DIN Cutout Spacer
For additional strength, **extra Mounting Slide Clips** can be ordered and doubled up one behind the other. P/N: (75-DMTCLIPF)
2mm (0.08") Connector Socket

Various bezel colors are available. Black is standard.

Panel adaptor plates are available to retrofit most existing panel cutouts.

High Strength Panel Mounting Kit
P/N: OP-PMA96X48

`1999`
`1999`

The 96x48mm case is particularly suitable for mounting in mosaic panels or insulative panels up to 2" thick. They can also stack mount, 2 up in existing cutouts for 1/4 DIN (96x96mm) or 4 up in 1/2 DIN (96X192mm).

Ordering Information

Standard Options for this Model Number

Part Number / **Description**

▶ **BASIC MODEL NUMBER** Includes plug in type screw terminals, standard display and standard power supply unless optional versions are ordered.

DU-35RTD-F .....DPM, Pt.,100 Ohm in °F, 1° resolution
DU-35RTD-F.1...DPM, Pt.,100 Ohm in °F, .1° resolution
DU-35RTD-C .....DPM, Pt.,100 Ohm in °C, 1° resolution
DU-35RTD-C.1 ..DPM, Pt.,100 Ohm in °C, .1° resolution

▶ **DISPLAY**

STANDARD.......Red LEDs, 0.56 inch high
DU-BRIGHT . . . . . . .Super bright Red LEDs, 0.56 inch high
DU-GREEN . . . . . . .Green LEDs, 0.56 inch high
DU-GREEN 4.5D . . .Dummy Zero Display Option w/ Green LEDs
DU-RED4.5D . . . . . .Dummy Zero Display Option w/ Green LEDs
DU-35HI/BRT . . . . . .Above center position, .56 inch, Bright Red LED
DU-35HI/GRN . . . . .Above center position, .56 inch, Green LED
DU-35HI/RED . . . . .Above center position, .56 inch, Red LED

▶ **POWER SUPPLY**

STANDARD.......100/120 or 200/240VAC User selectable
V0-DC/ISO . . . . . . .Isolated auto-sensing AC/DC 9 to 36 VDC/12 to 24 VAC
V0-24V . . . . .Isolated transformer 12 VAC or 24 VAC user selectable

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

HD-CHANGE . . . . .Range change from the standard input as shown in **BOLD** type
DU-C/F . . . . .Header Select °C/°F for DU-35J/K/RTD

Special Options and Accessories

Part Number / **Description**

▶ **ACCESSORIES (Specify Serial # for Custom Artwork Installation)**

75-DBBZ9648F . . . .Black Bezel for 96x48mm Case
75-DMTCLIPF . . . . .Side Slide Brackets (2 pc) - extra set, extra strength
76-DU35G . . . . .Replacement DU Series grey lens for Green LEDs
76-DU35R . . . . .Replacement DU Series red lens for Red LEDs
76-DUPP/N . . . . . . .Anti-glare protective front lens plate for DU Series
93-PLUG2P-DP . . . .Extra Screw Terminal Conn., 2 Pin Power Plug
93-PLUG3P-DR . . . .Extra Screw Terminal Conn., 3 Pin Plug
CN-SPADE . . . . .Spade Lug pinouts and Insulated quick disconnects
DN•CAS96X48A . . .Complete 96x48mm Case with bezel
OP-DUEXTDP . . . . .Option for External Decimal Point
OP-MCLP96X48 . . .Screw Mounting Clips (2 pc) to screw tighten slide brackets
OP-MTL96X48 . . . . .Metal Surround Case includes metal mounting clips
OP-N4X/96X48 . . . .Clear Lockable Water-proof cover, Nema 4X, IP65
QD-KIT-1 . . . . .Replacement Crimp-on Quick Disconnects (7 per Set)
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-FL-001 . . . . .Custom Faceplate, 250 piece Min. - 1 color
ART-FL-002 . . . . .Custom Faceplate, 250 piece Min. - 2 color
ART-FL-003 . . . . .Custom Faceplate, 250 piece Min. - 3 color

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 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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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

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