TEXMATE

DU-Series

FUNCTION SPECIFIC METERS

CE

DU-35HZ
AC Line Frequency
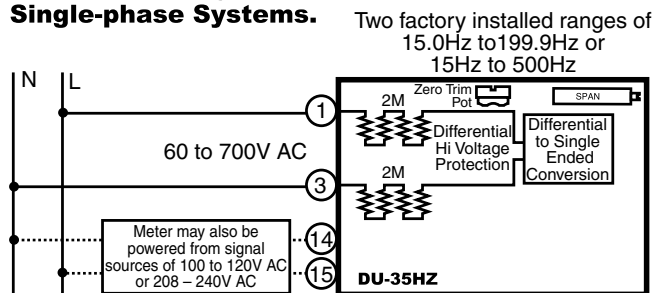## 3 1/2 Digit with 0.56" LEDs
in a 1/8 DIN Case

An economical meter for 50Hz, 60Hz, or 400Hz AC line frequency measurement. Quick and easily installation make it the OEM's choice for switchboard upgrades.

General Features

The DU-35HZ is a low-cost, AC line frequency measuring meter with a factory installed range of 15.0Hz to 199.9Hz or optionally15Hz to 500Hz. The unique input structure allows safe phase to phase line frequency measurements in multi-phase systems.

Display Hold and Display Test functions are also provided. The standard meters have 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. (See ordering information)

Typical Application Connections

AC Line Frequency measurement in Single-phase Systems.

Two factory installed ranges of 15.0Hz to199.9Hz or 15Hz to 500Hz

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

May be used with 3 Phase 3 Wire and 3 Phase 4 Wire Systems.

Two factory installed ranges of 15.0Hz to199.9Hz or 15Hz to 500Hz
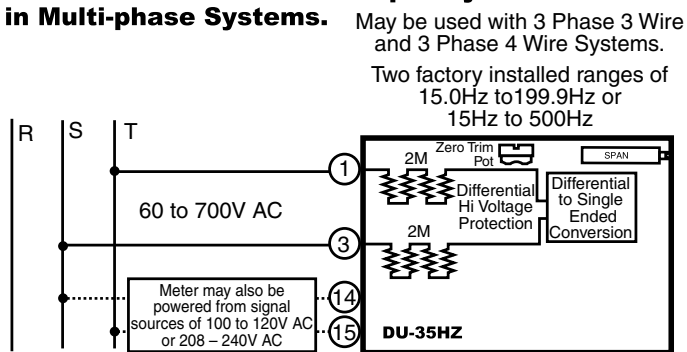
The unique differential input allows safe phase to phase AC line frequency measurements.

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.
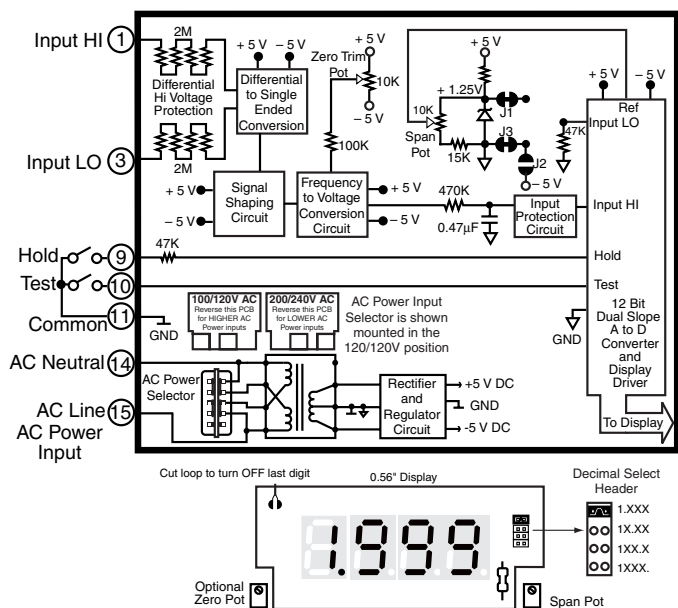
INTERNATIONAL
DIN CASES
1/32 | 1/8
1/32

Specifications

Input Configuration: ....Differential with Frequency to Voltage converter. Inputs resistively isolated to 1400V from the internal ground of meter by 1.94MΩ, so that phase to phase measurements up to 700V AC can be safely made.

Full Scale Ranges: ....Factory installed range of 15.0Hz to 199.9Hz or optionally15Hz to 500Hz

Input Impedance: 4MΩ

A/D Converter: ....12 Bit Dual Slope

Accuracy: ....±(0.05% of reading plus 2 counts)

Temperature Coefficient: 100 ppm/°C (Typical)

Warm Up Time: ....One minute 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, 50/60/400Hz. approx 1.5W.

  (Optn) VO-DC/ISO ....Isolated Switcher 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: ....11oz., 14oz. 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

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

Input Pins						Function Pins					Power	
1	2	3	4	5	6	8	9	10	11	12	14	15
INPUT HI	N/C	INPUT LO				HOLD	TEST	COMMON			AC Neutral	AC Line
											—DC	+DC with VO-DC/ISO

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 - Signal Input High: AC voltages from 60 to 700V can be applied this pin which is resistively isolated to 1400V from the internal ground of meter by 1.94MΩ, so that phase to phase measurements up to 700V AC can be safely made.

Pin 3 - Signal Input Low: AC voltages from 60 to 700V can be applied this pin which is resistively isolated to 1400V from the internal ground of meter by 1.94MΩ, so that phase to phase measurements up to 700V AC can be safely made.

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.
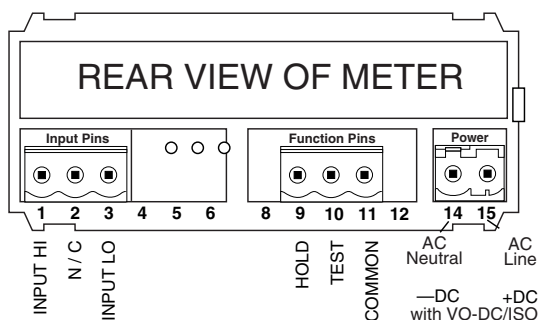
Pins 14 & 15 - AC Power Input: These pins are the Power Input pins for the meter. All DU-Series meters sold in North America are preconfigured at the factory for 100/120V AC operation. To reconfigure for 200/240V AC operation, simply pull out the AC Power Voltage Selector located directly behind the transformer, turn it around and reinsert 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

DU-35HZ

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 20% of the input signal range.

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.

3. Adjust the Span Pot until the meter displays the frequency being applied.

4. The DU-35HZ is now calibrated and ready for use.

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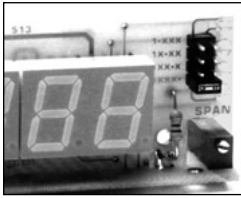
Decimal selection is made on the front of the display board by moving the jumper to the indicated position on the header for the decimal required.

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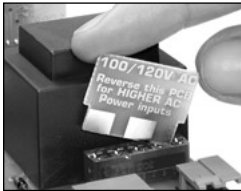
This unique voltage selector PCB displays the operating voltage selected. To change the voltage, disconnect power to the meter. Remove the selector, reverse the selector and fully re-insert it in the socket. This selector is not required for optional power supplies.

DU-Series Connector Options

Plug-in Screw Terminal Connectors are Provided
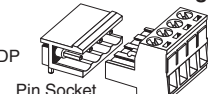
Input Power Screw Terminal Plug
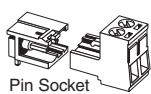
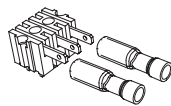

Pin Socket

Part Number: 93-PLUG2P-DP

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.

**Part No.
OP-MTL96X48**

Meter with **Metal Surround Case** and screw-type mounting clips assembled

Screw-type Mounting Clip

Ground Tab

Metal Surround Case & Mounting Clips
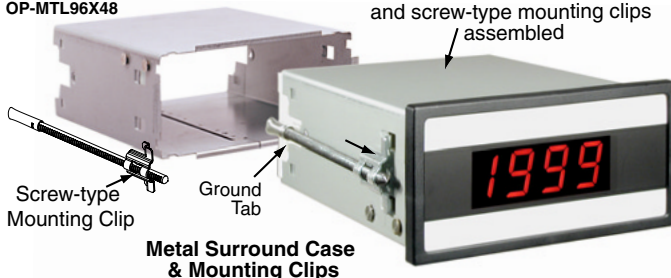
Face Plate Descriptors

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

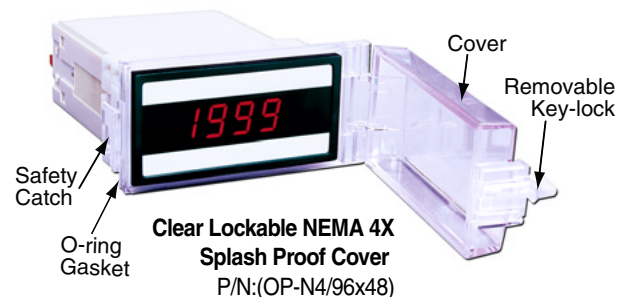DU Series   Above-Center Display Option

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.

Cover

Removable Key-lock

Safety Catch

O-ring Gasket

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

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
92 mm (3.62")
Loose Fitting
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)

Various bezel colors are available. Black is standard.

SIDE VIEW

Straight-thru Connector for meters with output board 20mm (0.79")

3.7mm (0.15")
43.4 mm (1.71") DIN Cutout spacers
40.8 mm (1.61")
5.3 mm (0.21")
117 mm (4.61")
Right-angled Connector 11.8mm (0.47")

TOP VIEW

50mm (1.97") Max. panel thickness
91.6mm (3.6") DIN Cutout Spacer
96 mm (3.78")
95.4mm (3.77")
87.4mm (3.45") mosaic fitting
2mm (0.08") Connector Socket
4.7mm (0.19") 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.

For additional strength, **extra Mounting Slide Clips** can be ordered and doubled up one behind the other. P/N: (75-DMTCLIPF)

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	List
▶ BASIC MODEL NUMBER Includes plug in type screw terminals, standard display and standard power supply unless optional versions are ordered.		
DU-35HZ	DPM, **15.0Hz** to **199.9Hz** or 15/500Hz. Up to 700V AC input	
▶ 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	
V0-50K	Zero offset potentiometer 50k	
CB-FS35	Non-Std Range and Scale Changes for all DU-35 series	

Special Options and Accessories

Part Number	Description	List
▶ 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-MTLCLIP	. . .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. ($1.00 each) - 1 color	
ART-FL-002	. . . . .Custom Faceplate, 250 piece Min. ($1.40 each) - 2 color	
ART-FL-003	. . . . .Custom Faceplate, 250 piece Min. ($1.80 each) - 3 color	

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

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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