



DX-45-DCA

20/50/100/200mV DC Full Scale 4 1/2 Digit with 0.56" LEDs in a 1/8 DIN Case

Measuring DC signals as low as 20mV full scale, this meter is ideal for use with low voltage drop current shunts or other precision low DC measurements.

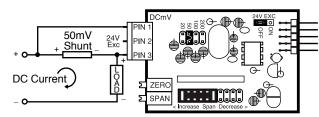
General Features

The DX-45-DCA is a cost-effective, low DC voltage measuring meter with four header selectable full scale ranges of 20mV, 50mV, 100mV(standard) and 200mV. The meter is particularly suited for measuring DC current using 50mV standard current shunts. After selecting a new range, re-calibration is required. Display Hold and Display Test functions are also provided.

The standard meter has a high efficiency red LED.

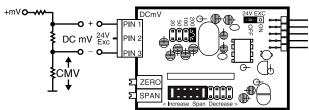
Typical Application Connections

DC Current measurement using a 50mV Shunt. Easily user scaled to display currents up to 19999 Amps.



Shunt may be in Hi or Lo side of Load.

DC mV measurement with a resolution of 100 microVolts. Easily user scaled to display voltages up to 199.99 mV.



Can be used to measure single-ended or differential inputs. Max CMV (common mode voltage) is 50V*.

Because CMV is common with meter ground, higher CMV inputs to a max of 1KV require mechanical isolation of all contactable meter parts.

Compatibility

DX-Series FUNCTION

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



Specifications

Input Configuration:	Single-ended, however isolated power
	supply enables differential measurements up to a maximum common mode of 50V.*
	- P

Full Scale Ranges: Four header selectable ranges of ±20mV DC, ±50mV DC, ±100mV DC & ±200mV

DC full scale

Input Impedance: $50 K\Omega/100 K\Omega/65 K\Omega$ in 50/100/200 ranges

A/D Converter: 16 Bit Dual Slope

Accuracy: ± (0.05% of reading + 3 digits)

Temperature Coefficient: 100ppm/°C (Typical)

Warm Up Time: One minute to specified accuracy

Conversion Rate:..... 3 readings per second

Display:...... 4 1/2 digit 0.56" Red LED display(std),

0.56" Green or Super Bright Red (optn). Display Hold & Display Test are provided.

Polarity: Bipolar. Assumed positive,

displays negative

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

Positive Overrange: All 0000 flash.

 Negative Overrange:
 Negative sign - and all 0000 flash.

 Power Supply:
 AC/DC Auto sensing wide range supply

 PS1 (std)
 85-265 VAC, 50-400Hz / 95-300 VDC @1.5W

 PS2
 15-48 VAC,50-400Hz / 10-72 VDC @4.0W

Operating Temperature:...0 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

Certification: UL Listed

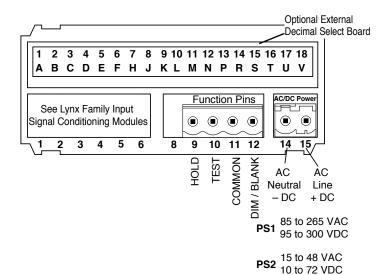
DX-Series, the OEMs choice for switchboard and process indication

	DC volts ±2V/±20V/±200V Header Selectable Ranges, 3.5 digit
DX-35-DCA	DC mV ±50mV, ±100mV, ±200mV Header Selectable Ranges, 3.5 digit
DX-35-ACV	AC volts, Scaled RMS (True RMS Opt.). 199.9/300V AC Header
	Selectable Ranges, 3.5 digit
DX-35-ACA	AC amps, Scales RMS (True RMS Opt.). (5 Amp Internal Shunt), 3.5digit
DX-35-CL	Process 4 to 20mA (100.0), easily user scalable, 3.5 digit w/Exc. opt
DX-35-HZ	AC Line Frequency 15.0Hz to 199.9Hz. Up to 300V AC input, 3.5 digit

DX-35-TC-KF	K Thermocouple with ° F , optional ° C , 3.5 digit
DX-35-TC-JF	J Thermocouple with °F, optional °C, 3.5 digit
DX-35-RTD-F	100Ω platinum RTD, 3 or 4 wire, °F in 1° resolution, optional °C, 3.5 digit
DX-40-ACV	AC volts, Scaled RMS (True RMS Opt.). 300.0V AC full scale, 4 digit
DX-45-ACA	AC amps, Scaled RMS (True RMS Opt.). (5 Amp Internal shunt), 4.5 digit
DX-45-DCV	DC volts ±2V/±20V/±200V Header Selectable Ranges, 4.5 digit
DX-45-DCA	DC mV ±50mV/±100mV/±200mV Header Selectable Ranges, 4.5 digit
DX-45-CL	Process 4 to 20mA (100.00), easily user scalable, 4.5 digit w.Exc opt.

Connector Pinouts

This meter uses plug-in type screw terminal connectors for all connections.



Pin Descriptions

Pin 1 - Signal Input High: Signal high input for the meter. Full scale ranges of 20/50/100/200 mV DC can be selected on the Range Select Header.

Pin2-24V Excitation: 24V Excitation when selected on module.

Pin3-Signal Input Low: Signal low input for the meter.

Pin 9 - Hold: If this pin is left unconnected the meter will operate in a free running mode. When this pin is connected to the Common Pin 11, the meter display will be latched. A/D conversions will continue, but the display will not be updated until Pin 9 is disconnected from Pin 11.

Pin 10 - Display Test: When this pin is connected to the Common Pin 11, all segments of the display light up and 1888 is displayed. This is used to detect any missing segments in the display.

Pin 11 - Common: To Hold, Test or Dim the display, the respective pins have to be connected to this Common Pin.

Pin 12 - Dim/Blank: When this pin is connected to the Common Pin 11 the display is blanked out. If it is connected through an external 1K Ω pot, the display may be dimmed.

Pin 14 & 15 - AC/DC Power Input: These pins are the power pins of the meter and they only accept a special polarized screw terminal plug that can not be inserted into any other input socket. The standard meter has a auto sensing AC/DC power supply that operates from 85-265 VAC/95-300 VDC (PS1 Std). An optional isolated low voltage power supply that operates from 15-48 VAC/10-72 VDC (PS2) is also available.

OPTIONAL EXTERNAL DECIMAL POINT SELECTION BOARD

Pins 6, F - Decimal Common: Connect to these pins to activate decimals.

Pins 7, **H - Decimal XXXX**.: Connect to pin 6 or pin F to activate decimal XXXX..

Pins 8, J - Decimal XXX.X: Connect to pin 6 or pin F to activate decimal XXX.X.

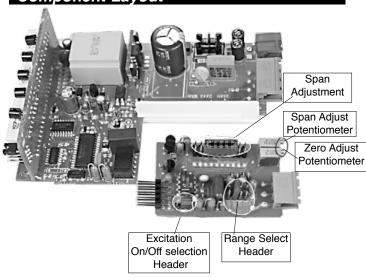
Pins 9, K - Decimal XX.XX: Connect to pin 6 or pin F to activate decimal XX.XX.

Pins 10, L - Decimal X.XXX: Connect to pin 6 or pin F to activate decimal X.XXX.

Calibration Procedure

- Select the required full scale voltage range, by repositioning the jumper clip on the range select header.
- Apply an input of 0 millivolts. Adjust the zero offset pot until the meter reads 000.
- 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 DX-45-DCA is now calibrated and ready for use. (Whenever a new range is selected, re-calibration is required to meet the specified accuracy).

Component Layout



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, re-calibration is required.



Turn Clockwise to

Increase Reading

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 100% of the input signal range.



Turn Clockwise to

Increase Reading

∠ ZERO Potentiometer (Pot)

The ZERO pot is always to the left of the SPAN pot (as viewed from the front of the meter). Typically it enables the displayed reading to be offset ± 100 counts.

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 DX-Series meters slide out from the rear of the case as a complete assembly.

Decimal Point Selection

0.56" LED Display

Cut loop to turn OFF last digit







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



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

Optional External Decimal Point Selection Board

Connectors

This meter uses plug-in type screw terminal connectors for all input and output connections. The power supply connections (pins 14 and 15) have a unique plug and socket outline to prevent cross connection. The main board uses standard right-angled connectors.







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.

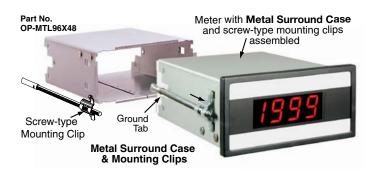
Installation Guidelines

- 1. Install and wire meter per local applicable codes/regulations, the particular application, and good installation practices.
- 2. Install meter in a location that does not exceed the maximum operating temperature and that provides good air circulation.
- 3. Separate input/output leads from power lines to protect the meter from external noise. Input/output leads should be routed as far away as possible from contactors, control relays, transformers and other noisy components. Shielding cables for input/output leads is recommended with shield connection to earth ground near the meter preferred.
- 4. A circuit breaker or disconnect switch is required to disconnect power to the meter. The breaker/switch should be in close proximity to the meter and marked as the disconnecting device for the meter or meter circuit. The circuit breaker or wall switch must be rated for the applied voltage (e.g., 120VAC or 240VAC) and current appropriate for the electrical application (e.g., 15A or 20A).
- 5. See Case Dimensions section for panel cutout information.
- 6. See Connector Pinouts section for wiring.
- 7. Use 28-12 AWG wiring, minimum 90°C (HH) temperature rating. Strip wire approximately 0.3 in. (7-8 mm).
- 8. Recommended torque on all terminal plug screws is 4.5 lb-in (0.51 N-m).

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.

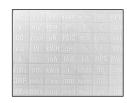


Clear Lockable Water-proof Cover

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



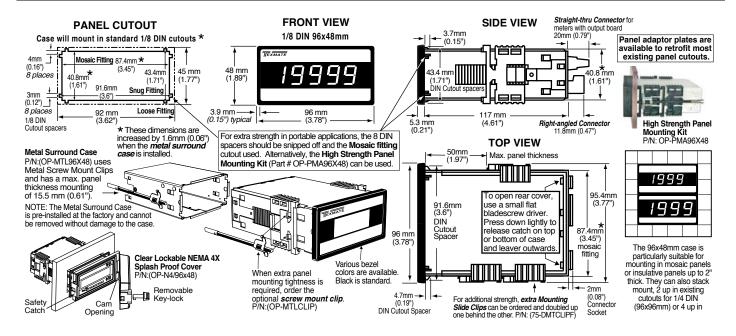
Optional Face Plate Descriptors



To customize the face plate, clear adhesive label containing various popular descriptors may be ordered. Choose the descriptor desired, peel off the adhesive backing and align the descriptor in the center right of the faceplate.

P.N.: DU-CASEDES

DU Case Dimensions and Panel Cutouts



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. DX-45-DCA...... DPM, DC mV ±20mV, ±50mV, ±100mV, ±200mV

Header selectable ranges

▶ DISPLAY

DB. . . . Super-bright Red LED, 0.56 inch high DG ...Green LED, 0.56 inch high

▶POWER SUPPLY

Special Options and Accessories

Part Number Description List

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

CR-CHANGE . . Calibrated Range Change to another Standard Range . . CS-4.5/5/6. . . . Custom display scaling within std.ranges OP-DXEXTDP. . External Dec. Pt. W/Conn. Option-Factory Installed . .

►ACCESSORIES (Specify Serial # for Custom Artwork Installation)

75-DBBZ9648F. .Extra Black Bezel for 96x48mm Case 75-DMTCLIPF. . . Side Slide Brackets (2 pc) - extra set, extra strength . 76-D45G-N4....NEMA 4 Green LED Faceplate, Factory Installed... 76-D45R-N4 NEMA 4 Red LED Faceplate, Factory Installed . . . CN-L18...... Dual Row 18 Pin Edge Connector, Solder Type. DN.CAS96X48B .Complete 96 X 48 mm Case with bezel OP-MTLCILP. . . . Screw Mount Clips (2 pc) - to screw tighten slide brackets OP-MTL96X48 . . Metal Surround Case, includes screw mounting clips OP-N4X/96X48 . .96x48mm clear lockable front cover-NEMA 4X, splash proof OP-PSA/96X48. Panel to Case Seal Adapter with O-Ring and Foam Gasket. DU-CASEDES...Clear adhesive descriptors label for face plate .

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