

DIN panel meters – short scale

FEATURES

- A range of the most popular short-scale measuring instruments in 4 case sizes
- Shock resistant sprung pivot and jewel movement
- Terminal covers supplied as standard
- EMC hard frequency meters are fully EMC and LVD compliant
- 1/4" 'fast on' terminals available



APPLICATIONS

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control

APPROVALS



BENEFITS

- Low cost
- Local indication
- Ease of installation
- Minimal training
- Low maintenance
- Customised options and features

A range of 48, 72, 96 and 144 mm DIN style panel meters measuring all electrical parameters and featuring moving coil or moving iron movements. All meters incorporate slide-in dials and terminal covers as standard. A range of customised options is available.

MOVEMENTS

MOVING COIL METER

Centre cored, self shielding moving coil movement, using pivots, hairsprings and sprung jewels. Seven variations have been designed in movement ranges: all intermediate ranges are achieved by shunting the next lowest range. All DC voltmeters are 1000 ohms per volt, rectified product run at 900 ohms per volt, millivolt meters use the 5 milliamp movement.

MOVING IRON METER

Clapper type repulsion design using pivots, hairsprings and jewel movements. The bottom jewel is oil filled to provide damping while the top is sprung for resilience. All voltmeters are manufactured with external voltage dropper resistors to substantially reduce the self heating effects.

FREQUENCY METER

Meter uses a 100 microamp 4000 ohm movement driven by an EMC hard frequency conversion circuit.

DIALS, SCALES AND POINTERS

Standard dials are white matt with black printed scales and bar knife-edge pointers. Black dials with white or yellow scales and pointers are also available. Interchangeable slide-in dials are used on the E242, E243, E244 and E246 90° moving iron, moving coil and frequency meter models.

General options include red supplementary pointers, red indexes (quadrant scales), red, green or blue lines, bands or segments, finely spaced divisions, multi-scales, special scales and captions to customer's requirements.

SPECIFICATIONS

Type of instrument	Moving iron for current and voltage	Moving coil for current and voltage	Moving coil with rectifiers for current and voltage	Moving coil with built-in transducer for frequency measurement	Maximum demand indicators	Combined MD with moving iron movement
Format	48 x 48 mm 72 x 72 mm 96 x 96 mm 144 x 144 mm	48 x 48 mm 72 x 72 mm 96 x 96 mm 144 x 144 mm	48 x 48 mm 72 x 72 mm 96 x 96 mm 144 x 144 mm	72 x 72 mm 96 x 96 mm 144 x 144 mm	72 x 72 mm 96 x 96 mm	96 x 96 mm
Movement type	Sprung pivot jewel with silicon oil damping	Sprung pivot jewel with eddy current damping	Sprung pivot jewel with eddy current damping	Sprung pivot jewel with eddy current damping	Sprung pivot jewel with silicon oil damping	Sprung pivot jewel with silicon oil damping
Burden	0.5 VA-15 A then 0.8 VA voltmeters 4.5 VA	See type specific specifications	See type specific specifications	See type specific specifications	2.5 VA	3 VA
Accuracy	1.5% to DIN43780	1.5% to DIN43780	2.5% to DIN43780	0.5% to DIN43780	3%	3% on MDI 1.5% ammeter
Input type	AC current or voltage	DC current or voltage	AC current or voltage	AC voltage	AC current	AC current
Measuring range	6-600 V 100 mA-100 A 48 mm only up to 40 A	50 mV-600 V 100 μ A-40 A, 48 mm only 25 A	15-600 V 1m A-100 mA and 1 A & 5 A	57.7 V @ 45 Hz 500 V @ 44 Hz	0-1/1.2 A or 0-5/6 A 8, 15 or 20 minute delays	1-6 A 8, 15 or 20 minute delays 0-5 A/6 A instantaneous
Dielectric voltage withstand test	3 kV AC	3 kV AC	3 kV AC	3 kV AC	3 kV AC	3 kV AC

DIN panel meters – short scale

DIN16257 SYMBOL MEANING FOR CALIBRATION POSITION

VERTICAL



HORIZONTAL



INCLINED



Inclination of dial surface.
Required orientation must always
be stated when ordering if other
than vertical mounting is required.

GENERAL SPECIFICATIONS

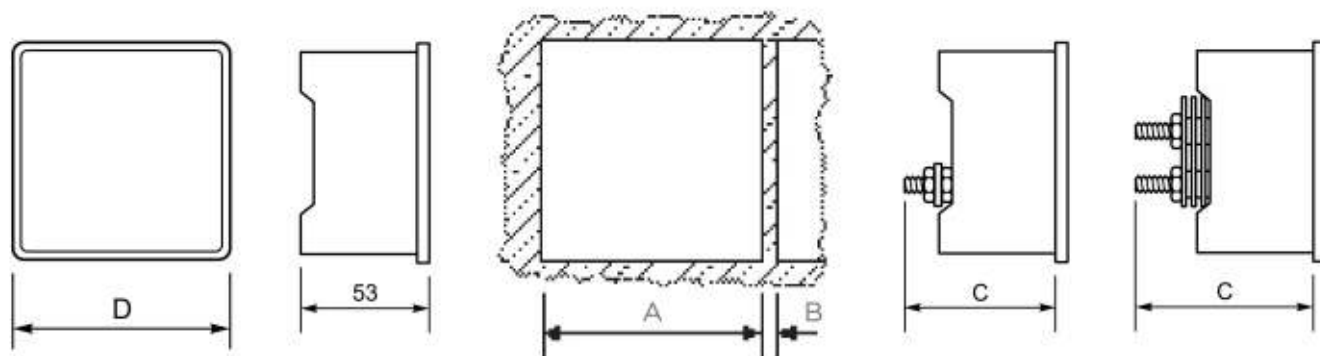
Performance	BS EN60051
Measuring ranges	DIN43701
Accuracy overload	BS EN60051
Dimensions	DIN43700
Scale marking generally to	DIN43802
Magnetic influence	BS EN60051
Safety	BS EN61010-1
Terminals	Clamp strap M4 for up to 25 A. Clamp strap M8 for over 25 A. 1/4" spade terminals available for models E243 and E244
Humidity range	Up to 95% RH (non condensing)
Test voltage @50Hz	3 kV RMS for 1 minute
Ammeter ranges	1.0/1 2/1 5/2 5/5/6 and decade multiples thereof
Overload AC current	x 1.2 continuous x 10 for 5 seconds
AC voltage and frequency	x 1.2 continuous x 2 for 5 seconds
Standard calibration	23°C. Calibration at other temperatures available on request
Operating temperature	-20°C to +80°C
Damping time	Less than 3 seconds
Enclosure code	IP52 as standard IP54 on request
Case and base	Grade UL94V0
Case	Dimensions and panel cut out conform to IEC473, DIN43700. Case made from glass filled polycarbonate self-extinguishing and non drip in accordance with UL94V-0
Bezel	Slim-line DIN43802, black as standard
Bezel window	Standard sheet glass, with zero adjusters where appropriate. Non reflecting glass or polycarbonate shatterproof windows are available
Installation	Installations in switchboard panel or mosaic arrangement on equipment or machine with a panel thickness of up to 40 mm in a horizontal or vertical plane
Fixing on panel	Swivel captive fasteners, which can be fixed at either corner
Mounting position	Normal vertical mounting or as indicated on the scale in accordance with DIN16257. A deviation of $\pm 15^\circ$ is permissible
Insulation group	Insulation resistance more than $5\Omega @ 500 \text{ V}$
Environmental	Measurement category III IEC 1010-1 Pollution degree 2 IEC 1010-1 Electrical rating 600 V RMS (920 V peak)
Approvals	EMC, LVD, Lloyds and UL

DIMENSIONS

Moving coil measuring range		Moving iron measuring range	
B - 60 A	C=67 mm	0 - 30 A	C=64 mm
>60 A	C=78 mm	>30 A	C=67 mm

MAX. PANEL THICKNESS = 40 MM

D	A	B
48 x 48	45 x 45	4
72 x 72	68 x 68	4
96 x 96	92 x 92	4
144 x 144	138 x 138	4



Short scale maximum demand indicators



The thermal/time characteristics of MDI meters monitor the most economic use of cable, fusegear and transformers. The directly heated bimetal element indicates mean RMS current over 8, 15, or 20 minutes, and a red slave pointer shows the highest value reached. The reset knob is wire sealable. Scales are calibrated to match the CT primary plus 20% overload. End values are selected from: 1.2, 1.8, 2.4, 3, 3.6, 4.8, 6, 7.2, 9 amps and their multiples of 10 and 100.

PRODUCT CODES

Bezel size mm	72	96
Scale length mm*	65	94
Product codes		
8 minute time lag		
without limiting CT for use with 5 A CT	E243-16B	E244-16B
15 minute time lag		
without limiting CT for use with 5 A CT	E243-16A	E244-16A
20 minute time lag		
without limiting CT for use with 5 A CT	E243-16J	E244-16J

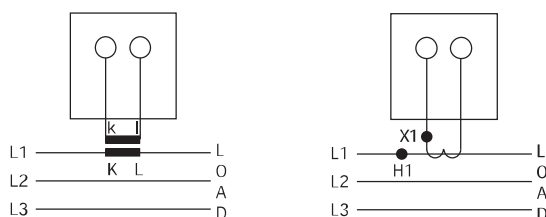
* Scaled 0/100/120% of CT primary value.

SPECIFICATIONS

Accuracy	Class 3
Options	5 A for use with separate CT 5/5 A saturating CT 1/5 A saturating CT
Burden at 50 Hz	MDI - 2.5 VA, CT - 2 VA
Overload withstand	Standard: 5 x FL for 5 seconds, 10 x FL for 1 second. With saturating CT: 10 x FL for 3 seconds, 20 x FL for 1 second
Frequency	50/60 Hz

CONNECTIONS

Maximum demand indicators



Combined AC ammeter and maximum demand indicators



Where measurement of instantaneous and maximum demand currents are required, these instruments combine both movements in one case. The meter can also replace an existing AC ammeter. Meets the same specifications listed above.

PRODUCT CODES

Bezel size mm	72	96
Scale length mm*	65	94
Product codes		
8 minute time lag		
without limiting CT for use with 5 A CT 3 VA	-	E244-16Q
15 minute time lag		
without limiting CT for use with 5 A CT 3 VA	E243-16C	E244-16C
with limiting CT		E244-16F
20 minute time lag		
without limiting CT for use with 5 A CT 3 VA	-	E244-16H

SPECIFICATIONS

Accuracy	Moving iron ammeter: Class 1.5 MDI: Class 3
Burden at 50 Hz	MI - 0.5 VA, MDI - 2.5 VA saturating CT - 2 VA