

## Features

- Measures DC current or voltage
- Direct and shunt connected ammeters
- Direct connected voltmeters
- Live zero ammeters and voltmeters
- Centre zero ammeters and voltmeters
- Linear scaling
- 240° long scale version

## Benefits

- Easy to operate
- Exchangeable dial
- Terminal cover included

## Applications

- DC switchgears, panels and distribution boards
- Control boards
- Process indication
- Battery supervision

## Construction

- Magnet core none sensitive to external fields
- Slot in screw fixing

## Standards

- CE marked
- BV approved

## DC Ammeters and Voltmeters

### General Specification

- Accuracy class - 1.5
- Maximum continuous overload -  $1.2 \times I_n$ ,  $1.2 \times U_n$
- Maximum short duration overload -  $10 \times I_n - 9 \times 0.5s + 1 \times 5s / 60s$ ,  $2 \times U_n - 9 \times 0.5s + 1 \times 5s / 60s$

### Product Codes

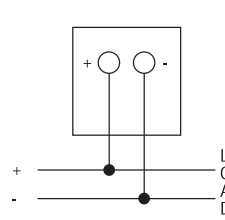
Bezel size (mm)	48	72	96	144
Scale length (mm)	71	113	155	235
DC ammeter 240°	M242-05A	M243-05A	M244-05A	M246-05A
DC voltmeter 240°	M242-05V	M243-05V	M244-05V	M246-05V
DC ammeter 240° live zero	M242-05R	M243-05R	M244-05R	M246-05R
DC voltmeter 240° live zero	M242-05S	M243-05S	M244-05S	M246-05S
DC ammeter 240° centre zero	M242-05C	M243-05C	M244-05C	M246-05C
DC voltmeter 240° centre zero	M242-05N	M243-05N	M244-05N	M246-05N

### Standard input ranges

DC ammeter 240° scaling (0/x A)	1, 1.5, 2.5, 4, 5, 6, 10, 15, 20, 25 (limit on M242), 30, 40, 50, 60 A
DC ammeter 240° scaling, process and shunt indicators	0-1, 0-5, 0-10, 0-20, 4-20 mA, 0-50, 0-60, 0-75 mV
DC ammeter 240° scaling, centre zero (x-0-x A)	1-0-1, 1.5-0-1.5, 2.5-0-2.5, 4-0-4, 5-0-5, 6-0-6, 10-0-10 (limit on M242), 15-0-15, 20-0-20, 25-0-25, 30-0-30A
DC ammeter 240° scaling, centre zero process and shunt indicators	1-0-1, 5-0-5, 10-0-10, 20-0-20 mA, 50-0-50, 60-0-60, 75-0-75 mV
DC voltmeter 240° scaling (0/x V)	10, 15, 20, 30, 60, 100, 150, 250, 300 (limit on M242), 400, 500, 600 V
DC voltmeter 240° scaling, process indicators	1-5, 2-10 V
DC voltmeter 240° scaling, centre zero (x-0-x V)	10-0-10, 15-0-15, 20-0-20, 30-0-30, 60-0-60, 100-0-100, 150-0-150 (limit on M242) 250-0-250, 300-0-300 V

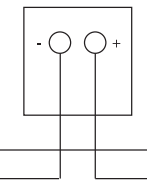
## Connection Diagrams

### DC Voltmeter

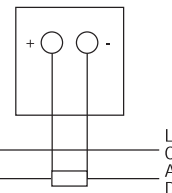


### DC Ammeter

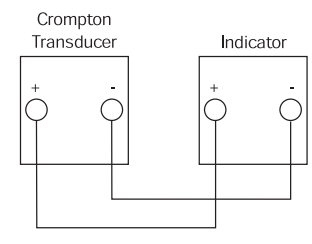
#### Direct Connected



#### With Shunt



### Transducer Indicator



## Order data/examples

### Ammeter

Example A

- 1) Select type: M243-05A,
- 2) Specify input: 0-10 A,
- 3) Specify scaling: 0-10 A

Example B

- 1) Select type: M244-05R,
- 2) Specify input: 4-20 mA,
- 3) Specify scaling: 0-100 MVA

Example C

- 1) Select type: M244-05C,
- 2) Specify input: 60-0-60 mV,
- 3) Specify scaling: 150-0-150 A

### Voltmeter

Example A

- 1) Select type: M244-05V,
- 2) Specify input: 0-15 V,
- 3) Specify scaling: 0-15 V

Example B

- 1) Select type: M244-05S,
- 2) Specify input: 2-10 V,
- 3) Specify scaling: 0-100 %

Example C

- 1) Select type: M242-05N,
- 2) Specify input: 10-0-10 V,
- 3) Specify scaling: 20-0-20 A

## DIN PANEL METERS - LONG SCALE



### Benefits

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

### Applications

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

A range of 48mm, 72mm and 96mm DIN style panel meters measuring all electrical parameters and featuring moving coil 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, made of light quality material which is not sensitive to external electromagnetic fields and is resistant to mechanical impacts and vibrations. All voltmeters are 1000 ohms per volt.

#### Frequency Meter

Meter uses a 100 microamps 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 M242, M243 and M244 240° moving coil and frequency meter models.

Standard options include red supplementary pointers, and non-reflecting glass.

### 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 15A. Clamp strap M6 for 15 to 40A.
Humidity range:	Up to 75% RH (non condensing)
Test voltage @50Hz:	2kV RMS for 1 minute
Overload AC current:	x 1.2 continuous, or x 10 for 5 seconds max
AC voltage and frequency:	x 1.2 continuous, or x 2 for 5 seconds max
Standard calibration:	23°C. Calibration at other temperatures available on request
Operating temperature:	-10°C to +55°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-O
Bezel:	Slim-line DIN43802, black as standard
Bezel window:	Standard sheet glass, with zero adjusters where appropriate. Non reflecting glass and polycarbonate windows are available
Installation:	Installations in switchboard panel or mosaic arrangement on equipment or machine with a panel thickness of up to 40mm in a horizontal or vertical plane
Fixing on panel:	2 captive fasteners (optional 4 on request)
Mounting position:	Normal vertical mounting or as indicated on the scale in accordance with DIN16257. A deviation of 315° is permissible
Insulation group:	Insulation resistance more than 5MΩ@ 500V
Environmental:	Measurement category III IEC 1010-1 Pollution degree 2 IEC 1010-1 Electrical rating 600V RMS (920V peak)
Approvals:	EMC and LVD, BV Approval

### DIN16257 symbol meaning for calibration position

Vertical



Horizontal



Inclined

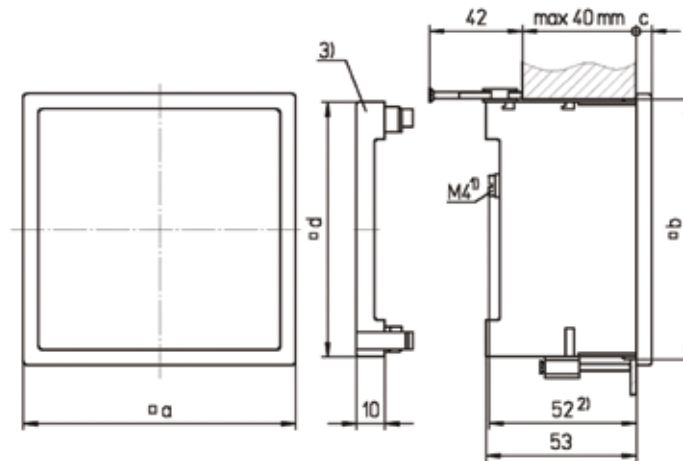


Inclination of dial surface.

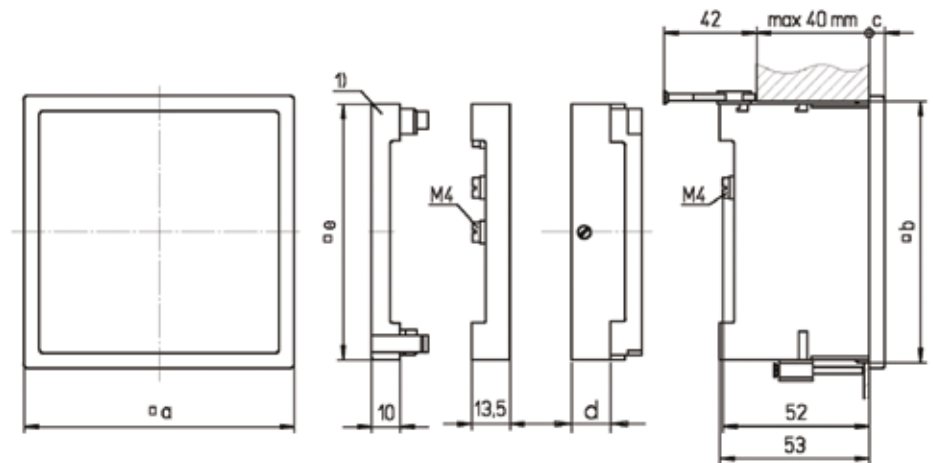
Required orientation must always be stated when ordering if other than vertical mounting is required.

### Product Dimensions

Description		M242-01*, M242-02*, M242-05*	M243-01*, M243-02*, M243-05*	M244-01*, M244-02*, M244-05*, M244-41R*, M244-41E*, M244-41L*, M244-41D*, M244-80*	M246-01*, M246-02*, M246-05*
Bezel (mm)	a	48	72	96	144
Panel cut out (mm)	b	45 (+0.6)	68 (+0.8)	92 (+0.8)	138 (+1.0)
Bezel height (mm)	c	5.0	5.5	5.5	8.0
Terminal cover (mm)	d	42.5	66.5	90	90



M242-01\*, M242-02\*, M242-05\*, M243-01\*, M243-02\*, M243-05\*, M244-01\*, M244-02\*, M244-41R\*, M244-41E\*, M244-05\*, M246-01\*, M246-02\*, M246-05\*



M244-41L\*, M244-41D\*, M244-41S\*, M244-80\* (d = 27.3 mm)