Power

Wattmeters & VArmeters

Self contained Wattmeters and VArmeters are able to measure active and reactive power in both balanced and un-balanced, single-, 3-phase 3-wire and 3-phase 4-wire systems. Wattmeters are ideal for clear precise analogue indication of power in applications such as power generation, industrial control and power distribution.

Specifications

Voltage inputs		
1-phase	**3-phase 3-wire**	**3-phase 4-wire**
63.5V AC	110V AC L/L	63.5V AC L/N
100V AC	120V AC L/L	69.3V AC L/N
110V AC	220V AC L/L	127V AC L/N
120V AC	230V AC L/L	132.7V AC L/N
220V AC	240V AC L/L	139V AC L/N
230V AC	380V AC L/L	220V AC L/N
240V AC	415V AC L/L	240V AC L/N
380V AC	440V AC L/L	254V AC L/N

	Current inputs	
1A AC	1A AC	1A AC
5A AC	5A AC	5A AC

Accuracy:	Class 1.5
Measuring ranges:	Voltage: 85-115% Current: 20-120%
Overload:	120% of rated voltage & current continuos
Max Input:	600V
Frequency:	50/60Hz (45-65Hz max)
Power factor:	Unity power factor assumed range 0.5/1/0.5
Burden:	Current: ≤ 0.2VA per phase Voltage: ≤ 1VA per phase

Dimensions

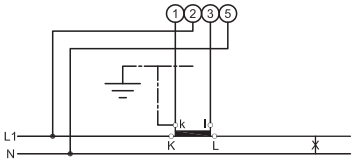
Bezel size mm	96
Scale length mm	94
Wattmeter Product Codes	
1-phase	E244-210
3-phase 3-wire balanced load	E244-211
3-phase 4-wire balanced load	E244-21C
3-phase 3-wire unbalanced load	E244-213
3-phase 4-wire unbalanced load	E244-214
VArmeter Product Codes	
1-phase	E244-310
3-phase 3-wire balanced load	E244-311
3-phase 4-wire balanced load	E244-31C
3-phase 3-wire unbalanced load	E244-313
3-phase 4-wire unbalanced load	E244-314

Product Codes - Long Scale

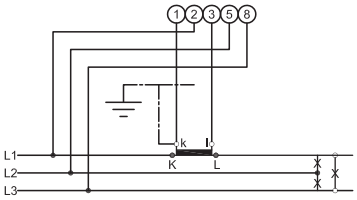
Bezel size mm	96
Scale length mm	150
Wattmeter Product Codes	
1-phase	E244-215
3-phase 3-wire balanced load	E244-216
3-phase 4-wire balanced load	E244-21D
3-phase 3-wire unbalanced load	E244-218
3-phase 4-wire unbalanced load	E244-219
VArmeter Product Codes	
1-phase	E244-315
3-phase 3-wire balanced load	E244-316
3-phase 4-wire balanced load	E244-31D
3-phase 3-wire unbalanced load	E244-318
3-phase 4-wire unbalanced load	E244-319

Active Power

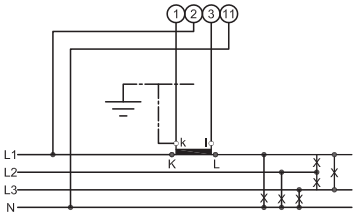
Single-phase
(one element)



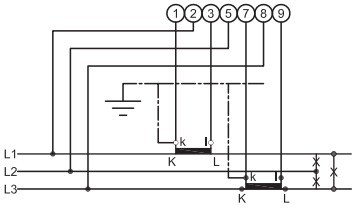
Three-phase, three-wire
AC supply with balanced load
(One element)



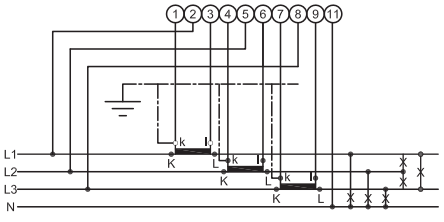
Three-phase, four-wire
AC supply with balanced load
(One element)



Three-phase, three-wire
AC supply with unbalanced load
(Two element)

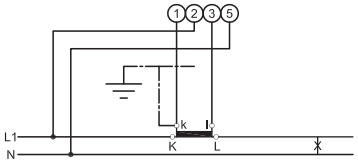


Three-phase, four-wire
AC supply with unbalanced load
(Three element)

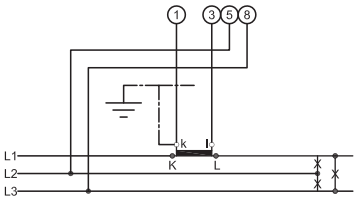


Reactive Power

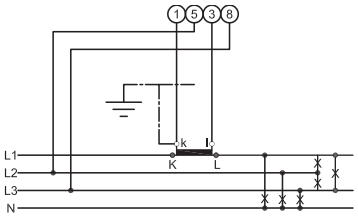
Single-phase
(one element)



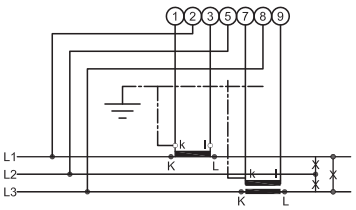
Three-phase, three-wire
AC supply with balanced load
(One element)



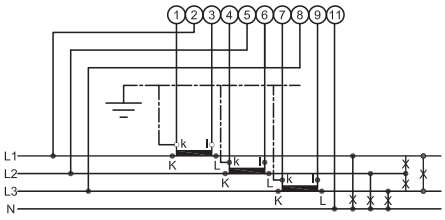
Three-phase, four-wire
AC supply with balanced load
(One element)



Three-phase, three-wire
AC supply with unbalanced load
(Two element)



Three-phase, four-wire
AC supply with unbalanced load
(Three element)



DIN Panel Meters – Long Scale

A range of 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.

Features

- A range of the most popular long scale measuring instruments in 2 case sizes
- Shock resistant sprung pivot and jewel movement
- Terminal covers supplied as standard
- EMC hard frequency meter are fully EMC and LVD compliant

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

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.

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 E243 and E244 240° moving coil and frequency meter models.

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

General Specifications

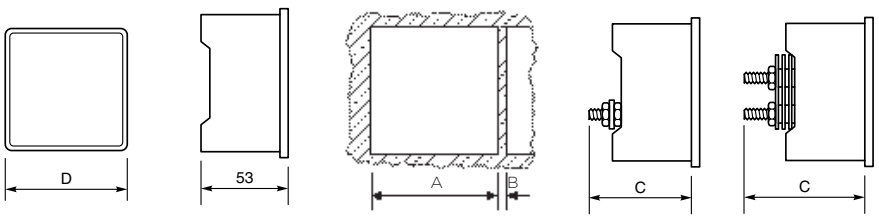
Performance:	BSEN60051
Measuring ranges:	DIN43701
Accuracy overload:	BSEN60051
Dimensions:	DIN43700
Scale marking generally to:	DIN43802
Magnetic influence:	BSEN60051
Safety:	BSEN61010-1
Terminals:	Clamp strap M4 for up to 25A. Clamp strap M8 for over 25A
Humidity range:	Up to 75% RH (non condensing)
Test voltage @50Hz:	3kV 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 (Lexan 500R)
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 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:	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 ±15° 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

Dimensions

Moving coil measuring range	
6-60A	C=67mm
>60A	C=78mm

Dimensions

D	A	B
72 x 72mm	68 x 68mm	4
96 x 96mm	92 x 92mm	4

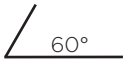


DIN16257 symbol meaning for calibration position

Vertical

Horizontal

Inclined



Inclination of dial surface.

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