

Wattmeters & Varmeters

Wattmeters and Varmeters are suitable for the measurement of active power (Watts) or reactive power (Vars). DIN96 meters are self contained whilst all smaller units are connected to a separate converter unit and calibrated as a complete unit to individual requirements.

The converter unit has finger-proof terminal covers and can be remotely DIN rail mounted. All meters have a jewel and pivot movement which ensures reliability and accuracy. The Wattmeters and Varmeters are available in shortscale (90°) only. Scales are linear and are calibrated from zero to full scale.

Notes:

1. Ensure that current transformers are mounted such that K faces the supply and L faces the load.
2. Secondary windings of the current transformers should be earthed.
3. No isolation is provided between input AC voltage and DC output on converter unit.



Models Available

- FE48W** DIN48 Wattmeter with Converter
- FE72W** DIN72 Wattmeter with Converter
- EL96W** DIN96 Wattmeter - Self Contained

- FE48V** DIN48 Varmeter with Converter
- FE72V** DIN72 Varmeter with Converter
- EL96V** DIN96 Varmeter - Self Contained

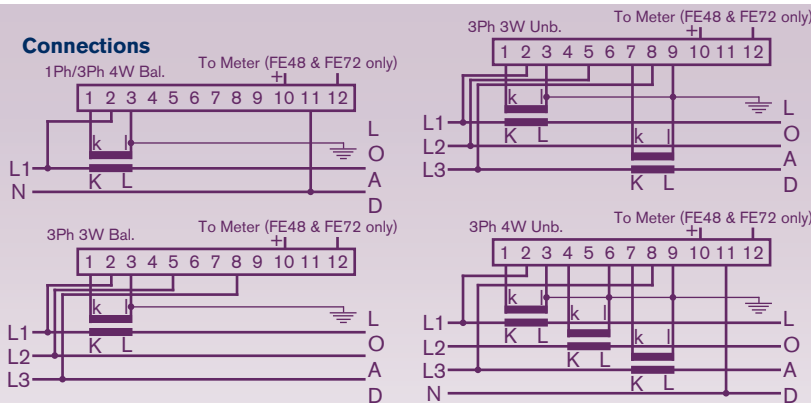
Product Features

- Active power (Watts) or Reactive power (Vars)
- Standard DIN square sizes
- Many options available (see page 16)

For dimensions see pages 17-18

Wattmeters & Varmeters – for measurement of active or reactive power

Connections



Ordering information

Code	DIN Square Size & Movement Type	Meter Type	Input & Scaling
FE48W	48 x 48mm Shortscale (90°) Wattmeter	-	-
FE72W	72 x 72mm Shortscale (90°) Wattmeter	-	-
EL96W	96 x 96mm Shortscale (90°) Wattmeter	-	-
FE48V	48 x 48mm Shortscale (90°) Varmeter	-	-
FE72V	72 x 72mm Shortscale (90°) Varmeter	-	-
EL96V	96 x 96mm Shortscale (90°) Varmeter	-	-
/1	-	Single Phase	-
/2	-	3 Phase 3 Wire Balanced	-
/3	-	3 Phase 3 Wire Unbalanced	-
/4	-	3 Phase 4 Wire Balanced	-
/5	-	3 Phase 4 Wire Unbalanced	-
Specify	-	Voltage (L-N or L-L), Current (CT Ratio)	-
Specify	-	and/or full scale Watts/Vars	-
Example	EL72W	/5	230VL-N, 100/5A

Specification

- Accuracy:**
- Class 1.5 ($\pm 1.5\%$ max. error)
- Input Current, I_n :**
- 0-0.2A to 0-10A direct connected
 - 1A or 5A CT operated
- Input Voltage, U_n :**
- 110, 230 or 415V (-15% to +10%)
 - (50 to 600V upon request)
- Frequency:**
- 50/60Hz
- Scales:**
- 0-1 to 0-1000 W/Var, kW/kVar or MW/MVar
- Overload:**
- 1.2 x I_n or U_n for 2 hours
 - 6 x I_n for 5 seconds
- Burden:**
- Voltage circuit < 2VA per phase
 - Current circuit < 1VA per phase
- Response Time:**
- < 1 second
- Weight:**
- FE48 140g, FE72 180g, EL96 320g
 - Converter unit 200g
- Converter Unit Enclosure:**
- 55mm wide grey ABS
 - Case IP40, terminals IP20
 - Fixes to 35mm DIN rail (DIN-EN 50022)

Meter Options

Meter Terminal Covers

Available for FE72 and FE96* meters is a plastic terminal cover to finger-proof the terminals.
(Order Code: **FE72TC, FE96TC**) *All FE48 meters are supplied with terminal covers

Meter Terminal Covers

Available for all sizes of FE72, FE96 and EL meter are a pair of plastic terminal covers to finger-proof the terminals.
(Order Code: **MTC**)

DIN Square Blanking Plates

Available on all sizes of meter is a black plastic blanking plate to cover a DIN square hole.
(Order code: **FE48BP, FE72BP, FE96BP**)

Adjustable Red Pointer

Available on all sizes of shortscales meter is an adjustable red pointer which can be adjusted by a screwdriver from the front fascia. Not available on longscales meters.
(Order code: **ARP**)

Calibration Certificate

Calibration certificates traceable to national standards can be supplied on all meters.
(Order code: **CALCERT**)

6x Overload

Available on all ac ammeters is an overload reading of 6x the full scale current (2x is standard).
(Order Code: **6X O/L**)

Red Line On Scale

Available on any scale is a red line marked at any point on the scale, as specified by the customer.
(Order Code: **RL@ - specify**)

Coloured Sector On Scale

One or more specified coloured (red, green, yellow) sectors on the scale are available on all meters.
(Order Code: **Coloured Sector - specify**)

Heavily Damped Movements

1A or 5A DIN96 moving iron ammeters are available with a damped viscous movement and all moving coil meters are available with an electronically damped movement.
(Order Code: **HD movement**)

IP65 Sealing

All meters are available with a front sealed to IP65 and a neoprene gasket to retain sealing against the panel.
(Order Code: **IP65**)

Gaskets

Gaskets are available for all meters.
(Order Code: **G48F, G72F, G96F**)

Centre Zero Movement

Moving coil meters are available with a bi-directional reading, centre zero movement and scale. Moving coil meters are also available with an offset centre zero movement and scale.
(Order Code: **C/Z movement or O/Z movement**)

Suppressed Zero Movement

Moving Coil meters are available with a suppressed zero movement and scale (e.g. 15Vdc with suppressed scale from 0 to 10Vdc).
(Order Code: **S/Z movement**)

External Adjustable Trim Potentiometer

All moving coil meters are available with an external trim multi-turn potentiometer which is accessible from the back of the meter and adjusts the full scale reading by a minimum of $\pm 20\%$.
(Order Code: **EXT. TRIM. POT.**)

Polycarbonate Window

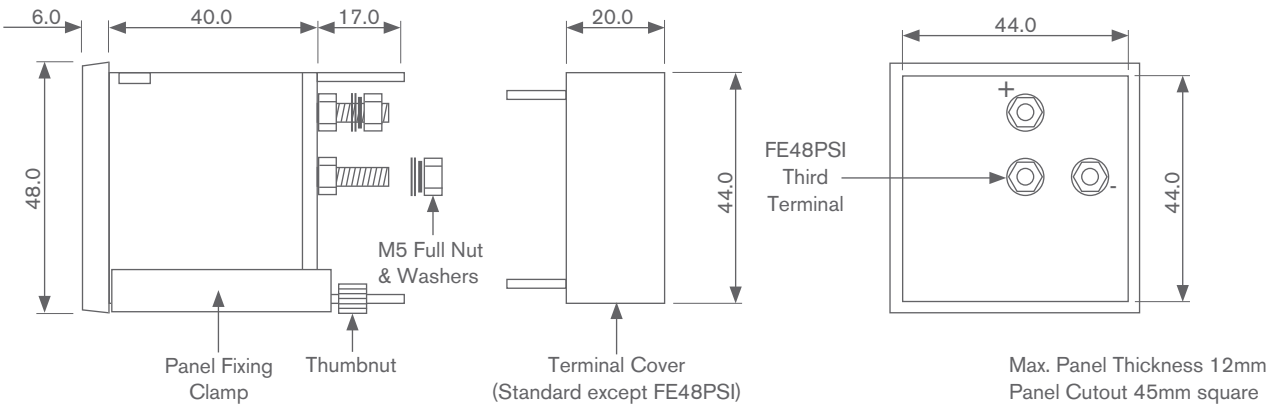
All sizes of FE meters have a glass window but a polycarbonate window is available. All sizes of EL meters have polycarbonate windows as standard.
(Order Code: **POLY window**)

Anti-Glare Window

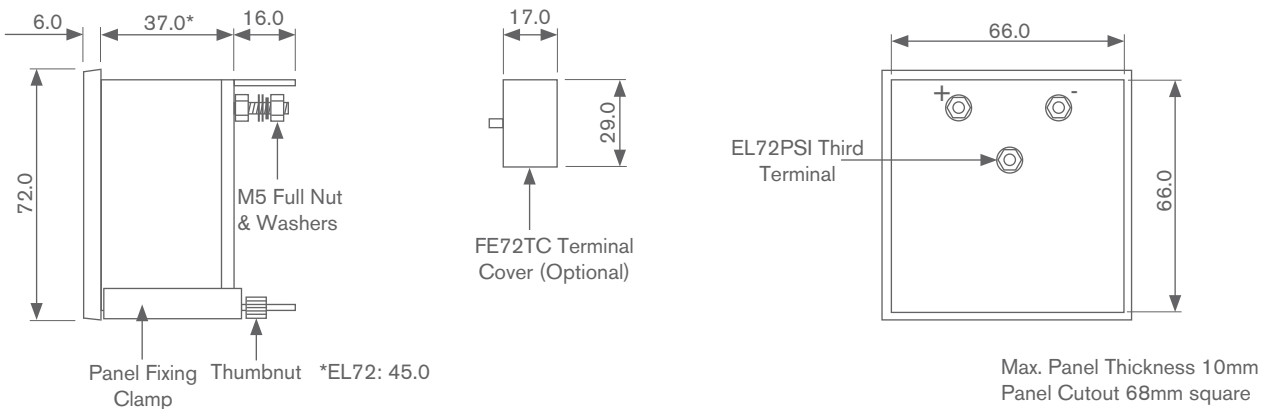
Anti-glare windows are available for all meters.
(Order Code: **AG window**)

Dimensions

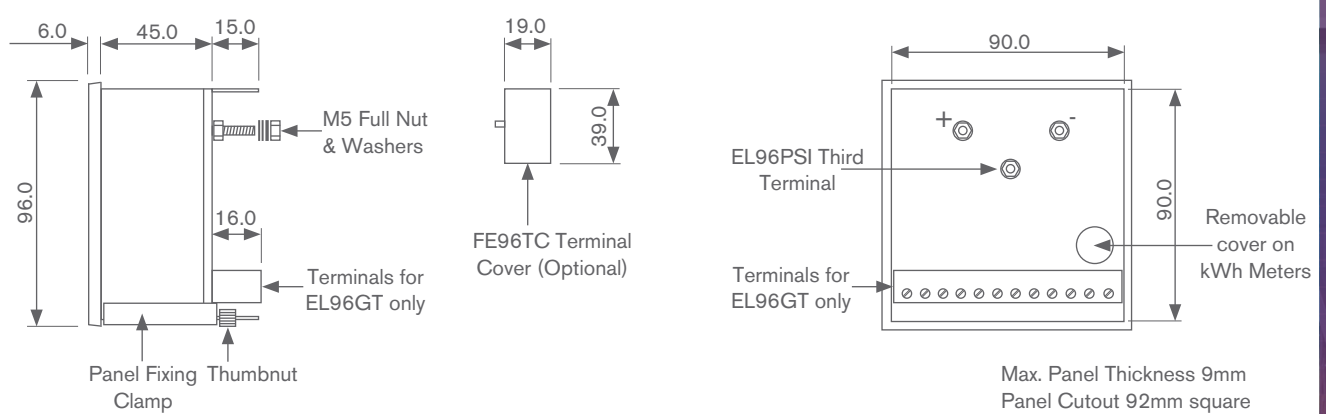
FE48 Enclosure



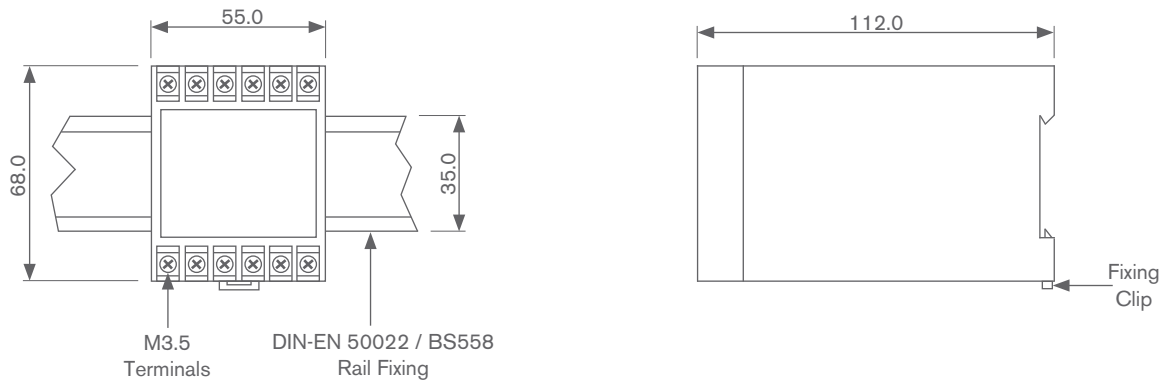
FE72/EL72 Enclosure



FE96/EL96 Enclosure



Watt/Var/cosØ Converter Unit Enclosure



General Specification

Reference Standards

Performance / Accuracy:	BS EN 60051-1, BS 89 and DIN 43780
Enclosure:	DIN 43700
Vibration Resistance:	DIN 43780
Measuring Ranges:	DIN 43701
Safety:	IEC 414
Dial Symbols:	IEC 51

Environmental

Calibration Temperature:	23°C
Operating Temperature:	-25°C to 50°C
Temperature Coefficient:	±0.03%/ °C
Relative Humidity:	0 - 90% non-condensing

Input

Input Burden:	See individual specifications
Overload:	See individual specifications
Response Time:	< 2seconds

Scales

Dials:	White with black legends
Reference Standard:	DIN 43802
Scale Length:	DIN48 - 37mm DIN72 - 65mm DIN96 - 90mm

Enclosure

Enclosure:	Flame retardant white ABS plastic case with black bezel Plain glass window is standard* but a polycarbonate window is available. (*Polycarbonate window is standard on EL meters)
Enclosure Code:	Case IP52 (IP65 with gasket optional) to IEC529 and BS5490
Insulation Test:	2kV rms 50Hz 1min (to IEC 414)
Markings:	CE marked

Specification subject to change without notice.