

## Installation Instructions

### M series Analogue DIN Panel Meters

M242-05\*, M242-15\*, M244-13\*, M242-41\*  
 M243-05\*, M243-15\*, M244-21\*, M243-41\*  
 M244-05\*, M244-15\*, M244-31\*, M244-41\*

### Introduction

This product range includes a wide range of functions, including AC Ammeters and maximum demand meters; AC Voltmeters; DC Ammeters and milliammeters; DC Voltmeters and millivoltmeters; Elapsed time meters; Frequency meters; AC wattmeters and var meters and Power factor meters.

### Marking and ratings

Body side labels show function, electrical rating, and connection diagram, where there are more than two terminals on the unit. For two terminal units, the terminals are connected directly across the input to be measured. Terminal numbers are moulded into the base adjacent to each terminal stud and corresponding numbers appear on the connection diagram. Note that the electrical rating may differ from the dial scale marking, and the unit side label is definitive.

These meters are intended for a rated temperature range, is -20/+60 deg C and up to 80% relative humidity, and only for indoor use at an altitude of less than 2000m. Shock maximum level is 30g.

### Installation

The meter should be installed in line with the requirements of the local electrical code. It should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and within ratings above. These units are only for built in use and with terminals inaccessible to users after installation and should be mounted to a DIN panel cut-out up to a maximum thickness of 5 mm. Mounting is by 2 opposed corner clamps. It may be convenient to use a 7mm screwdriver style nut driver to engage the barrel nuts on those models with plastic nuts, particularly when starting the thread, but great care must be taken not to over tighten. It is very easy to cause damage with excessive torque when using a nut driver, so final tightening should be performed with finger pressure only.

### Fusing and connections

External voltage transformers and current transformers may be used where appropriate to extend the range, provided that the ratings marked on the side label are not exceeded at point of connection to meter. These products are designed for permanently connected use, normal condition measurement category III, pollution degree 2 (e.g. non ventilated panels or ventilated panels with filters, without condensation occurring), basic insulation, for rated voltage. Connection diagrams shown on the unit side label should be carefully followed to ensure correct polarity and phase rotation where applicable. Terminals are intended for use with insulated ring lugs. Ensure a minimum spacing of 5.5mm (0.21") between uninsulated parts of adjacent ring lugs. Tighten terminal screws to 2Nm (1.5 ft/Lb) only.

These products do not have internal fuses therefore external fuses **must** be used for safety protection under fault conditions. Voltage input lines where required must be fused with a quick blow fuse 1A maximum. Auxiliary supply lines, where required must be fused with a slow blow fuse rated 1A maximum. Current metering circuits directly connected in line with the load must be fused at the rated current for the meter. Where fitted, current transformer (CT) secondaries must be connected to protective earth in accordance with local regulations. Do not fuse CT circuits.

The equipment into which this meter is installed must have a clearly marked adjacent means of isolating the supply voltage to permit safe access for subsequent maintenance. Ensure supply circuits are rated for meter VA: >4.5VA

### Warnings



### Caution: Risk of Electric Shock

**During normal operation, voltages hazardous to life may be present at some of the terminals of this unit.**

- These instructions contain important safety information: Read before starting installation or servicing of the equipment
- Installation and maintenance should be performed only by qualified, properly trained personnel' abiding by local regulations.
- Ensure all supplies are de-energised before attempting connection or other procedures.
- Never open circuit the secondary winding of an energised current transformer.
- If this equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired.

- **Measurement categories 600V CAT III.**

### Choice of associated components

Choose fuses of a voltage rating equal to or exceeding the rated voltage of the circuit into which the meter is connected and of a type and with a breaking capacity appropriate to the supply to which the fuse is connected. Connection wires and ring lugs should be rated for at least 1A for voltage and auxiliary lines and to at least the rated current for current measuring circuits. Additionally, wires for DC current meters rated over 50mA must be rated at 75 deg C or greater. Ensure cables and ring lugs have a voltage insulation rating equal to or greater than the rated voltage of the circuit to which they are connected.

CT cable impedance should ensure that CT VA rating is not exceeded and it's accuracy impaired.

### Cleaning and maintenance

As required, wipe the front face with a damp cloth, ensuring that no moisture enters the unit or penetrates behind the mounting panel. No maintenance is required beyond periodically checking the mechanical zero of the meter as described overleaf in "commissioning", if necessary removing any accumulations of dust or other foreign matter from the terminal area and ensuring that connections remain tight.

## Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of CE and other regulations. Precautions necessary to provide proper operation of this and adjacent equipment will be installation dependent and so the following can only be general guidance:-

- Avoid routing wiring to these products alongside cables and products that are, or could be, a source of interference.
- Where required, the auxiliary supply to the unit should not be subject to excessive interference. In some cases, a supply line filter may be required.
- To protect the product against incorrect operation or permanent damage, surges and transients must be controlled. It is good EMC practice to suppress transients and surges at the source.
- Connecting leads may require the fitting of RF suppression components, such as ferrite absorbers or line filters
- It is good practice to install sensitive electronic instruments that are performing critical functions in EMC enclosures that protect against electrical interference causing a disturbance in function.

## Commissioning

The units are calibrated at the factory for full accuracy. No further adjustments are required except to check the zero position.

With the meter in the intended attitude, adjust the centre slotted adjuster for scale zero without electrical input signal. It is

recommended that after installation, test signals are applied to confirm correct indication and that, where applicable, CT phasing is correct and voltage and current connections match. Bezel

## Panel cut-out

For assistance on protection requirements please contact your local sales office.

	(M242)	(M243)	(M244)
<b>Bezel</b>	48x48mm	72x72mm	96x96mm
<b>Panel</b>			
<b>Cut out</b>	45x45mm	68x68mm	92x92mm

## Terminal Covers

Terminal covers are supplied as standard. All types have a push fit cover and this cover is fitted after the meter has been installed in the panel and all wire connections made.

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Tyco Electronics (UK) Ltd  
a TE Connectivity Ltd. company  
Freebournes Road,  
Witham  
Essex CM8 3AH  
England  
Tel: +44 (0) 1376 509509  
Fax: +44 (0) 1376 509511  
www.crompton-instruments.com  
www.energy.te.com

Registered office:  
Faraday Road, Dorcan  
Swindon, SN3 5HH  
Reg. no. 550 926

