

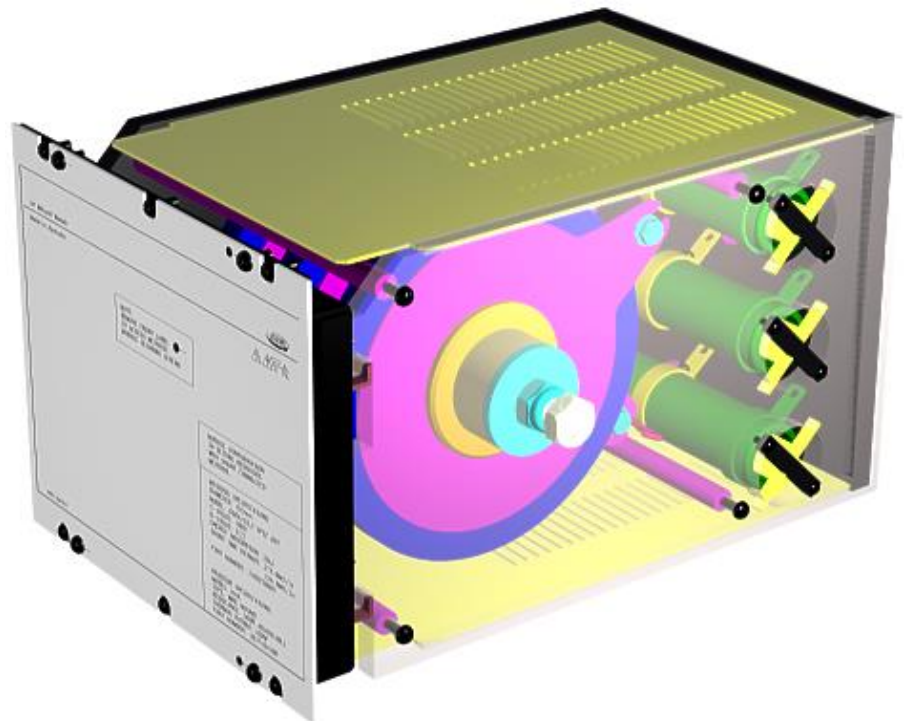


2V75 User Guide

Metrosil Module

RMS Mors Smitt

Advanced Protection Devices



User Guide



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2V75 User Guide

About This Manual

This User Guide covers all 2V75 relays manufactured from May 2023. Earlier products do not necessarily incorporate all the features described. Our policy of continuous development means that extra features & functionality may have been added.

The 2V75 User Guide is designed as a generic document to describe the common operating parameters for all relays built on this platform.

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Documentation

Technical Bulletin

The detailed technical attributes, functional description & performance specifications for the 2V75 are described in the product Technical Bulletin.

The order of precedence for product information is as follows:

- Technical Bulletin
- User Guide

User Guide

This User Guide covers all 2V75 relay versions & describes the generic features & attributes common across all versions.

Different relay versions are required to cater for varying customer requirements such as auxiliary voltage range, I/O configuration, case style, relay functionality etc.

Introduction

The 2V75 Metrosil module is designed for application with high impedance differential protection schemes.

An external Metrosil module having a nonlinear resistance characteristic is required for each phase element to limit the peak voltage appearing across the secondary differential circuits under internal fault conditions.

The Metrosil module may also be fitted with resistors either for series connection to establish the stabilisation voltage of the high impedance scheme or shunt connection to alter the high impedance scheme sensitivity.

The 2V75 Module provides a compact, simple & cost effective means of fitting a pre-wired Metrosil & resistor combination into protection panels employing high impedance differential schemes.

Mounting is achieved by first fitting a special panel to the front of the cubicle. This panel is suitable for 19 inch rack or flush mounting.

The separate Metrosil module is then installed from the rear of the cubicle & latched onto the self-aligning rails on the front rack mounting panel. Retention screws are provided to lock the Metrosil module in place.

The Metrosil module may, alternatively, be surface mounted in the rear of the cubicle using the surface mount bracket.

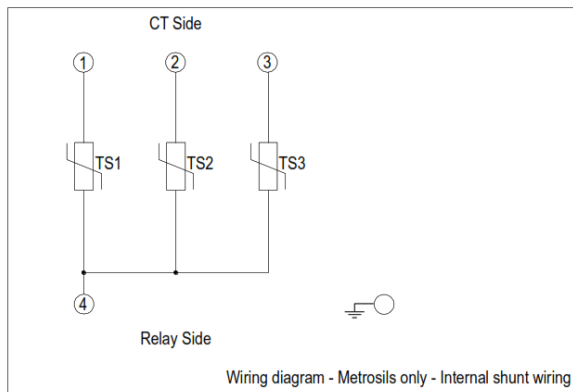
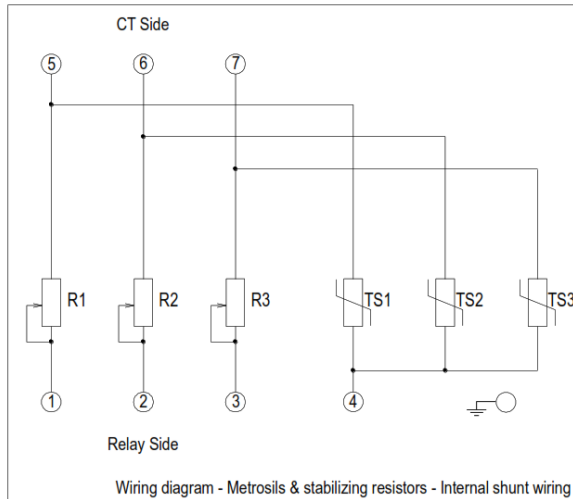
Heavy duty screw terminals are provided on the rear of the Metrosil module to suit ring or crimp lug terminals. Internal wiring utilizes 2.5mm² cable.

The rear terminal door may be swung open to access the stabilizing resistors (where fitted) to allow adjustment.

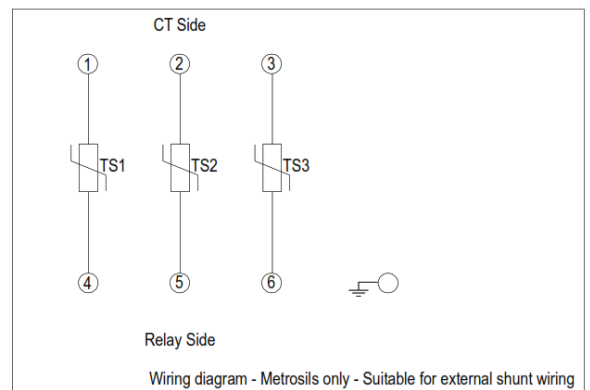
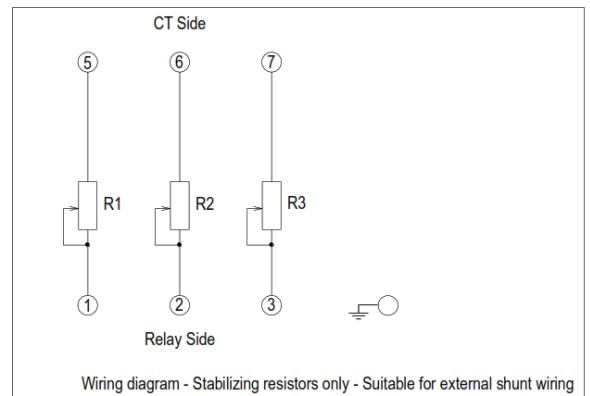
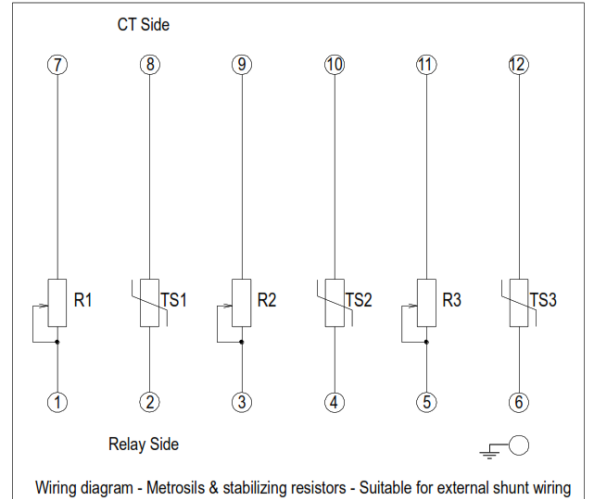
The completed installation is compact while providing safety isolation, the desired level of ventilation for the stabilizing resistors & a means of simple adjustment.

Typical Connection Diagrams

Modules with Internal Shunt Wiring



Modules Suitable for External Shunt Wiring



Note: Internal shunt wiring is only available on variants with a Metrosil.

Installation

Safety Section

This Safety Section should be read before commencing any work on the equipment.

The information in the Safety Section of the product documentation is intended to ensure that products are properly installed and handled in order to maintain them in a safe condition. It is assumed that everyone who will be associated with the equipment will be familiar with the contents of the Safety Section.

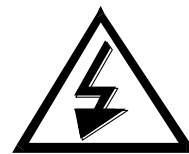
Explanation of Symbols & Labels

The meaning of symbols and labels which may be used on the equipment or in the product documentation, is given below.

Caution: refer to product information

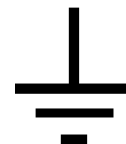


Caution: risk of electric shock



Functional earth terminal

Note: this symbol may also be used for a protective/safety earth terminal if that terminal is part of a terminal block or sub-assembly eg. power supply.



Unpacking

Upon receipt inspect the outer shipping carton or pallet for obvious damage.

Remove the individually packaged relays and inspect the cartons for obvious damage.

To prevent the possible ingress of dirt the carton should not be opened until the relay is to be used.
Refer to the following images for unpacking the relay:



Outer packing carton showing shipping documentation pouch.
Address label on top of carton.



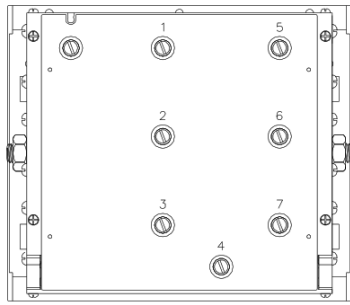
Inner packing carton with lid open showing protective foam insert.

Panel mounting adapter is at the top.

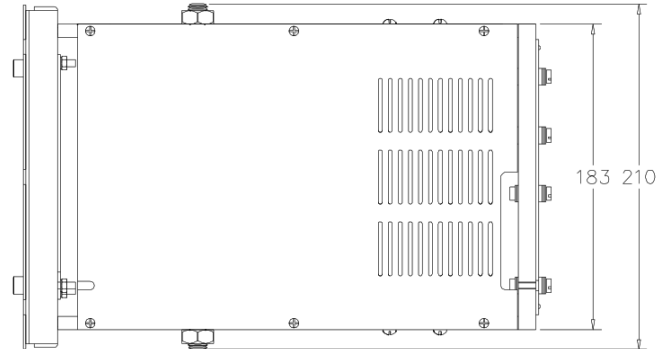


- 1 x Front panel
- 4 x front panel locating thumb screws
- 1 x panel mount kit
- 1 x panel mount kit self threading screws

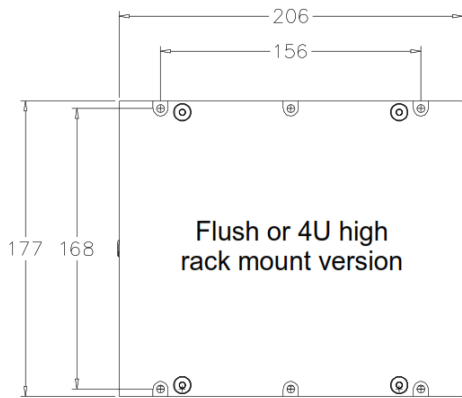
Dimensions



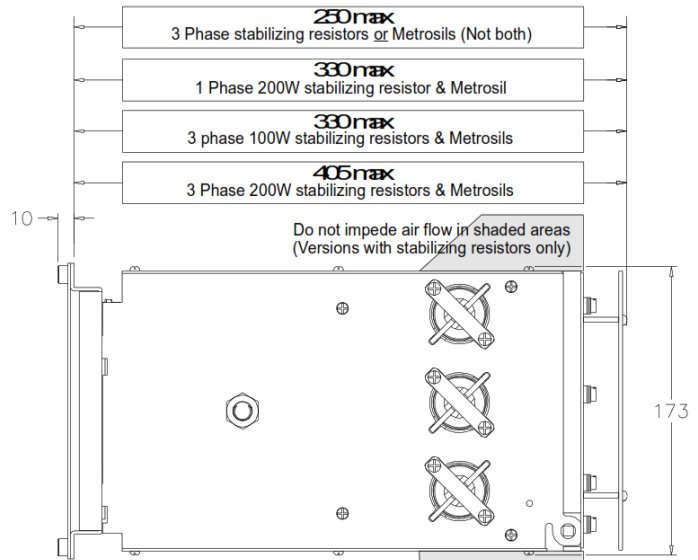
Rear view showing terminal numbers



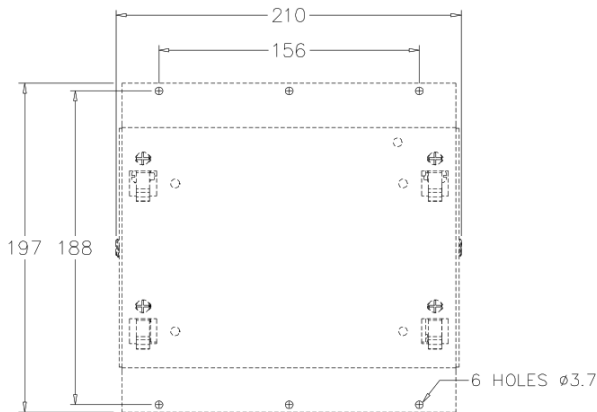
Top view showing stabilizing resistor ventilation slots (mm)



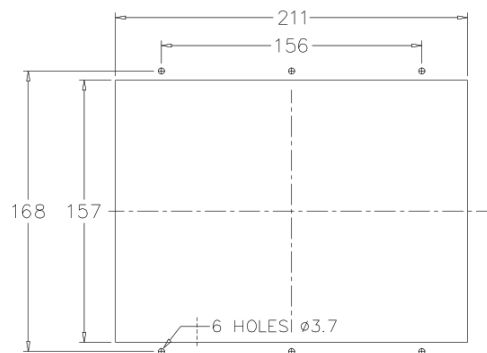
Front panel dimensions (mm)



Side view dimensions (mm)

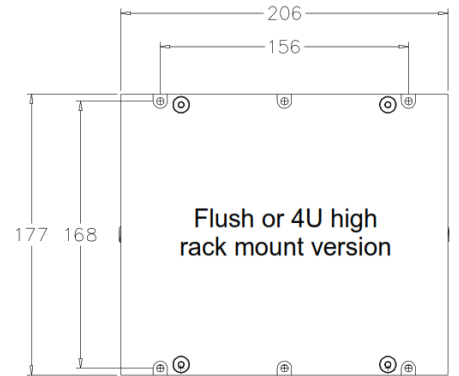
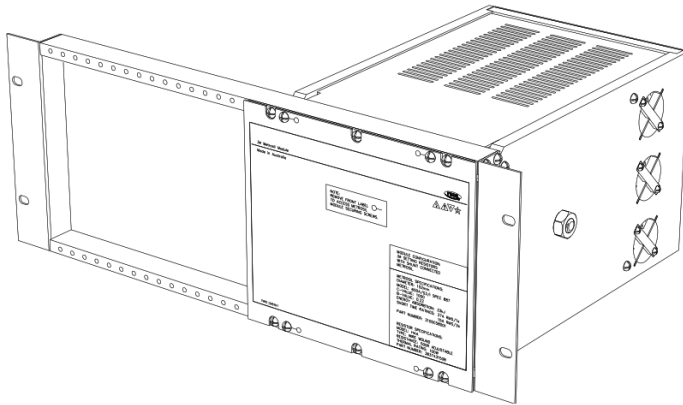


Surface mounting details (mm)

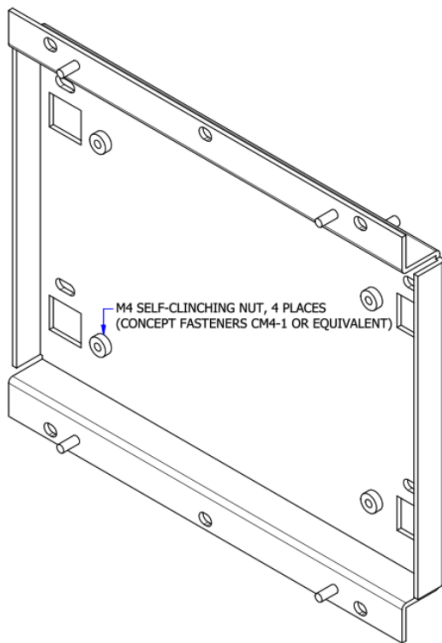


Flush mount panel cut out dimensions (mm)

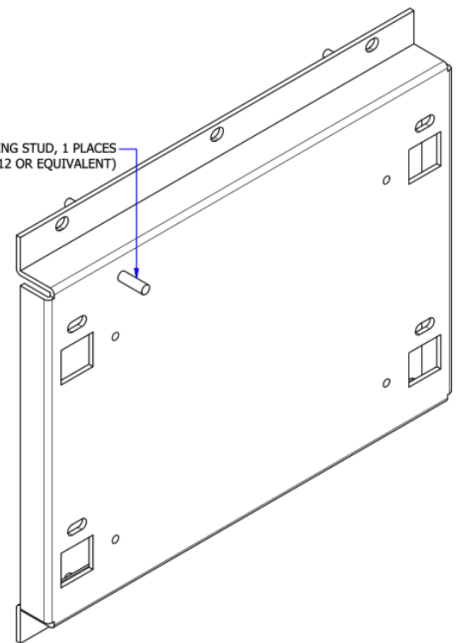
Typical Rack Mounting with 2V75 mounted into a 19" sub rack frame with rack mount bracket



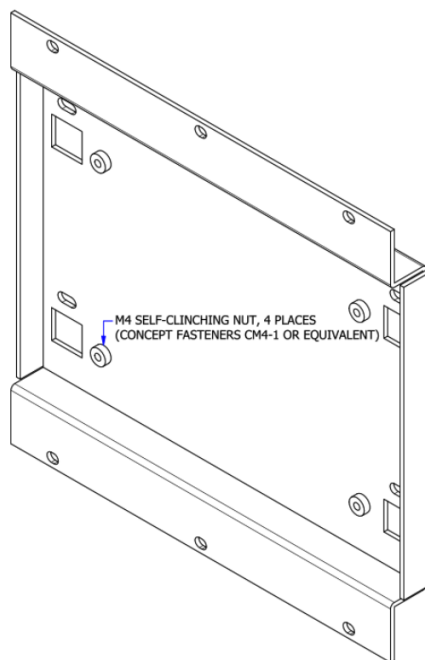
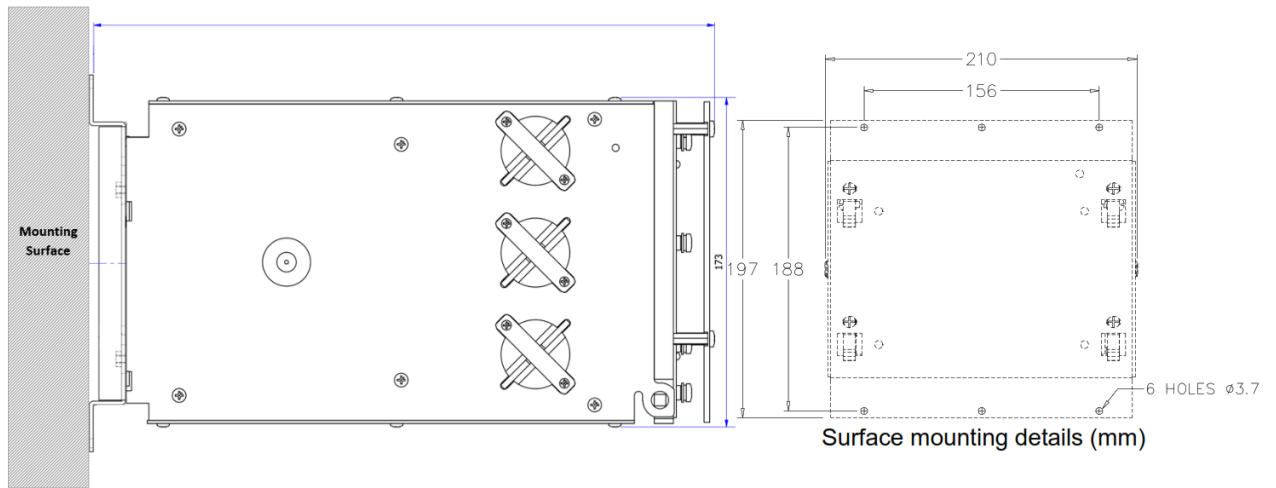
Front panel dimensions (mm)



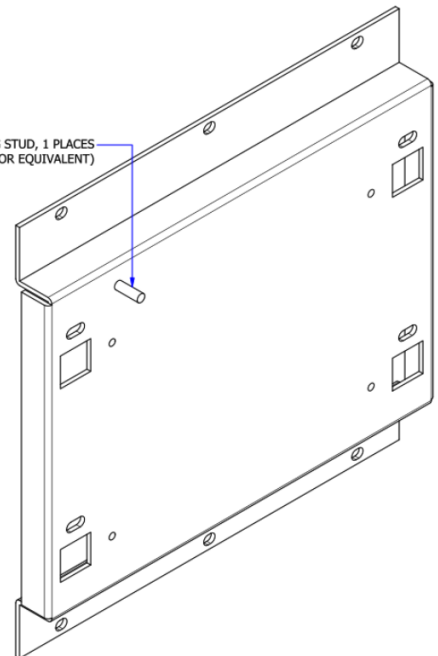
M4x12 SELF-CLINCHING STUD, 1 PLACES
(CONCEPT FASTENERS CHM4-12 OR EQUIVALENT)



Typical surface mounting arrangement with surface mount bracket



M4x12 SELF-CLINCHING STUD, 1 PLACES
(CONCEPT FASTENERS CHM4-12 OR EQUIVALENT)



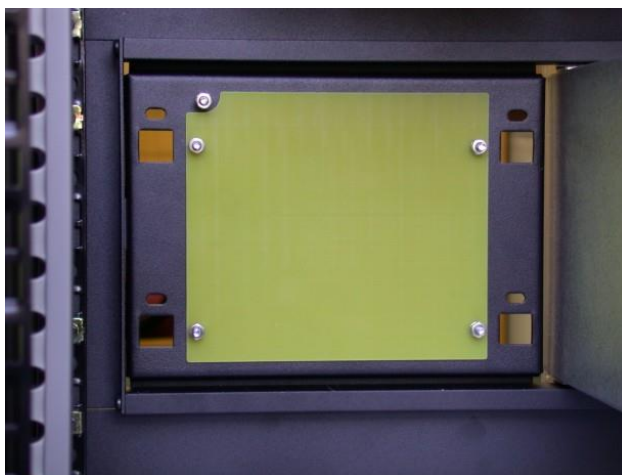
Example of Rack Mounting Installation



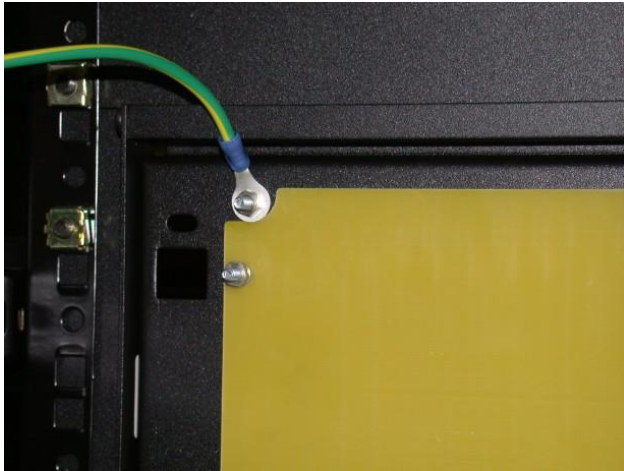
- 1 x Front panel
- 4 x front panel locating thumb screws
- 1 x panel mount kit
- 1 x panel mount kit self threading screws



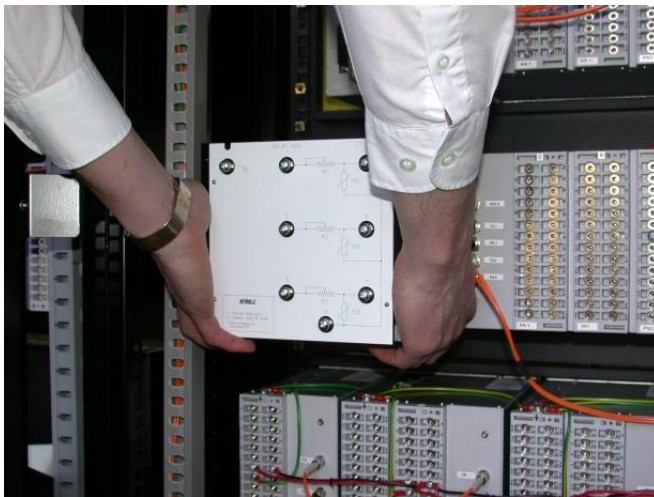
Panel mount plate being screwed into 19 inch sub rack.



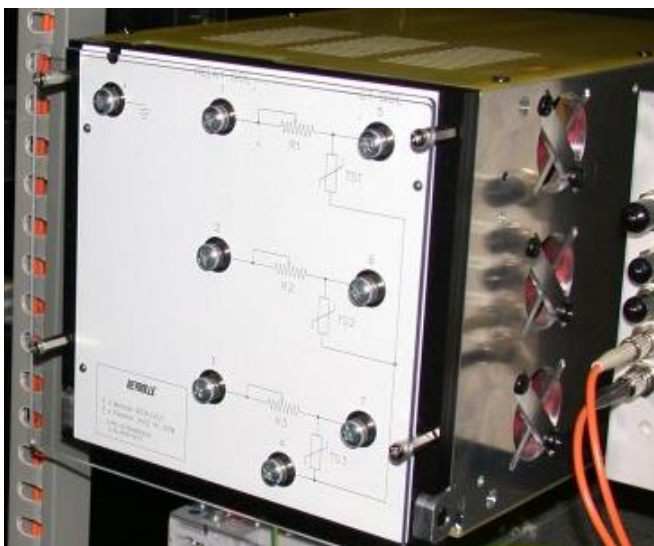
Rear of panel mount plate showing fibreglass insulating plate & location points for the Metrosil module.



Earth connection to panel mount plate.
Connect other end to
Metrosil module earth point.



Load the Metrosil module into the rear
of the cubicle & locate onto
the panel mounting plate.



This photo shows the Metrosil module
in position viewed from the rear.
Note the clear polycarbonate terminal cover.



This photo shows the Metrosil module location lugs protruding through the front mounting plate.

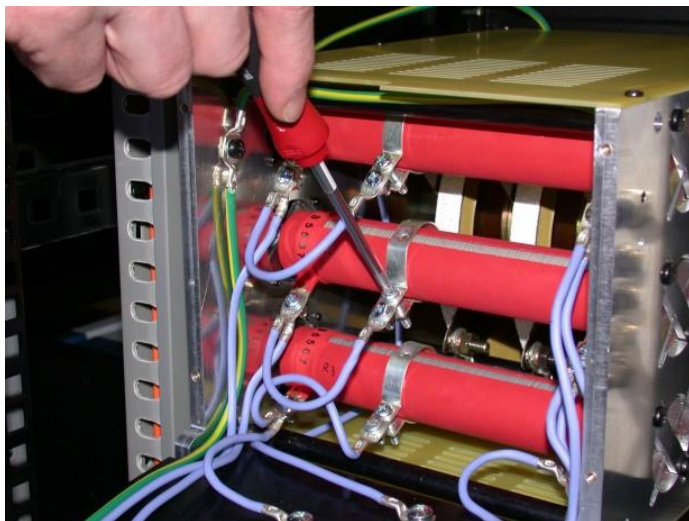
Screws are being fitted to secure the Metrosil module.



Remove clear polycarbonate terminal cover screws and mounting pillars which hold the rear door closed.



Swing open the rear door to access the stabilizing resistors.



Loosen the moving terminal to adjust the nominal value of each resistor. Do not attempt to force the moving terminals to slide as this may damage the resistance wire.

Equipment Operating Conditions

The equipment should be operated within the specified electrical and environmental limits.

Protective relays, although generally of robust construction, require careful treatment prior to installation and a wise selection of site. By observing a few simple rules, the possibility of premature failure is eliminated, and a high degree of performance can be expected.

Care must be taken when unpacking and installing the relays so that none of the parts are damaged or their settings altered and must always be handled by skilled persons only.

Relays should be examined for any wedges, clamps, or rubber bands necessary to secure moving parts to prevent damage during transit and these should be removed after installation and before commissioning.

The relay should be mounted on the circuit breaker or panel to allow the operator the best access to the relay functions.

Equipment Connections

Personnel undertaking installation, commissioning or servicing work on this equipment should be aware of the correct working procedures to ensure safety. The product documentation should be consulted before installing, commissioning or servicing the equipment.

Terminals exposed during installation, commissioning and maintenance may present hazardous voltage unless the equipment is electrically isolated.

If there is unlocked access to the rear of the equipment, care should be taken by all personnel to avoid electric shock or energy hazards.

Voltage and current connections should be made using insulated crimp terminations to ensure that terminal block insulation requirements are maintained for safety. To ensure that wires are correctly terminated, the correct crimp terminal and tool for the wire size should be used.

Before energising the equipment, it must be earthed using the protective earth terminal, or the appropriate termination of the supply plug in the case of plug connected equipment. Omitting or disconnecting the equipment earth may cause a safety hazard.

The recommended minimum earth wire size is 2.5mm², unless otherwise stated in the technical data section of the product documentation.

Before energising the equipment, the following should be checked:

1. Voltage rating and polarity;
2. CT circuit rating and integrity of connections;
3. Protective fuse rating;
4. Integrity of earth connection (where applicable)

Decommissioning & Disposal

Decommissioning: The auxiliary supply circuit in the relay may include capacitors across the supply or to earth. To avoid electric shock or energy hazards, after completely isolating the supplies to the relay (both poles of any dc supply), the capacitors should be safely discharged via the external terminals prior to decommissioning.

Disposal: It is recommended that incineration and disposal to water courses is avoided. The product should be disposed of in a safe manner.

Maintenance

Mechanical Inspection

Module Assembly

Inspect the module for obvious signs of damage or ingress of moisture or other contamination, signs of overheating burn marks which may have been caused by overvoltage surge or transient conditions on the protection scheme.

Test Intervals

The maintenance tests required will largely depend upon experience and site conditions, but as a general rule it is recommended that the following inspection and tests are performed every twelve months.

- ◆ Mechanical Inspection
- ◆ Check of Connections
- ◆ Insulation Resistance Test