Installation Instructions

Earth Leakage Protector Relay

GENERAL GUIDELINES
The product should be fastened to a standard 35mm DIN rail (DIN50022) and is also suitable for panel mounting when installed in an enclosure conforming to DIN43880. Consideration should be given to the space around the unit to allow for bends in the connecting cables. The connection terminals on this product are rated to IP20, and as such, should be protected from liquids. The unit must not be mounted where it can be subjected to direct sunlight, and vibration should be kept to a minimum. Connection wires must be sized to comply with local regulations. The product has no internal fuse; therefore, an external auxiliary supply fuse must be used for safety protection under fault conditions.

WARNING
· During normal operation, voltages hazardous to life may be present at some of the terminals of this unit. Installation and servicing 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.
· It is recommended adjustments be made with the supplies de-energised, but if this is not possible, then extreme caution should be exercised.
· Terminals should not be user accessible after installation and external installation provisions must be sufficient to prevent hazards under fault conditions.
· This unit is not intended to function as part of a system providing the sole means of fault protection - good engineering practice dictates that any critical function be protected by at least two independent and diverse means.
· Never open circuit the secondary winding of an energised current transformer.

Fusing and Connections
1. This unit must be fitted with external fuses in voltage and auxiliary supply lines.
1. Voltage input lines must be fused with a quick blow fuse 1A maximum.
2. Auxiliary supply lines must be fused with a slow blow fuse rated 1A maximum.
3. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.
4. Where fitted, CT secondaries must be grounded in accordance with local regulations.

Screw torque
Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.

SAFETY SPECIFICATION
This product complies with International standards IEC1010-1 and BS EN 61010-1

Product
· Permanently connected use
· Normal condition
· Basic insulation
· Installation category III (Aux Supply)
· Pollution degree 2
· This Product is intended as part of a permanent installation
· For use in altitudes up to 2000m
· Temperature –10°C to +60°C
· Maximum relative humidity 95% (non condensing)
· Front Panel Sealing to IP50
· Terminal Sealing to IP20
· Max System working Voltage to ground is 600 Volts rms or dc.
· See product's data label for operating Voltage

Relays
· Relay protection class II (VDE0700)
· Dielectric Strength, coil-contacts 5kV RMS
· Dielectric Strength, open contact circuit 1kV RMS
· Insulation to VDE0110b (2/79)
· Insulation category/reference Voltage C/250.B/400

ELECTROMAGNETIC COMPATIBILITY (EMC) INSTALLATION REQUIREMENTS
This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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 this unit alongside cables and products that are, or could be, a source of interference.
· 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, surge transients must be controlled. It is good EMC practice to suppress differential surges to 2kV or less at the source. The unit has been designed to automatically recover from typical transients, however in extreme circumstances it may be necessary to temporarily disconnect the auxiliary supply for a period of greater than 5 seconds to restore correct operation.
· Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
· 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 PRODUCT
Install the core balanced CT in a suitable location with all the necessary conductors passing through the centre of the CT aperture. Connect the CT secondary directly to terminals 1 and 3 on the protector. Cabling between the CT and protector should be kept as short as possible. For longer cable runs or in electrical environments with high interference levels, screened cable is preferred, with the screen terminated at the product.
A trip condition can be reset locally with the front panel reset switch and, remotely, by interrupting the auxiliary supply to the product. See connection diagram.
The product contains a switch mode power supply, which has a very wide input range. For products with a DC auxiliary, ensure correct polarity.
Default relay operation is de-energize on trip (this configuration is fail safe). Relay operation can be reversed to energize on trip by fitting a wire link between terminals 17 and 18. The length of this link wire must not exceed 50mm.
Trip Setting: Always select the most appropriate trip current for the installation. If in doubt, start at the most sensitive (30mA) setting, and make use of LED bar graph indicator or 0 to 1 mA output to determine the approximate level of leakage in the installation. Under normal circumstances, the leakage should be below 50% of the range. When the product is set correctly, any degradation in insulation should cause a trip. In environments of high electrical noise, it may be necessary to select a higher trip setting to avoid nuisance tripping.

Time Delay: The time delay feature can be used for several purposes, for example:
1) To disregard a nuisance trip, which could occur due to high inrush currents, such as motor start up. Increase the delay setting to overcome the problem. Never adjust the trip level setting to overcome this, since this will degrade the level of protection.

2) For fault grading – where more earth leakage relays are installed downstream. The time delay setting must be greater than those relays downstream to avoid cascade tripping.

Recommended Cable Routing Though the CT

Primary conductors should be grouped together and fed though the CT aperture as shown. It is essential that each conductor passes though the device in the same direction. Each phase conductor and Neutral (when present) must pass through the CT.

IMPORTANT: The equipment grounding conductor must always bypass the CT. The connections between the CT and protector should be kept as short as possible to minimise signal noise. For best results, use screened cable, with the screen grounded at the protector.

For Best Results

· Always place the CT on a straight section of cable
· Make sure the cables are in the centre of the aperture
· Use a CT with the smallest aperture size for the cables
· Ensure signal lead from CT is screened and connected to ground as shown.

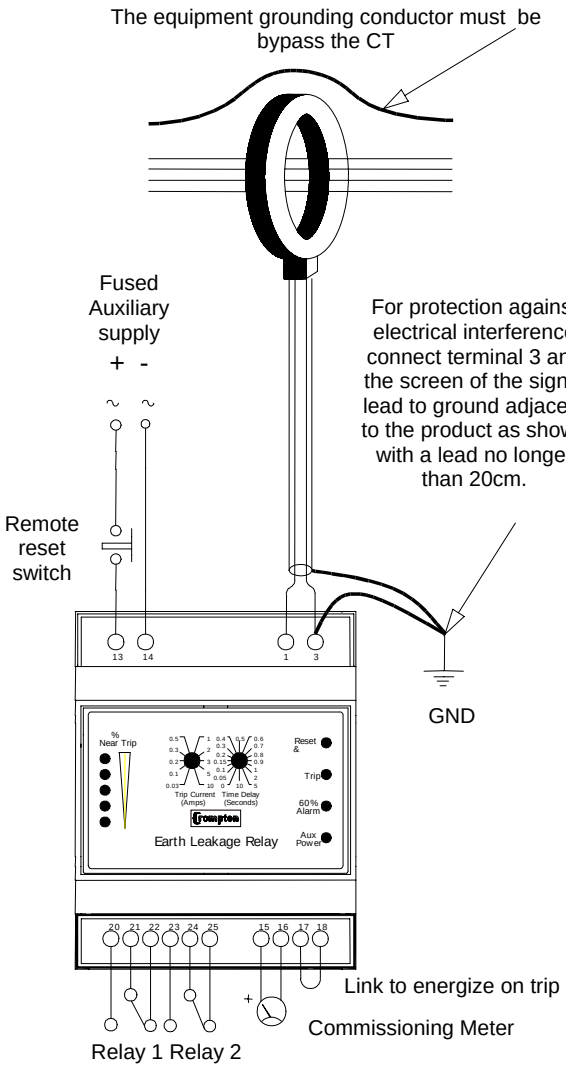
Testing the Relay

Once the product is installed, an electronic confidence check can be performed by pressing and holding the Test / Reset button. This will force the product to trip, so the relay contacts will change state, and all LEDs will illuminate. Releasing the button restores normal operation.

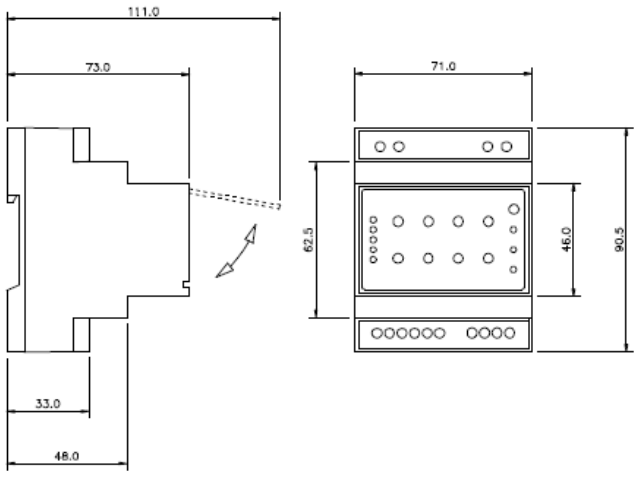
IMPORTANT NOTE: The check function does not test the measuring current transformer or associated wiring. It is recommended that the entire system is functionally checked for correct operation regularly by applying a suitably scaled leakage current via the CT.

Maintenance

All units are fully calibrated before despatch and therefore no adjustments are required. During routine servicing and inspection of equipment the unit should be inspected to normal standards for this class of equipment. For example, remove accumulations of dust and check connections for tightness and corrosion. In the event of a fault occurring and repair being necessary, it is recommended that the instrument be returned to the factory or to the nearest Sales and Service Centre. Repair should not be attempted, since the product contains no adjustable components. With any enquiry, please quote the full Type Number and Serial Number found on the side label. Cleaning: Make sure that the supply is disconnected before attempting cleaning. Use a damp cloth impregnated with anti static solution to clean the product, and avoid using abrasive materials and solvents that are not suitable for polycarbonate surfaces.



Dimensions



On the standard product, Relay 1 and Relay 2 will operate together.

When the pre-alarm option is supplied, Relay 1 operates as the 60% alarm contact and Relay 2 is the main trip contact.

Relay contacts are shown in their de-energized state.

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