



603239

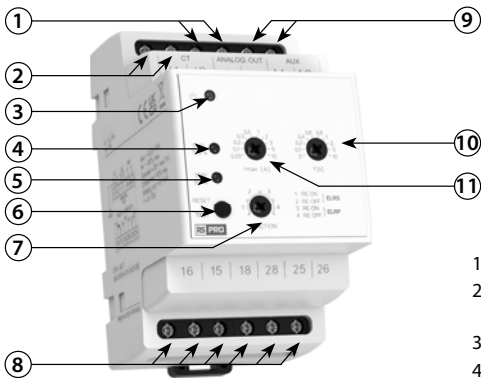
Earth Leakage Protector Relay



Characteristic

- Monitors the value of the leakage ground current that can cause e.g. undesirable overheating of cables and a subsequent failure of the device or even dangerous voltage of the grounded device serves as protection of electrical engines, generators, transformers and other devices - the device is automatically disconnected in case of failure
- Continuous monitoring of the current value using an external current transformer
- Very short response time ($< 40\text{ms}$)
- Step-adjustable value of monitored current (in 10 steps)
- Step-adjustable response delay (in 10 steps)
- Switching the relay function on the device panel
- For each function the relay state in case of failure may be set - ON or OFF
- RESET & TEST button for the return to the initial state or device test
- Analogue output $0\ldots 1\text{mA}$ for the control meter
- 2 types according to the value of the supply voltage: 24 - 240V AC/DC or 12 - 24V DC
- 3-module version, mounted onto the DIN rail
- Pre-alarm function:
 - 2 levels of monitored current - MAIN ALARM (set current value) and PRE-ALARM (60% of set current value)
 - Each current level has a dedicated LED indicator
 - When the current value PRE-ALARM is exceeded the relay 1 (contact 15-18) responds - without delay
 - When the MAIN ALARM current value is exceeded relay 2 (contact 25-28) responds - with preset delay
- Main alarm function
 - Both relays respond at the same time only when the MAIN ALARM current value is exceeded

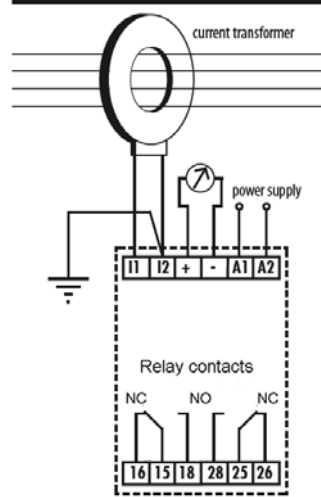
Description



- Analogue output
- Terminals for the connection of the current transformer
- Supply voltage indication
- Indication TRIP 100%
- Indication TRIP 60%
- Button RESET & TEST
- Relay function setting
- Output contacts
- Supply voltage terminals
- Delay setting
- Imax setting

Connection

The grounding device must lead outside the current transformer.



NC = Normally closed. Contact closed when relay de-energised.
NO = Normally open. Contact open when relay de-energised.

All connections are made to screw clamp terminals. Terminals are suitable for copper wires only and will accept one stranded $0.05 - 2.5\text{mm}^2$ (30 - 12 AWG) stranded or solid core cables. Terminal screws should be tightened to 0.5Nm . Choice of cable should meet local regulations.

Instrument transformers used for connection to the meter must be of approved type, compliant with ANSI/IEEE C57.13 / IEC 60044-1 to provide isolation from measuring inputs.

For UL approved installation, use National Electrical Code (NEC)

Class 1 wiring, rated at $300\text{V} / 60^\circ\text{C}$ min rating.

Fusing

A suitable switch or circuit breaker conforming to the relevant parts of IEC 60947-1 and IEC 60947-3 should be included in the building installation. It should be positioned so as to be easy to operate, in close proximity to the equipment, and clearly identified as the disconnecting device.

This unit must be fitted with an external fuse in voltage supply line. Line must be fused with a quick blow fuse 1A maximum. Choose fuse of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

For UL approved installations:

UL listed branch circuit fuses, suitable for the installation voltage, shall be provided and installed in accordance with national installation code - 1A fast acting AC rated at the input.

Auxiliary Supply

There are two auxiliary supply options available. The unit should ideally be powered from a dedicated supply. However it may be powered from the signal source, providing the source will always be within tolerance for the auxiliary supply (24 to 240V AC or $\text{DC} \pm 10\%$ 0.9W 3VA . $45\text{--}65\text{Hz}$ for AC). For $12\text{--}24\text{V DC}$ 1W , polarity reversal will not cause damage but the instrument will not function.

Maintenance

In normal use, little or no maintenance is needed. Where used, ensure any CT secondary circuits are short circuited prior to carrying out installation or maintenance of the unit. As appropriate for service conditions, isolate electrical power, inspect the unit and remove any dust or other foreign material present. Periodically check all connections for freedom from corrosion and screw tightness, particularly if vibration is present.

Technical parameters

603239	
Supply voltage	24 V / 240 V AC/DC
Burden on supply	3VA / 0.9W
A.C. Supply frequency	45-65 Hz
Supply voltage tolerance	±10%
Adjustable current levels (Imax)	0.03A, 0.1A, 0.2A, 0.3A, 0.5A, 1A, 2A, 3A, 5A, 10A
Overload capacity	20x set value (Imax) 1s max
Pre-Alarm (Ipa) Current level	60% (Imax)
Pre-Alarm difference	10% (Imax)
Adjustable delay t(s)	0s, 0.1s, 0.2s, 0.4s, 0.6s, 0.8s, 1s, 2s, 5s, 10s*
Analogue Output	0-1mA = 100% set Value (Imax)
Response time	< 40ms
Relay contacts: for general switching operations	2 x changeover, volt-free
Load capacity - a.c.	250V @ 8A, 2 kVA
Load capacity - d.c.	30V 8A
Insulation	4 kV/1 min
Mechanical endurance	30x10 ⁶ operations
Other Data:	
Dimensions	90 x 52 x 64 mm
Weight	135g approx.
Maximum conductor size	2 x 1.5 mm ² or 1 x 2.5 mm ²
Operating temperature	-20 to +55 °C
Storage temperature	-30 to +70 °C
Over-voltage category	III
Pollution degree	2
Environmental protection	IP40 for front panel IP20 for terminals
Standards	EN 60255-6, EN 60255-27, EN 61000-6-2, EN 61000-6-4

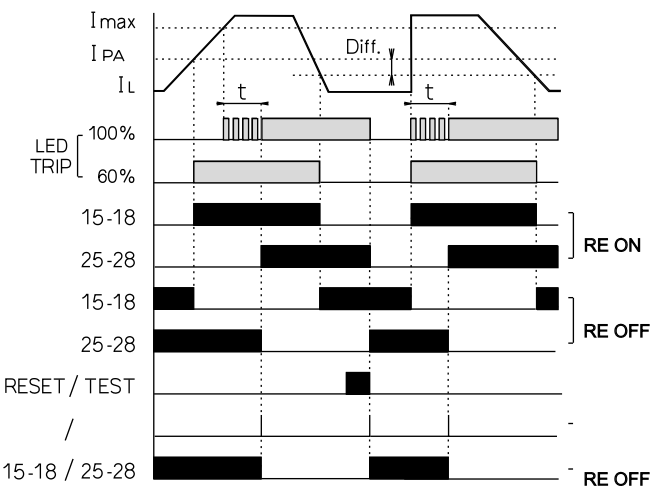
Warning

- 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.
- The unit does not have internal fuses therefore external fuses must be used for protection and safety under fault conditions.
- If this equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired.

Safety

The unit was designed in accordance with BS EN 600255-6 and -27 – Permanently connected use, Normal condition. Insulation category III, pollution degree 2, basic insulation for rated voltage. Measurement Category III.

Functions



After the connection of the supply voltage to the supply terminals (A1-A2) the green LED goes on. The device is monitoring the value of the leakage current (at terminals I1, I2) by means of external current transformer. If the current value exceeds 60% of the set value the red LED TRIP 60% goes on and relay 1 responds. If the current value exceeds the set value (100%) the red LED TRIP 100% goes on after the delay timing elapses and relay 2 responds. The red LED is flashing during the timing. If the current range is set to 30mA, relay 2 responds without delay. The relay also responds if the set current value is exceeded 5 times. If the current value drops below the set value, relay 2 remains unchanged. If the current value drops below 60% of the set value and the difference is overridden the state of relay 1 changes. **Relay 2 returns into the idle state by briefly pressing the RESET & TEST button. It can also be reset by disconnecting the supply voltage.**

Both relays respond at the same time only when the set current value (100%) is exceeded. By pressing and holding (for longer than 1s) the button the device test is activated - both the relays respond in the same way as in the case of exceeding the set current value. After releasing the button the relay returns to the initial state.

Core Balanced current transformer

Function principle: all phase conductors (also the neutral conductor, if connected) lead through the Core Balanced core of the current transformer. In the ideal case, the currents flowing through the conductors into the load and back become neutral due to their mutual effect and there is no signal on the secondary coil of the current transformer. If other undesirable current leakage is detected (e.g.: in case of insulation defect) the balance is disrupted and the current transformer evaluates the current difference.