



Earth Leakage Relay

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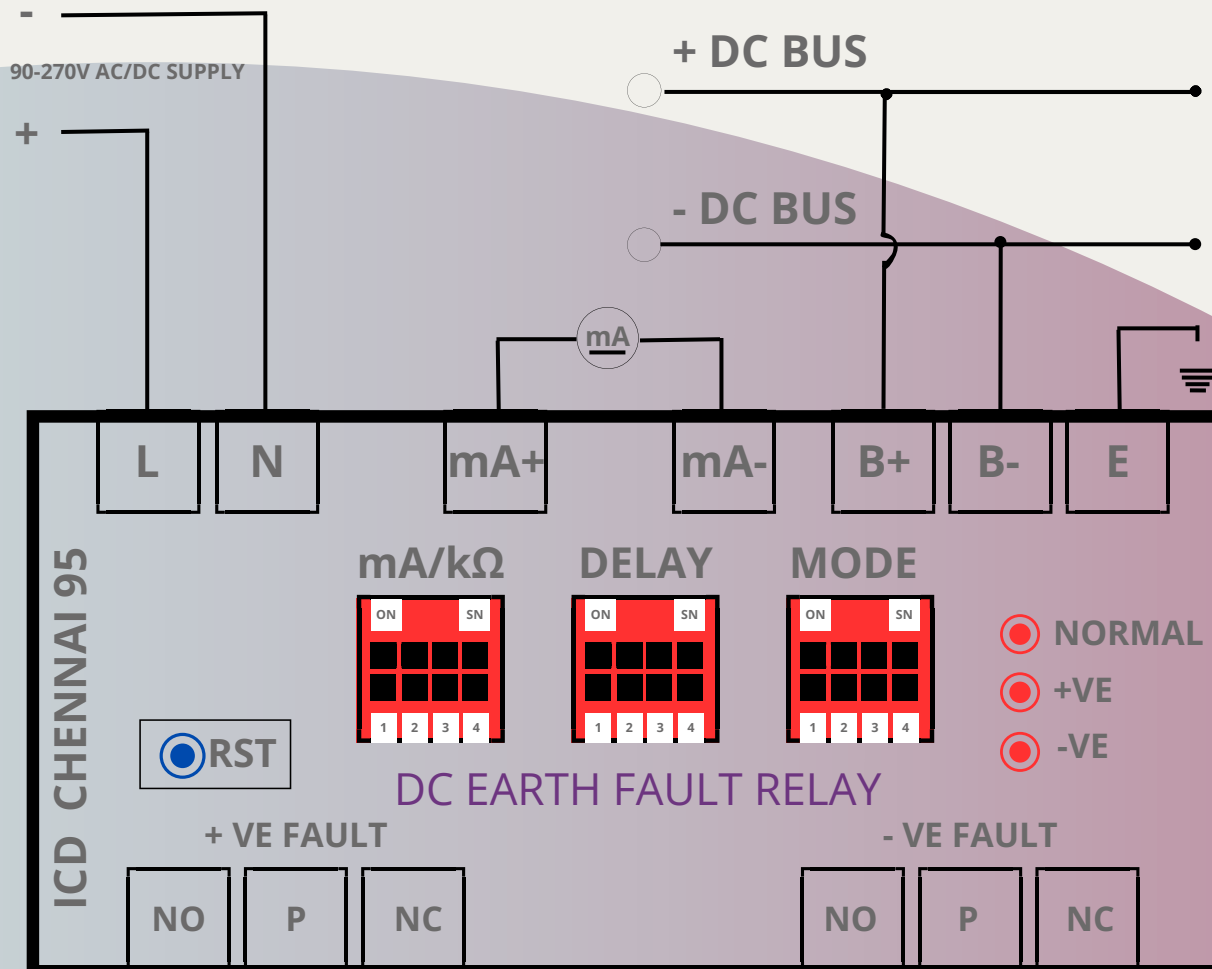
01 Addressing Earth Leakage Relay

Frequent occurrences of nuisance tripping in electrical systems have raised concerns about system reliability. The introduction of an earth leakage relay aims to enhance system safety by detecting ground-bound electrical currents and triggering circuit breaker trips. However, when such a relay triggers without a genuine threat, it disrupts power supply, an issue commonly referred to as nuisance tripping.

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02 Product Diagram



TERMINAL DETAILS

Relay output: Potential Free relay contact for

- 1) + ve side fault
- 2) - ve side fault

LED Indication: LED Indication for

- 1) Power ON
- 2) + ve side fault
- 3) - ve side fault

Milliamp meter: Terminals provided to connect Milliamp meter.

(if not used short the terminal)

Auxiliary supply: 90 - 260VAC or VDC

Dimension: 110(w) X 100 (d) x 70 (h)



03 Technical Specification

Make : ICD

Type : Earth Leakage Relay

System Voltage : 90 – 270 V AC / DC ranges

Trip Setting: by Dip Switch- 1 – 50 Ma

Trip Time Setting : by Dip Switch – 1,2,3,4,5,6,7,8,9,10 S

Mode Selection: Fault Auto Reset / Latch (Dip Switch)

Test and Reset : Provided

Isolation : Provided for Input Voltage and Output Contact.

Mounting : Din Rail Mounting



04 Relay-Induced Tripping

This case study focuses on nuisance tripping related to earth leakage relays within the context of PCC outgoing MCC feeders. While earth leakage relays are present in the setup, protection for the MCCs is limited to fuses. Consequently, an earth fault or leakage in the incoming motor load of an MCC can lead to unintended consequences.

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05 Relay vs. Fuse: Response Dynamics

In the observed scenario, the primary PCC's ELR-113 becomes active immediately, responding promptly to an earth fault. However, the outgoing motor reacts at a slower pace, accommodating certain earth faults in the MCC's outgoing motor feeder. Severe issues in the incoming motor feeder can result in a complete power loss for the entire MCC.

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Strategic ELR Adjustment

To mitigate this situation, ICD recommend ELR on MCC panels. This strategic step prevents a total shutdown, confining the impact of the fault to the specific problematic area. This approach ensures that the fault's effects are isolated and do not extend to unaffected sections.

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07 Safety and Maintenance

It is vital to note that the primary purpose of ELRs is to ensure personal safety during maintenance activities

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