IS 12640 (Part 1) : 2024/ IEC 61008-1: 2013 Residual Current Operated Circuit-Breakers without Integral Overcurrent Protection for Household and Similar Uses (RCCBs) Part 1: General Rules

Residual Current Operated Circuit-Breakers (RCCBs) are a safety device used in electrical installations to protect people from electric shocks and to prevent electrical fires. It works by detecting current imbalances between the live (phase) and neutral conductors in a circuit. When an imbalance occurs, it disconnects the circuit, preventing potential harm or damage, thus providing protection against shock hazard or against fire hazards due to a persistent fault current. RCCBs are not designed to perform the functions of protection against overloads and/or short-circuits and are used in electrical installations where the overcurrent protection is provided by separate devices.

IS 12640 (Part 1) : 2024/ IEC 61008-1: 2013 applies to residual current operated circuit-breakers (RCCBs) functionally independent of, or functionally dependent on, line voltage, for household and similar uses, not incorporating overcurrent protection, for rated voltages not exceeding 440 V a.c. with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A.

Tests prescribed in the standard are for verifying that RCCBs will trip under fault conditions, preventing potential hazards. Tests assess the operational characteristics of RCCBs, i.e. their sensitivity and trip time, ensuring they function correctly in real-world scenarios. The standard includes tests for mechanical and electrical endurance to confirm that RCCBs can withstand normal operational stresses and continue to function reliably over time. Tests specified also verify their performance under various environmental conditions (e.g., temperature, humidity) to ensure consistent operation regardless of the installation environment.

The standard specifies test sequence and number of samples to be submitted for full test procedure as well as simplified test procedure for the purpose of certification.

This Indian Standard is referred in SP 30 : 2023 National Electrical Code of India.

In electrical installations, the use of a residual current device as per the relevant standard is mandated under Regulation 44 of Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023.