



IS/IEC 60947-2: 2016 - Low-Voltage Switchgear and Controlgear

Part 2 Circuit-Breakers

A **circuit breaker** is an electrical device designed to protect circuits from damage caused by overloads or short circuits. It automatically disconnects the electrical supply when a fault is detected, safeguarding appliances, wiring, and other components. Indian Standards on circuit breakers are developed by the Bureau of Indian Standards (BIS) under **IS/IEC 60947** series of standards, which applies to low-voltage systems (up to 1,000 V AC or 1,500 V DC) and is used in residential, commercial, and industrial settings.

There are various types of circuit breakers, including **Molded Case Circuit Breakers (MCCBs)** and **Air Circuit Breakers (ACBs)**. MCCBs are used in industrial environments for high current ratings and adjustable overload protection, while ACBs are designed for large-scale industrial and power distribution applications. These circuit breakers are designed to meet specific operational needs, ensuring protection against faults.

When it comes to good quality circuit breakers, consumers expect quick and reliable **tripping characteristics, durability, and longevity**. The breaker must safely operate under various voltage ratings and provide protection against electrical faults. Additional safety features include **insulation resistance, shock protection**, and the ability to perform under different **environmental conditions** such as **temperature fluctuations, humidity, and pollution**.

Indian Standard IS/IEC 60947-2 sets down the quality benchmark for circuit breakers, including **performance requirements, construction standards, and safety features**. It mandates durability tests, such as **endurance and temperature rise tests**, and specifies current ratings, breaking capacities, and fault response times. The standard also emphasizes safety against electric shock, and isolation during faults, ensuring safe operation in various conditions. The standard also addresses the aspect of ensuring reliable performance of circuit breakers in different environmental conditions via tests related to **change of temperature, and damp heat (cyclic test)**.