

# CIRCUIT BREAKERS



**Ambient Compensation**

Limits or eliminates thermal derating (lowering of capabilities) caused by extreme ambient temperatures.

**Ambient Temperature**

Refers to the temperature of the air immediately surrounding the circuit breaker/protection device.

**Automatic Reset**

Device that will automatically open an overload circuit. It will also automatically close or complete the circuit after a period of time. If the overload is still present, the device will continue to cycle until either the power or the overload is removed.

**Circuit Breaker**

Device designed to open and close a circuit manually and to open the circuit automatically on a predetermined overload of current.

**Current Rating**

Designation of rating given in amperes at which the device will not trip. A specific temperature is usually assigned.

**Dielectric Strength**

The ability of an insulating material to withstand an over voltage without exceeding minimal leakage current levels or material breakdown. Specified in voltage (VAC), usually between a live metal part and ground or between open contacts of a device.

**Fuse**

A protective device using a special metal-alloyed conductor that is often notched or otherwise engineered to control the cross sectional area. A fault current will melt the narrow cross section, interrupting the flow of current.

**Fusible Link/Fail Safe**

A metallic sacrificial element within the RCCB or circuit breaker that melts and then arcs due to the joule heating of an over current. This feature ensures that a fault cannot cause the RCCB or circuit breaker to fail in the closed position.

**Interrupt Capacity**

The highest level of fault current that a circuit protective system is intended to interrupt.

Depending on qualification requirements, some devices must clear the fault, be operable afterwards, and still be capable of tripping on 200 percent overloads. While other qualified devices may have a backup device wherein the combination must successfully clear the fault while leaving the protector in a fail-safe condition (no loss of case integrity, external materials remaining unignited by gaseous emissions, and no dielectric path to grounded parts).

**Manual Reset**

Refers to breakers in which the electrical contacts remain open after a trip until someone physically closes or completes the circuit by either pushing a reset button or throwing a switch.

**Maximum Ultimate Trip (must trip)**

Current rating at which a circuit protection device will trip within a certain period of time at a specified temperature.

**Minimum Ultimate Trip (must hold)**

Current rating for which a circuit protection device will not trip for an extended period of time at a specified temperature.

**Nuisance Trips**

Those trips caused by a response to non-damaging inrush or start-up current surges, as opposed to an actual overcurrent trip.

**Overcurrent**

That current which may cause dangerous overheating.

**Overcurrent Protection**

Protection achieved by limiting the duration and magnitude of exposure to an overcurrent.

**Overload**

An electrical load or current flow greater than that which a circuit is designed to handle.

**Overload Capacity**

The highest level of overload current that devices will interrupt and remain in operable condition, capable of clearing additional overloads.

**Safety Factor**

The allowance added to the steady-state application current to ensure that the protective device selected will be more than sufficient to handle the

application without nuisance trips. Labinal Power Systems recommends a minimum safety factor of 15 percent.

**Slow-Blow Fuse**

A dual element fuse that allows for slow response to overloads (less than 10x rating) and fast response to fault currents.

**Trip-Free**

A characteristic of certain breakers that provides independence between the protection mechanism and the operating button or handle, such that a fault cannot be maintained manually (or held closed) against an overload.

**Trip Indication**

Visual sign the breaker has opened.

**Trip Curve**

Graphic displaying minimum and maximum time a breaker takes to trip for given levels of overload.

**Voltage Drop**

The voltage decreases across the protector/breaker due to the internal resistance of the device.