

## SHORT CIRCUIT RATING (SCCR)

The National Electric Code (2017) defines Short-Circuit Current Rating (article 100) as “the prospective symmetrical fault current at a normal voltage to which an apparatus or system is able to be connected without sustaining damage exceeding defined acceptance criteria.” SCCR is important to provide for safety of people and equipment during short-circuit conditions.

Article 409.110 (3) states that industrial control panels shall be marked with “short-circuit current rating of the industrial control panel based on one of the following: (a) short-circuit current rating of a listed and labeled assembly (b) short-circuit current rating established utilizing an approved method.” The fine print note refers to UL 508A, supplement SB as an example of an approved method. 430.8 require motor controllers to be marked with an SCCR.

Supplement SB in UL 508A uses a four step process to determine what a short circuit current rating for a panel should be. This process identifies the components with the lowest individual SCCR in the circuit. If there is no feeder over-current protective device (OCPD) this component is the weakest link and would determine the overall SCCR of the panel. Typically the feeder circuit will have an OCPD and we must consider its current-limiting effects on the circuit.

The feeder OCPD may limit fault currents enough so that the weakest link components are protected and the panel can have a higher overall SCCR. For more information please contact Mersen Technical Services at 978-462-6662 or [technicalservices.nby@mersen.com](mailto:technicalservices.nby@mersen.com).

## 11 REASONS FOR USING CURRENT-LIMITING FUSES:

**Arc Flash Reduction:** Current limiting fuses, when applied within their current limiting range, reduce personnel exposure to incident arc flash energy. Non fused systems may need extensive

re-engineering to reduce arc flash hazards, and improve personnel safety.

**Safety:** Overcurrent protective devices which operate are often reset without first investigating to find the cause of opening. Electromechanical devices which have opened high level faults may not have the reserve capacity to open a 2nd or 3rd fault safely. When a fuse opens it is replaced with a new fuse, thus protection is not degraded by previous faults.

**Reliability:** No moving parts to wear or become contaminated by dust, oil or corrosion.

**Long Life:** The speed of response of a fuse will not change or slow down as the fuse ages. In other words, the fuse’s ability to provide protection is not adversely affected by the passage of time.

**Minimal Maintenance:** Fuses do not require periodic recalibration as do electromechanical overcurrent protective devices.

**Component Protection:** The current limiting action of a fuse minimizes or eliminates component damage.

**North American Standards:** Tri-national Standards specify fuse performance and maximum allowable fuse  $I_p$  and  $I^2t$  let-thru values.

**Selectivity:** Fuses may be easily coordinated to provide selectivity under both overload and short circuit conditions.

**High Interrupting Rating:** You don’t pay a premium for high interrupting capacity.

Most low voltage current limiting fuses have a 200,000 ampere interrupting rating.

**Cost Effective:** Fuses are generally the most cost effective means of providing overcurrent protection. This is especially true where high fault currents exist or where small components need protection.

**Extended Protection:** Devices with low interrupting ratings are often rendered obsolete by service upgrades or increases in available fault current. Non-fused systems may need expensive system upgrades to maintain system safety.