

# Circuit Protection Checklist

Whether you're an OEM or just need replacement parts, you need to ask yourself if the panel or system you are designing/maintaining is properly protected against overload, short-circuit and surge events. Newark element 14 offers an exceptional breadth of Eaton circuit protection products, including the Bussmann® series of fusible and surge solutions.

## OEM (ORIGINAL EQUIPMENT MANUFACTURERS)

- Check machines and electrical panels that use safety switches, main circuit breakers or fused disconnects to protect against short-circuits, a National Electrical Code® (NEC®) requirement

## MRO

- Check your fuse and molded case circuit breaker inventory in electrical distribution equipment (switchboards, panel boards and motor control centers)
- Consolidate and enhance the protection offered by your fuse inventory by leveraging Eaton's Bussmann series Low-Peak™ Upgrade program and reduce the SKUs you stock
- Commission an arc flash study, electrical system review and personnel safety training for OSHA compliance

## ELECTRONIC CIRCUITS AND PRINTED CIRCUIT BOARDS (PCBS)

- Does my printed circuit board need to be protected? (Review requirement of National Electrical Code® (NEC®) – power circuit versus control circuit.)
- Where should I locate fuses? Do I need to access fuses? (Place close to a door for easy access.)
- Do I want only certified technicians to replace fuses?
- What is circuit voltage – AC or DC?
- What are downstream control or printed circuit board power requirements?
- Am I selecting the right fuse (fast-acting or time-delay, amps, volts) for primary and secondary protection, and do they have the required agency certifications for my markets?
- How should the fuse be mounted and does it need to be replaceable? (surface mount, block, holder or PCB fuseclips?)
- Do I need surge protection – for the power and data signals?
- Do I need real time clock (RTC) backup, or peak power management?
- Do I need inductors and transformers with performance characteristics to meet EMI shielding, elevated operating temperature conditions, space and other design constraints?

## INDUSTRIAL CONTROL PANELS

- Does my industrial control panel need to be protected – main circuit breaker or fuse?
  - Check NEC® requirement (volts AC/DC) – power circuit versus control circuit
  - What is the role of safety switches or an external main disconnect?
  - What is the UL® 508A equipment SCCR requirement for point of installation? (Use Eaton's Bussmann® series FC² Available Fault Current calculator mobile app tool for point of installation calculations and equipment labeling.)
  - What equipment SCCR do I need to comply with NEC and OSHA requirements? (Use Eaton's Bussmann® series OSCAR™ online SCCR Compliance Application.)
  - Authenticate your molded case circuit breakers (Use Eaton's Circuit Breaker Authentication tool).
- Where should I locate or apply circuit breakers and/or fuses?
  - Motor circuit protection (NEC requirement)
  - Feeder circuit breakers (NEC requirement)
  - Protect critical or expensive components – PLC, instruments
  - Operator Interface – UL® 1077 miniature circuit breakers, fuse information

- Do you need to access fuses? (Place close to a door for easy access.)
- What is the supply voltage – AC or DC?
- What are the downstream circuit current requirements for motors (full load amps, FLA)?
- Calculate the correct circuit breaker or fuse protection (amps)
- Which circuit breaker or fuse should I specify in my UL 508A control panel? (Use Eaton's Bussmann® series OSCAR SCCR Compliance Application.)
  - Review motor protection – circuit breaker, fuse, manual motor protector, UL 489 miniature circuit breaker
  - Size and shape – Class R, J, or CC, CF fuse – rejection type
  - Other considerations
- Which fuse mounting should I choose – blocks or holders?
- Do I need finger-safe components?
- Which disconnect or accessories should I choose?
- Do I need a power distribution block? Can I use a Class J power distribution fuse block to increase SCCR and reduce component count and overall cost?
- Which disconnect or accessories should I choose?
- Review communication for control panel trip (Ethernet signal and other electromechanical – pilot light, stack light, disconnect handle position)
- Does my control panel need surge protection? Type 1 or Type 2, UL Listed or Recognized for power and control voltage and UL Listed 497B data signal for coaxial cable, RJ45 Ethernet, or twisted pair?

## SPECIAL NOTE: SWITCHBOARDS, PANELBOARDS AND MCCS

Check switchboards, panelboards, motor control centers, switchgear and feeder breakers that distribute electricity safely throughout the plant, data center and office environment. Use Eaton's mobile and online tools to help calculate available fault current levels and equipment SCCR for meeting NEC and OSHA requirements. Determine if high capacity surge protective devices are needed to protect electrical distribution systems.

## SPECIAL NOTE: MISSION CRITICAL EQUIPMENT

Protect mission critical equipment against short-circuits and overloads with circuit breakers – miniature and supplementary – fuses – supplementary, small dimension, Class CC and high-speed fuses – and uninterruptable power supplies (UPS). Protect power, control voltage and data signals with surge protective devices. Selective coordination tools can help increase power reliability and minimize downtime.

## Short Circuit Current Rating Checklist

Apply this sticker inside your control panel for easy reference.



### HOW MUCH SCCR PROTECTION DO I NEED?

Download Eaton's Bussmann® series free FC² app to calculate fault current, both three-phase or single-phase, and provide a label to meet panel marking requirements.

### WHICH PRODUCTS HAVE THE SCCR I NEED?

Link to the Eaton SCCR Protection Suite, an online selector guide that identifies which products can help you achieve an optimal equipment short-circuit current rating.  
<http://sccr.eaton.com>

### WHAT IS THE SCCR OF MY PANEL?

Link to the Bussmann series OSCAR SCCR Compliance Application to determine equipment SCCR and generate documentation. It also identifies the "weak links" limiting SCCR level.  
<http://oscar.bussmann.com/login.aspx>

### AUTHENTICATE YOUR MOLDED CASE CIRCUIT BREAKERS WITH THE CIRCUIT BREAKER AUTHENTICATION (CBA) TOOL



Call 1-800-463-9275 to order.



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