

AIC Ratings for Panels and Breakers

Power companies have increased the requirements for A.I.C. rated equipment. As such, we expect to see a dramatic cost increase for panels and breakers for all modular buildings.

AIC RATINGS

Electrical distribution system components for modular buildings such as circuit breakers, panel boards and fuses are assigned fault amperage interrupting capacities, or AIC ratings. These are mechanical ratings that assess the modular buildings device's ability to maintain integrity if a fault condition occurs downstream of the protection device. For example, a modular building's 10 kAIC-rated circuit breaker can safely interrupt 10,000 amps of fault current without blowing apart or internally short circuiting. A modular building's 65 kAIC switchboard must mechanically sustain 65,000 amps of fault current flowing through the switchboard and remain undamaged. These fault current ratings can be determined by consulting the manufacturer's data sheet and are most often listed on the protective device.

AIC & SCCR RATINGS AND AN SPD

While no credible manufacturer would deliberately design a product to fail, the potential for malfunction exists in all electrical devices in modular buildings. It is critical that failures, regardless of occurrence frequency, minimize damage and present no risk of personal injury. The purpose of coordinated overcurrent protection in an SPD is to ensure that in the event of a fault, the device can safely and promptly remove itself from the electrical distribution system. The SPD is concerned only with faults produced within the suppressor and not those that may occur elsewhere in the distribution system.

While some SPD manufacturers incorporate fault current protection within their devices (e.g., fuses), care should be taken to confirm these important factors:

- proper coordination of the SPD with the available fault current of the SPD installation location
- proper product performance testing
- compliance with all applicable UL requirements

For products manufactured without inherent fault current protection, such protection should still be provided. This can be accomplished by installing the devices via an external fusing system or circuit breaker. By incorporating coordinated fault current protection, the SPD will be removed from the rest of the distribution system if the suppressor experiences a fault condition or failure.

THE IMPORTANCE OF OVERCURRENT PROTECTION

Without overcurrent protection in place to take the failed protection device off-line, the fault will seek another upstream overcurrent device to clear. Often the alternate is the modular building's main breaker or a branch panel board or service entrance switchboard, depending upon the location of the surge protective device. Properly coordinated overcurrent protection allows the SPD to remove itself from the modular building's distribution system under all fault conditions without catastrophic consequences to the device or other connected loads.

While often times confusing, the selection of a surge protective device must include a basic understanding of the differences between surge current and fault current. Also essential to the selection process is knowledge about the application of an SPD, the intended installation environment and the device's operating characteristics. Understanding these informational building blocks will help ensure a well-designed protection system in modular buildings.

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