

# Protect with selective coordination





## Safe, reliable and cost-effective power distribution

Commercial, healthcare and industrial facilities require reliable power distribution without compromising the safety of people or equipment, which is often driven by code requirements. We understand that this can be a difficult result to achieve.

Eaton offers the broadest circuit protection and electrical safety solutions in the industry that enable customers to achieve code compliance more effectively and economically than our competitors. What's more, we offer technical expertise and a support structure to help achieve project goals, whether facing new construction, expansion or renovation.

Our comprehensive portfolio of overcurrent and overvoltage circuit protection products offers solutions that not only enhance safety and reliability, but also help ensure compliance with code requirements. Additionally, many of our products boast compact sizes, helping to reduce the equipment footprint and drive down costs. Our team of application engineers and sales engineers can recommend solutions for reducing footprint and saving installation time, all while providing the industry's best protection. They can also guide you in the selection of products to help meet all of your project's requirements.

# Delivering the level of protection you need

With safe and reliable power distribution top priority, selectivity has always been a key goal for power system designers. But determining the type of power distribution system that will meet code and project requirements can be a difficult process.

Historically, the level of selectivity desired for a project was the choice of the system designer. However, the most recent edition of the National Electric Code® (NEC), published in 2014, specifically defines selective coordination in Article 100.

Selective coordination applies for the full range of overcurrents on the system and the full range of overcurrent device interrupting times associated with those overcurrents.

Selective coordination is required for systems related to life safety as defined by:

- Elevators – 620.62
- Critical Operations Data Systems – 645.27
- Multi-building Campus-Style Complexes (Fire Pumps) – 695.3(C)(3)
- Emergency Systems – 700.28
- Legally Required Standby Systems – 701.27
- Critical Operations Power Systems (COPS) – 708.54

The 2014 NEC® also provides minimum requirements for coordination in healthcare essential electrical systems, as outlined in Essential Electrical Systems for Hospitals Coordination – 517.30. Coordination applies to circuit protection devices for any fault time extending beyond 0.1 seconds.

These revisions from previous editions not only clarify the terms, but also set specific standards for system safety and reliability.

Local and national code requirements, as well as customer preference for system characteristics, ultimately determine the level of coordination needed. Regardless of the level chosen, Eaton has the right products and solutions to solve them competitively.

Visit [www.eaton.com/selectivecoordination](http://www.eaton.com/selectivecoordination) for more information on how Eaton can deliver the level of protection you need.

## Understanding selective coordination and coordination

**Selective coordination** is achieved when an overcurrent on a circuit is interrupted and only the closest upstream device opens such that only the section of the electrical system with a problem is taken offline. Selective coordination applies for the full range of overcurrents on the system and the full range of interrupting times associated with those overcurrents.

**Coordination** is required for overcurrent protective devices for Essential Electrical Systems in healthcare facilities. The overcurrent protective devices must be coordinated for any fault duration extending beyond 0.1 seconds. Essential Electrical Systems are comprised of life safety branch, critical branch, and equipment branch.

## Portfolio spotlight: Solutions that exceed expectations

### Circuit Protection

- Finger-safe Bussmann series CUBEFuses™ reduce footprint up to 70%
- Bussmann series Low-Peak™ fuses offer superior current limitation to help increase short-circuit current ratings
- Eaton molded-case circuit breakers minimize downtime and offer advanced safety features
- 310+ Trip Unit enhances coordination, offering features such as an arc reduction maintenance switch



### Arc Flash Reduction Maintenance System

- Fastest arc flash energy reduction technology for personnel safety
- Remotely enabled for worker safety with remote indication for situational notification
- Code mandated in NEC® Section 240.87 for Arc Energy Reduction for circuit breakers 1200A and above
- Available in molded case circuit breakers from 55A-2500A and air circuit breakers up to 6300A
- 24Vdc circuit allows for manual or interlock switch connection for simple activation



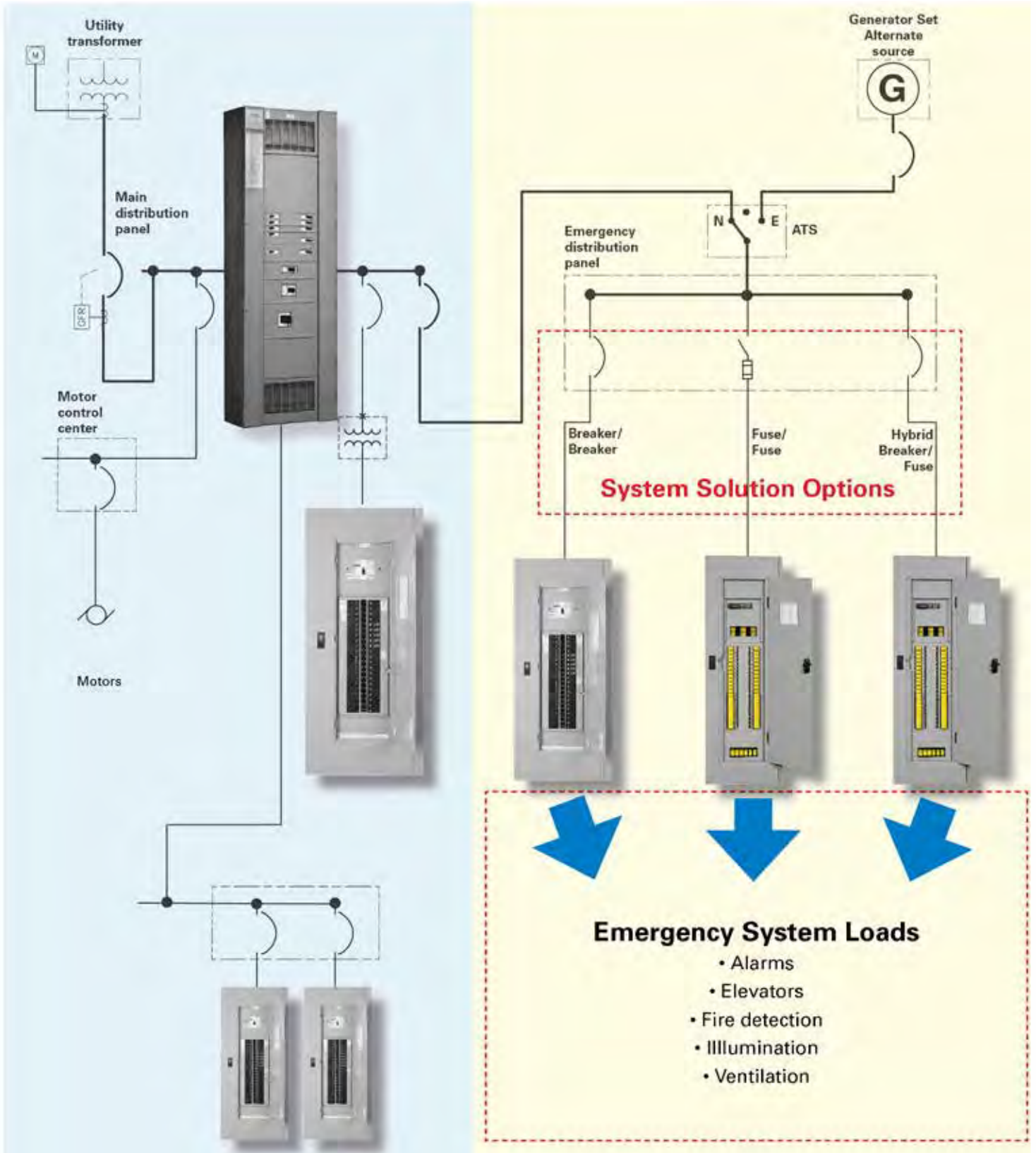
### Quik-Spec™ Coordination Panels

- Ease of selective coordination using published circuit breaker/fuse and fuse/fuse ratio tables
- Compact footprint up to 40% smaller than other fusible solutions
- Safety-focused design that includes finger-safe branches, branch fuse interlock and fuse ampacity rejection



## Normal source

## Emergency source



The diagram above shows three options for an emergency system (fully fused, all circuit breakers or fuse and circuit breaker hybrid). These same options are available for other critical loads such as legally required standby systems or critical operations power systems.

# Leadership in circuit protection

When it comes to circuit protection, only Eaton can provide a complete portfolio of solutions for virtually every application. Eaton delivers:

- The most diverse solutions to mitigate arc flash energy for personnel and equipment protection.
- The smallest and most cost effective solutions to meet selective coordination requirements.
- The most experienced, time-tested solutions to meet national and local code requirements.
- The most tested circuit breaker/circuit breaker, circuit breaker/fuse, and fuse/fuse selective coordination combinations.
- The only one-stop shop to solve your design challenges using our expertise and an unmatched portfolio.

Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority.

**At Eaton, that's how we're powering business worldwide.**

## Case study

A U.S. customer for a municipal building project needed to achieve selective coordination in order to comply with NEC® requirements, and wanted to do so in a cost-effective manner.

Because Eaton has more than 100 years of experience with power distribution applications and a deep understanding of the NEC®, the customer reached out to a local Eaton application engineer for support in efficiently designing the building's power distribution system.

Additionally, our team was able to offer a portfolio of both component and assembly products, as well as the support to ensure the project was designed, installed and commissioned quickly and cost efficiently.

After working closely with our team, the customer now has a power distribution system that utilizes both Eaton circuit breakers and Busmann series fuses (a hybrid system), that achieves selective coordination and provides safer and more reliable power.



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