2020 & 2023 NEC Impact to the Market

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The 2020 and 2023 editions of the National Electric Code (NEC) section 210.8 (B) have expanded GFCI regulations in areas with sink and permanent provisions for food preparation and cooking, directly affecting commercial kitchens. The updated code covers GFCI protection for personnel in "other than dwelling" units and focuses on GFCI protection for applicable kitchen appliances powered by 3-phase power (e.g. line to line, < 250 VAC, 208 VAC typical). However, ideal GFCI solution would also be compatible with 2-pole (e.g. line to line, 240 VAC).

Both 2020 and 2023 NEC have increased GFCI requirements in more locations. What this means to architects, designers, electricians, general contractors, or program managers is a year over year increase in demand for breakers with GFCI protection. Will manufacturers of breakers continue to struggle servicing the demand for 15 A to 100 A, 2 or 3 pole, GFCI MCB's?

Summary of 2023 Code Changes

2023 Edition NEC article 210.8 (B) related to spaces "other than dwellings" has been rewritten to clarify and expand GFCI requirements.

a) The word "Kitchens" was added as article 210.8(B)(2) and requires all single phase (50A or less) or 3 phase (100A or less) plug-in-cord-connected appliances to have GFCI protection.

b) A new addition, article 210.8(B)(4), covers buffet serving areas, commonly referred to as break areas within commercial occupancy. The effected spaces include areas with provisions for food service. beverage service, or cooking. Any receptacles and special appliances within these areas shall be GFCI protected.

c) The specific appliances list was updated (article 210.8(D)(8) through (12)) for appliances that are commonly installed as hardwired outlets, 60A or less. Shock hazards exist whether appliances are energized from outlet (hardwired) or receptacle (cord and plug).

d) A new code (Stationary appliances, article 210.8(B)(7)) revised the code to include stationary appliances located within 1.8 m (6 ft) of the top inside edge of a sink shall have GFCI protection.

A 5 mA Ground Fault Protection System

Many GFCI solutions exist for low amperage (15/20A) single-phase branch circuits, often in the form of an "all-in-one" GFCI Circuit Breaker. The situation changes when moving to three-phase power. GFCI protection for a three-phase branch circuit typically requires a shunt trip circuit breaker combined with a ground fault relay. This is especially true when the amperage is 60A or higher, where a shunt trip circuit breaker with ground fault relay is the only solution.

A 5 mA ground fault protection system includes a breaker with shunt trip option and an AC ground fault sensor. All NK Technologies ground fault relays have numerous options to ensure compatibility with any shunt trip breaker (MCB or MCCB), relay or contactor. NK Technologies ground fault sensors are compact in size and easily installed within the panelboard. A shunt trip breaker with ground fault sensor will protect 15 A to 100+ A branch circuits from both overload current and ground fault currents exceeding 5 mA.

When combined with a shunt trip breaker, the AGU Series is a cost effective, compact ground fault protection system that is easy to install and set up, and is compatible across all OEM panel boards. The AGU Series ground fault sensor can service the NEC GFCI requirements for up to 50 A single phase (120 VAC to 240 VAC) or up to 100 A three-phase (208 VAC or 240 VAC) branch circuit. For situations when the wire bundle is larger than 0.75" diameter, use the AGL Series instead.

5 mA Ground Fault Solutions for Single or 3-Phase up to 100 Amps

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NK Technologies

APPLICATION NOTE

5 mA Ground Fault Circuit Interrupter Solutions for Single or Three Phase Circuits up to 100 Amps

Cost Effective, Readily Available, Designed and Assembled in the USA

NK Technologies 5 mA Ground Fault Circuit Interrupter Solution Benefits

- Meets intent of 2020 & 2023 NEC 210.8 defined term ground fault circuit interrupter.
- Compact relay size allows for multiple mounting opportunities anywhere from the breaker to the appliance.
- Inventory and unrivaled in-house expertise within the USA.
- When you call, chat or email our application support team will answer promptly.
- Industry leading 5-year warranty.

Resources & Downloads

How to Select a Ground Fault Relay »»

Choose a Ground Fault in 4 Easy Steps »»

Ground Fault Relay Part Number Selection »»

Shunt Trip Breaker Selection »»

2020 & 2023 NEC Impact to the Market »»

What is a 5 mA Ground Fault Interrupter Solution? »»

Calculating a Wire Size Bundle »»

How to Wire a Shunt Trip »»

Frequently Asked Questions »»

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