Data Bulletin

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National Electrical Code® (NEC®) 2008: Removal of 42 Circuit Limitation for Lighting and Appliance Panelboards

Class 1600

Retain for future use.

Introduction

The National Electrical Code® (NEC®) 2008 edition no longer distinguishes between lighting and appliance panelboards and power panelboards. In prior NEC editions, panelboards were required to have no more than 42 overcurrent protective devices (OCPDs) when used for lighting and appliance branch circuits (as defined in the 2008 NEC edition).

This white paper covers the following topics to assist you with future panelboard installations:

- Definition of the 42 Circuit Rule
- Application Impact
- Applications Still Requiring the 42 Circuit Rule
- 2008 NEC Panelboard Changes
- 2008 NEC Adoption and Enforcement Reminder

Definition of the 42 Circuit Rule

The 2005 NEC edition, Article 408 defines a lighting and appliance branch-circuit panelboard as

> ". . . *having more than 10 percent of its overcurrent devices protecting lighting and appliance branch circuits. Such circuits have a connection to the neutral of the panelboard and overcurrent protection of 30 A or less in one or more conductors."*

The scope of application areas for lighting and appliance panelboards include residential, commercial, retail, and industrial (depending on the type of loads connected). The maximum number of 42 overcurrent protective devices in one lighting and appliance branch circuit panelboard is specified in NEC 408.35.

Article 408 also defined "power panelboard" as a panelboard having 10 percent or fewer of its overcurrent devices protecting lighting and appliance branch circuits. Power panelboards are allowed more than 42 branch circuits.

Application Impact

The elimination of the 42 circuit rule will be reflected in the product standards for panelboards, allowing manufacturers to build 42+ circuit panelboards for lighting and appliance branch circuit applications.

Installations that previously used a two section panel due to the 42 circuit rule may be able to install all of the necessary overcurrent devices in a single panel. This may benefit those applications where the number of circuits required were slightly more than the 42 circuits installed.

There are a number of factors to think about when considering larger panels with more overcurrent devices:

1. What is the handle height rule?

   The maximum height is 6’7” with no lower limit.

2. Will a larger panel be more efficient?

   The following considerations will drive the practical maximum number of overcurrent protective devices in a single panelboard:

   — Size and weight of panelboard
   — Ability of panelboard to effectively handle larger quantities of wire
   — Knockouts in panelboard: there are a finite number of knockouts that can be placed in a panelboard enclosure endwall that may restrict the number of circuits
   — Maintenance of installation: if all of the circuits are in the same panel, OSHA and NFPA 70E will require the entire panel to be de-energized before doing maintenance, which may leave more of your facility in the dark than would be the case if there were additional panels

Applications that Still Require the 42 Circuit Rule

Areas under the 2005 NEC Edition

The 42 circuit rule will continue to apply for areas under adoption of the 2005 or earlier NEC editions. Many states will not make the 2008 NEC adoptions effective until well into 2008 or later.

Panelboard Fed by Two OCPDs

2008 NEC article 408.36 makes an exception to the general rule that a panelboard must be protected by a single OCPD not exceeding the rating of the panelboard. The exception allows two OCPDs as long as the sum of their ratings does not exceed the panelboard rating and the panelboard has a maximum capability of 42 overcurrent protective devices. In this type of application, the 42 circuit rule still applies.

Information Technology (IT) Rooms

Article 645.17 retains the 42 circuit restriction for panelboards used within Power Distribution Units for IT rooms. However, there is not a restriction preventing a lighting panelboard with more than 42 circuits that is installed in accordance with Article 408 in the 2008 NEC edition.

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2008 NEC Panelboard Changes

1. The distinction between “lighting and appliance panelboards” and “power panelboards” has been eliminated, along with the definitions of the terms.
2. All panelboards are to be sized “not smaller” than the feeder. This is simply a clarification of previous 2005 NEC requirement.
3. All panelboards are to be protected “at not greater than” their rating by a single overcurrent protective device within or ahead of the panelboard.

Exceptions

The following three exceptions waive the single overcurrent protective device requirements.

Exception No. 1:

Individual protection shall not be required for a panelboard used as service equipment with multiple disconnecting means in accordance with 230.71. In panelboards protected by three or more main circuit breakers or sets of fuses, the circuit breakers or sets of fuses shall not supply a second bus structure within the same panelboard assembly.

Exception No. 2:

Individual protection is not required for a panelboard protected on its supply side by two main circuit breakers or two sets of fuses having a combined rating “not greater than” that of the panelboard. A panelboard constructed or wired under this construction should not contain more than 42 overcurrent protective devices. For the purposes of determining the maximum of 42 overcurrent protective devices, a 2-pole or a 3-pole circuit breaker shall be considered as two or three overcurrent protective devices, respectively.

Exception No. 3:

For existing panelboards, individual protection shall not be required for a panelboard used as service equipment for an individual residential occupancy.

4. NEC 408.54 requires panelboards to be provided with physical means to prevent the installation of more overcurrent protective devices than the number for which the panelboard was designed, rated, and listed.

2008 NEC Adoption and Enforcement Reminder

The NEC publications are adopted by a state or local jurisdiction. The fact that the 2008 NEC edition has now eliminated the circuit limitation restriction on panelboards does not mean it will be immediately recognized across the country. Before using this new permission in the 2008 NEC edition for panelboards, consult the enforced codes in your area for your construction project.

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