



National Fire Protection Association

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WORKING DRAFT OF NEC CODE-MAKING PANEL 10 MEETING OUTPUT

**CONTENT NOT FINAL – SUBJECT TO REVISION
PRIOR TO LETTER BALLOT AND PUBLICATION OF
FIRST DRAFT REPORT**

Document: National Electrical Code®

Revision Cycle: A2025

Meeting Dates: January 24 – 26, 2024

Panel Activity: Input Stage

This is a working draft, prepared by NFPA staff, to record the output generated at the Code-Making Panel 10 First Draft Meeting. It includes draft copies of the First Revisions and any Global Revisions.

It is being made available to Panel members for the purpose of facilitating early review, particularly for those Panel members who may be seeking input from their respective organizations in preparation for the First Draft Ballot.

**First Revision No. 8995-NFPA 70-2024 [Global Input]**

[See attached word file "70_NEC_CMP10_A2025NEC_Article215_Global_FR_8995" for reorganization of Article 215]

Relocate 215.2 to 215.4

Relocate 215.3 to 215.5

Relocate 215.4 to 215.14

Relocate 215.5 to 215.13

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70_NEC_CMP10_A2025NEC_Article215_Global_FR_8995.docx	For staff use only	
70_NEC_CMP10_A2025NEC_Article215_Global_FR_8995.docx	For prod use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 15:35:43 EST 2024

Committee Statement

Committee Statement: These sections are renumbered to comply with NEC Style Manual section 2.2.1.

Response Message: FR-8995-NFPA 70-2024

~~215.2~~ 215.4 Minimum Rating and Size. [Move 215.2 to 215.4]

(A) General.

Feeder conductors shall have an ampacity not less than the larger of 215.2(A)(1) or (A)(2) and shall comply with 110.14(C).

(1) Continuous and Noncontinuous Loads.

Where a feeder supplies continuous loads or any combination of continuous and noncontinuous loads, the minimum feeder conductor size shall have an ampacity not less than the noncontinuous load plus 125 percent of the continuous load.

Exception No. 1: If the assembly, including the overcurrent devices protecting the feeder(s), is listed for operation at 100 percent of its rating, the ampacity of the feeder conductors shall be permitted to be not less than the sum of the continuous load plus the noncontinuous load.

Exception No. 2: Where a portion of a feeder is connected at both its supply and load ends to separately installed pressure connections as covered in 110.14(C)(2), it shall be permitted to have an ampacity not less than the sum of the continuous load plus the noncontinuous load. No portion of a feeder installed under this exception shall extend into an enclosure containing either the feeder supply or the feeder load terminations, as covered in 110.14(C)(1).

Exception No. 3: Grounded conductors that are not connected to an overcurrent device shall be permitted to be sized at 100 percent of the continuous and noncontinuous load.

(2) Ampacity Adjustment or Correction Factors.

The minimum feeder conductor size shall have an ampacity not less than the maximum load to be served after the application of any adjustment or correction factors in accordance with 310.14.

Informational Note No. 1: See Informative Annex D for Examples D1 through D11.

Informational Note No. 2: Conductors for feeders, as defined in Article 100, sized to prevent a voltage drop exceeding 3 percent at the farthest outlet of power, heating, and lighting loads, or combinations of such loads, and where the maximum total voltage drop on both feeders and branch circuits to the farthest outlet does not exceed 5 percent, will provide reasonable efficiency of operation.

Informational Note No. 3: See 210.19, Informational Note for voltage drop for branch circuits.

(B) Grounded Conductor.

The size of the feeder circuit grounded conductor shall not be smaller than the equipment grounding conductor size required by 250.122, except that 250.122(F) shall not apply where grounded conductors are run in parallel.

Additional minimum sizes shall be as specified in 215.2(C) under the conditions stipulated.

(C) Ampacity Relative to Service Conductors.

The feeder conductor ampacity shall not be less than that of the service conductors where the feeder conductors carry the total load supplied by service conductors with an ampacity of 55 amperes or less.

~~215.3~~ 215.5 Overcurrent Protection. [Move 215.3 to 215.5]

Feeders shall be protected against overcurrent in accordance with Part I of Article 240. Where a feeder supplies continuous loads or any combination of continuous and noncontinuous loads, the rating of the overcurrent device shall not be less than the noncontinuous load plus 125 percent of the continuous load.

Exception: Where the assembly, including the overcurrent devices protecting the feeder(s), is listed for operation at 100 percent of its rating, the ampere rating of the overcurrent device shall be permitted to be not less than the sum of the continuous load plus the noncontinuous load.

~~215.4~~ 215.14 Feeders with Common Neutral Conductor. [Move 215.4 to 215.14]

(A) Feeders with Common Neutral.

Up to three sets of 3-wire feeders or two sets of 4-wire or 5-wire feeders shall be permitted to utilize a common neutral.

(B) In Metal Raceway or Enclosure.

Where installed in a metal raceway or other metal enclosure, all conductors of all feeders using a common neutral conductor shall be enclosed within the same raceway or other enclosure as required in 300.20.

~~215.5~~ 215.13 Diagrams of Feeders. [Move 215.5 to 215.13]

If required by the authority having jurisdiction, a diagram showing feeder details shall be provided prior to the installation of the feeders. Such a diagram shall show the area in square feet of the building or other structure supplied by each feeder, the total calculated load before applying demand factors, the demand factors used, the calculated load after applying demand factors, and the size and type of conductors to be used.

**First Revision No. 8952-NFPA 70-2024 [Detail]****[Existing 408.3(F) Moving to New 408.10(F)]****(F) Switchboard, Switchgear, or Panelboard Identification.**

A caution sign(s) or a label(s) provided in accordance with 408.3(F)(1) through (F)(5) shall comply with 110.21(B).

(1) High-Leg Identification.

A switchboard, switchgear, or panelboard containing a 4-wire, delta-connected system where the midpoint of one phase winding is grounded shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

.

CAUTION _____ PHASE HAS _____ VOLTS TO GROUND

(2) Ungrounded AC Systems.

A switchboard, switchgear, or panelboard containing an ungrounded ac electrical system as permitted in 250.21 shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

.

CAUTION UNGROUNDED SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS

(3) High-Impedance Grounded Neutral AC System.

A switchboard, switchgear, or panelboard containing a high-impedance grounded neutral ac system in accordance with 250.36 shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

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CAUTION: HIGH-IMPEDANCE GROUNDED NEUTRAL AC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS AND MAY OPERATE — _____ VOLTS TO GROUND FOR INDEFINITE PERIODS UNDER FAULT CONDITIONS

(4) Ungrounded DC Systems.

A switchboard, switchgear, or panelboard containing an ungrounded dc electrical system in accordance with 250.169 shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION: UNGROUNDED DC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS

(5) Resistively Grounded DC Systems.

A switchboard, switchgear, or panelboard containing a resistive connection between current-carrying conductors and the grounding system to stabilize voltage to ground shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION: DC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS AND MAY OPERATE — _____ VOLTS TO GROUND FOR INDEFINITE PERIODS UNDER FAULT CONDITIONS

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-8952_408.3_F_.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10
Submittal Date: Wed Jan 24 13:38:54 EST 2024

Committee Statement

Committee Statement: The added language increases clarity of where field marking can be added for enclosures. However, the word 'enclosure' after the word 'panelboard' in the proposed changes were not accepted since such language is redundant.

Response Message: FR-8952-NFPA 70-2024

Public Input No. 237-NFPA 70-2023 [Section No. 408.3(F)]

[Existing 408.3(F) Moving to New 408.10(F)]

(F) Switchboard, Switchgear, or Panelboard Identification.

A caution sign(s) or a label(s) provided in accordance with 408.3(F)(1) through (F)(5) shall comply with 110.21(B).

(1) High-Leg Identification.

A switchboard, switchgear, or panelboard containing a 4-wire, delta-connected system where the midpoint of one phase winding is grounded shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION _____ PHASE HAS _____ VOLTS TO GROUND

(2) Ungrounded AC Systems.

A switchboard, switchgear, or panelboard containing an ungrounded ac electrical system as permitted in 250.21 shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION UNGROUNDED SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS

(3) High-Impedance Grounded Neutral AC System.

A switchboard, switchgear, or panelboard containing a high-impedance grounded neutral ac system in accordance with 250.36 shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION: HIGH-IMPEDANCE GROUNDED NEUTRAL AC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS AND MAY OPERATE — _____ VOLTS TO GROUND FOR INDEFINITE PERIODS UNDER FAULT CONDITIONS

(4) Ungrounded DC Systems.

A switchboard, switchgear, or panelboard containing an ungrounded dc electrical system in accordance with 250.169 shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION: UNGROUNDED DC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS

(5) Resistively Grounded DC Systems.

A switchboard, switchgear, or panelboard containing a resistive connection between current-carrying conductors and the grounding system to stabilize voltage to ground shall be legibly and permanently field marked in a location where visible while servicing the equipment as follows:

CAUTION: DC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS AND MAY OPERATE — _____ VOLTS TO GROUND FOR INDEFINITE PERIODS UNDER FAULT CONDITIONS



First Revision No. 9070-NFPA 70-2024 [Detail]

[225.19(C)]

[See attached word file "70_NEC_CMP10_A2025NEC_225.19(C)_FR_9070" for clarification of proposed revision]

(C) Horizontal Clearances.

Horizontal clearances from overhead spans of open conductors to buildings shall not be less than 900 mm (3 ft).

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70_NEC_CMP10_A2025NEC_225.19_C_FR_9070.docx	For staff use only	
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Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 09:28:56 EST 2024

Committee Statement

Committee Statement: The language is revised to clarify that the clearance is measured horizontally from the building to the conductors.

Response Message: FR-9070-NFPA 70-2024

Public Input No. 853-NFPA 70-2023 [Section No. 225.19(C)]

[225.19(C)]

(C) Horizontal Clearances.

| Horizontal Clearances from overhead spans of open conductors to buildings shall not be less than 900 mm (3 ft).

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**First Revision No. 9102-NFPA 70-2024 [Detail]****230.2 Listing Requirements****All service equipment shall be listed or field evaluated.****Supplemental Information**

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9102_230.2.docx	For Staff Use	

Submitter Information Verification**Committee:** NEC-P10**Submittal Date:** Thu Jan 25 11:01:51 EST 2024**Committee Statement****Committee Statement:** The requirement is relocated from 230.66(A) for compliance with the NEC Style Manual section 2.2.1.**Response Message:** FR-9102-NFPA 70-2024Public Input No. 3679-NFPA 70-2023 [New Section after 230.2]

[Move from 230.66(A) to New 230.2]

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230.2 Listing Requirements

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All service equipment shall be listed or field evaluated.

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**First Revision No. 8851-NFPA 70-2024 [Definition: Feeder.]****Feeder.**

All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent protective device. (CMP-10)

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 08:59:09 EST 2024

Committee Statement

Committee Statement: The definition of feeder has been modified to align with the defined term branch-circuit overcurrent protective device.

Response Message: FR-8851-NFPA 70-2024

Public Input No. 745-NFPA 70-2023 [Definition: Feeder.]



First Revision No. 8853-NFPA 70-2024 [Definition: Industrial Installation, Supervised. (Supervise...]

Industrial Installation, Supervised. (Supervised Industrial Installation)

The industrial portions of a facility where all of the following conditions are met:

- (1) Conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system.
- (2) The premises wiring system has 2500 kVA or greater of load used in industrial process(es), manufacturing activities, or both, as calculated in accordance with Article 220, Parts II, III, IV, or V.
- (3) The premises has at least one service or feeder that is more than 150 volts to ground and more than 300 volts phase-to-phase.

This definition excludes installations in buildings used by the industrial facility for offices, warehouses, garages, machine shops, and recreational facilities that are not an integral part of the industrial plant, substation, or control center. (240) (CMP-10)

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 09:03:43 EST 2024

Committee Statement

Committee Statement: Per the NEC Style Manual section 4.1.4, referencing a full article is not permitted. The definition has been revised to comply with the Style Manual.

Response Message: FR-8853-NFPA 70-2024

Public Input No. 991-NFPA 70-2023 [Definition: Industrial Installation, Supervised. (Supervise...]



First Revision No. 8857-NFPA 70-2024 [Definition: Overcurrent Protective Device, Current-Limiting...]

Overcurrent Protective Device, Current-Limiting. (Current-Limiting Overcurrent Protective Device)

A device that, when interrupting currents in its current-limiting range, reduces

As applied to overcurrent protection devices)

The ability to reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance, when interrupting currents in its current-limiting range. (240)(CMP-10)

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-8857_Overcurrent_Protective_Device_def.docx		

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 09:07:47 EST 2024

Committee Statement

Committee Statement: The term “current-limiting overcurrent protective device” was revised to “current-limiting” as it is used throughout the Code in the same context without the “overcurrent protective device” portion. The application of the term in relation to overcurrent protection devices is now stated in a parenthetical. Additionally, the definition was revised editorially to be grammatically correct.

Response Message: FR-8857-NFPA 70-2024

[Public Input No. 4042-NFPA 70-2023 \[Definition: Overcurrent Protective Device, Current-Limiting...\]](#)

[Public Input No. 4273-NFPA 70-2023 \[Definition: Overcurrent Protective Device, Current-Limiting...\]](#)

[Public Input No. 4040-NFPA 70-2023 \[Definition: Overcurrent Protective Device, Current-Limiting...\]](#)

Overcurrent Protective Device, Current-Limiting. (Current Limiting Overcurrent Protective DeviceAs applied to overcurrent protection devices)

A device that, when interrupting currents in its current limiting range, ~~reduces~~The ability to reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance. ~~(240), when interrupting currents in its current-limiting range.~~ (CMP-10)

Commented [SB1]: Move definition before existing Cutout Box.

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First Revision No. 8903-NFPA 70-2024 [Definition: Panelboard, Enclosed. (Enclosed Panelboard)]

~~Panelboard, Enclosed. (Enclosed Panelboard)~~

~~An assembly of buses and connections, overcurrent devices, and control apparatus with or without switches or other equipment, installed in a cabinet, cutout box, or enclosure suitable for a panelboard application. (CMP-9)~~

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 11:25:05 EST 2024

Committee Statement

Committee Statement: The definition of 'enclosed panelboard' has been deleted due to UL 67 which states that some listed products are marked as 'enclosed panelboards' and some are not, which can cause confusion. The proper way to describe an "enclosed panelboard" would be "a panelboard in an enclosure." The CC should make sure other panels review this action for correlation.

Response Message: FR-8903-NFPA 70-2024



First Revision No. 8865-NFPA 70-2024 [Definition: Short-Circuit Current Rating.]

Short-Circuit Current Rating.

The prospective symmetrical fault current at a nominal voltage to which ~~an apparatus or system~~ equipment is able to be connected without sustaining damage exceeding defined acceptance criteria. (CMP-10)

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 09:39:57 EST 2024

Committee Statement

Committee Statement: The definition of “equipment” includes the term “apparatus”, whereas the term “apparatus” itself is not a defined term in the NEC. The proposed change adds clarity to the definition of short-circuit current rating.

Response Message: FR-8865-NFPA 70-2024

Public Input No. 3892-NFPA 70-2023 [Definition: Short-Circuit Current Rating.]



First Revision No. 8867-NFPA 70-2024 [New Definition after Definition: Metal Shield Connections.]

Metering Centers (Meter Center).

Panelboards in enclosures also containing one or more meter sockets. (CMP-10)

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 09:49:51 EST 2024

Committee Statement

Committee Statement: The term metering center is used in the NEC and used in the Standards for Panelboards UL 67. The addition of the definition of metering centers adds clarity and usability to the Code.

Response Message: FR-8867-NFPA 70-2024

Public Input No. 2556-NFPA 70-2023 [New Definition after Definition: Metal Shield Connections.]



First Revision No. 9148-NFPA 70-2024 [New Definition after Definition: Service Conductors, Underg...]

Service Disconnect (Service Disconnecting Means).

A device that is connected to service conductors and disconnects the premises wiring system or equipment from the service conductors to which it is connected. (CMP-10).

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 14:46:27 EST 2024

Committee Statement

Committee Statement: A service disconnect is a commonly used term which was previously not defined. A definition is added to provide users with clarity. The alternate term service disconnecting means is used interchangeably and added as an equivalent.

Response Message: FR-9148-NFPA 70-2024

Public Input No. 539-NFPA 70-2023 [New Definition after Definition: Disconnecting Means.]



First Revision No. 8885-NFPA 70-2024 [New Definition after Definition: Transformer.]

Transformer Secondary Conductor.

A conductor, other than a service conductor, that originates at the secondary winding terminals of a transformer. (CMP-10)

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 10:57:32 EST 2024

Committee Statement

Committee Statement: This public input defines a term that is used in 13 different sections within the NEC. It is important to define this term as new transformers are on the market that include a secondary overcurrent protective device yet listed as a transformer. This new defined term will add clarity to ensure that the correct terms are used to identify the correct requirements in the NEC. The conductor on the secondary of a transformer that includes a secondary circuit breaker as part of the transformer is a feeder and not transformer secondary conductors. The addition of this definition adds clarity for the user of the Code.

Response Message: FR-8885-NFPA 70-2024

Public Input No. 3631-NFPA 70-2023 [New Definition after Definition: Transformer.]

**First Revision No. 9018-NFPA 70-2024 [Section No. 215.1]****215.1 Scope.**

This article covers the installation requirements, overcurrent protection requirements, minimum size, and ampacity of conductors for feeders not over 1000 volts ac or 1500 volts dc, nominal.

Informational Note: See ~~Part III of~~ Article 235, Part III, for feeders over 1000 volts ac or 1500 volts dc.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 17:01:56 EST 2024

Committee Statement

Committee Statement: The informational note is being revised to comply with the NEC Style Manual section 4.1.4.

Response Message: FR-9018-NFPA 70-2024

Public Input No. 2627-NFPA 70-2023 [Section No. 215.1]

**First Revision No. 9000-NFPA 70-2024 [Section No. 215.2(B)]****(B) Grounded Conductor.**

~~The size of the~~ If a feeder circuit has a grounded conductor, it shall not be smaller than the equipment grounding conductor size required by 250.122, except that 250.122(F) shall not apply where grounded conductors are run in parallel.

Additional minimum sizes shall be as specified in 215.2(C) under the conditions stipulated.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:02:27 EST 2024

Committee Statement

Committee Statement: The revised language clarifies that a grounded conductor is not always provided in a feeder circuit, but must comply with this section if it is provided. The revised language aligns with the NEC Style manual 3.5.4.

Response Message: FR-9000-NFPA 70-2024

Public Input No. 183-NFPA 70-2023 [Section No. 215.2(B)]

**First Revision No. 9001-NFPA 70-2024 [Section No. 215.3]****215.3 Overcurrent Protection.**

Feeders shall be protected against overcurrent in accordance with ~~Part I of Article 240, Part I~~ . Where a feeder supplies continuous loads or any combination of continuous and noncontinuous loads, the rating of the overcurrent device shall not be less than the noncontinuous load plus 125 percent of the continuous load.

Exception: Where the assembly, including the overcurrent devices protecting the feeder(s), is listed for operation at 100 percent of its rating, the ampere rating of the overcurrent device shall be permitted to be not less than the sum of the continuous load plus the noncontinuous load.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:04:44 EST 2024

Committee Statement

Committee Statement: The language is being revised to comply with the NEC Style Manual section 4.1.4.

Response Message: FR-9001-NFPA 70-2024

Public Input No. 2628-NFPA 70-2023 [Section No. 215.3]

**First Revision No. 9002-NFPA 70-2024 [Section No. 215.6]****215.6 Feeder Equipment Grounding Conductor.**

Where a feeder supplies branch circuits in which equipment grounding conductors are required, the feeder shall include or provide an equipment grounding conductor, to which the equipment grounding conductors of the branch circuits shall be connected. ~~Where the feeder supplies a separate building or structure, the requirements of 250.32 shall apply.~~

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:06:55 EST 2024

Committee Statement

Committee Statement: The deleted language is recognized as redundant and a general grounding requirement. The proposed new language by the submitter is redundant and a general grounding requirement that is not necessary in this section.

Response Message: FR-9002-NFPA 70-2024

[Public Input No. 2937-NFPA 70-2023 \[Section No. 215.6\]](#)



First Revision No. 9007-NFPA 70-2024 [Section No. 215.10]

215.10 Ground-Fault Protection of Equipment.

(A) AC Systems.

Each feeder disconnect rated 1000 amperes or more and installed on solidly grounded wye electrical systems of more than 150 volts to ground, but not exceeding 1000 volts phase-to-phase, shall be provided with ground-fault protection of equipment in accordance with 230.95.

(B) DC Systems.

Each feeder disconnect rated 1000 amperes or more and installed on solidly grounded dc electrical systems of more than 150 volts to ground, but not exceeding 1500 volts dc line-to-line, shall be provided with ground-fault protection of equipment in accordance with 230.95.

Informational Note: See 517.17 for buildings that contain health care occupancies.

Exception No. 1: This section shall not apply to a disconnecting means for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.

Exception No. 2: This section shall not apply if ground-fault protection of equipment is provided on the supply side of the feeder and on the load side of any transformer supplying the feeder.

Exception No. 3: If temporary feeder conductors are used to connect a generator to a facility for repair, maintenance, or emergencies, ground-fault protection of equipment shall not be required. Temporary feeders without ground-fault protection shall be permitted for the time period necessary but shall not exceed 90 days.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9007_215.10.docx		

Submitter Information Verification

Committee: NEC-P10
Submittal Date: Wed Jan 24 16:26:28 EST 2024

Committee Statement

Committee Statement: The committee is including DC in 215.10(B) to ensure the hazards for arcing faults are also addressed in DC systems from 150V to ground up to 1500V line-to-line.
Response Message: FR-9007-NFPA 70-2024

Public Input No. 4279-NFPA 70-2023 [Section No. 215.10]

215.10 Ground-Fault Protection of Equipment. [Move text to (A) and (B)]

~~Each feeder disconnect rated 1000 amperes or more and installed on solidly grounded wye electrical systems of more than 150 volts to ground, but not exceeding 1000 volts phase-to-phase, shall be provided with ground-fault protection of equipment in accordance with 230.95.~~

~~Informational Note: See 517.17 for buildings that contain health care occupancies.~~

~~Exception No. 1: This section shall not apply to a disconnecting means for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.~~

~~Exception No. 2: This section shall not apply if ground-fault protection of equipment is provided on the supply side of the feeder and on the load side of any transformer supplying the feeder.~~

~~Exception No. 3: If temporary feeder conductors are used to connect a generator to a facility for repair, maintenance, or emergencies, ground-fault protection of equipment shall not be required. Temporary feeders without ground-fault protection shall be permitted for the time period necessary but shall not exceed 90 days.~~

(A) AC Systems.

Each feeder disconnect rated 1000 amperes or more and installed on solidly grounded wye electrical systems of more than 150 volts to ground, but not exceeding 1000 volts phase-to-phase, shall be provided with ground-fault protection of equipment in accordance with 230.95.

(B) DC Systems.

Each feeder disconnect rated 1000 amperes or more and installed on solidly grounded dc electrical systems of more than 150 volts to ground, but not exceeding 1500 volts dc line-to-line, shall be provided with ground-fault protection of equipment in accordance with 230.95.

Informational Note: See 517.17 for buildings that contain health care occupancies.

Exception No. 1: This section shall not apply to a disconnecting means for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.

Exception No. 2: This section shall not apply if ground-fault protection of equipment is provided on the supply side of the feeder and on the load side of any transformer supplying the feeder.

Exception No. 3: If temporary feeder conductors are used to connect a generator to a facility for repair, maintenance, or emergencies, ground-fault protection of equipment shall not be required. Temporary feeders without ground-fault protection shall be permitted for the time period necessary but shall not exceed 90 days.



First Revision No. 9011-NFPA 70-2024 [Section No. 215.12(C)(1)]

(1) Feeders Supplied from More Than One Nominal Voltage System.

Where the premises wiring system has feeders supplied from more than one nominal voltage system, each ungrounded conductor of a feeder shall be identified by phase or line and nominal voltage system at all termination, connection, and splice points in compliance with 215.12(C)(1)(a) and (C)(1)(b).

(a) *Means of Identification.* The means of identification shall be permitted to be by separate color coding, marking tape, tagging, or other approved means.

(b) *Posting of Identification Means.* The method utilized for conductors originating ~~within~~ from each ~~feeder~~ panelboard or similar ~~feeder~~ distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each ~~feeder~~ panelboard or similar ~~feeder~~ distribution equipment.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:39:41 EST 2024

Committee Statement

Committee Statement: The language is revised to remove feeder as this section already address feeder in the scope of the article and clarifies the language requested by the submitter. The language is revised to provide clarification as to the nominal voltage of the system in the sentence and also aligns with the language found in 210.5(C)(1).

Response Message: FR-9011-NFPA 70-2024

Public Input No. 783-NFPA 70-2023 [Section No. 215.12(C)(1)]

Public Input No. 2508-NFPA 70-2023 [Section No. 215.12(C)(1)]



First Revision No. 9013-NFPA 70-2024 [Section No. 215.12(C)(2)]

[See attached word document "70_NEC_CMP10_A2025NEC_215.12 (C)(2)_FR_9013" for clarification of proposed revisions]

(2). Feeders Supplied from Direct-Current Systems.

Where a feeder is supplied from a dc system operating at more than 60 volts, each ungrounded conductor of 4 AWG or larger shall be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means; each ungrounded conductor of 6 AWG or smaller shall be identified by polarity at all termination, connection, and splice points in compliance with 215.12(C)(2)(a) and (C)(2)(b). The identification methods utilized for conductors originating ~~within~~ from each ~~feeder~~ panelboard or similar ~~feeder~~ distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each ~~feeder~~ panelboard or similar ~~feeder~~ distribution equipment.

(a) *Positive Polarity, Sizes 6 AWG or Smaller.* Where the positive polarity of a dc system does not serve as the connection for the grounded conductor, each positive ungrounded conductor shall be identified by one of the following means:

- (2) A continuous red outer finish
- (3) A continuous red stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or black
- (4) Imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.8(B)
- (5) An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black

(f) *Negative Polarity, Sizes 6 AWG or Smaller.* Where the negative polarity of a dc system does not serve as the connection for the grounded conductor, each negative ungrounded conductor shall be identified by one of the following means:

- (7) A continuous black outer finish
- (8) A continuous black stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or red
- (9) Imprinted minus signs (-) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.8(B)
- (10) An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted minus signs (-) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red

Supplemental Information

File Name

Description

Approved

70_NEC_CMP10_A2025NEC_215.12_C_2_FR_9013.docx

For staff use only

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:42:40 EST 2024

Committee Statement

Committee Statement: The language is revised to remove feeder as this section already address feeder in the scope of the article and clarifies the language requested by the submitter.

Response Message: FR-9013-NFPA 70-2024

Public Input No. 784-NFPA 70-2023 [Section No. 215.12(C)(2)]

FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

[215.12(C)(2)]

(2) Feeders Supplied from Direct-Current Systems.

Where a feeder is supplied from a dc system operating at more than 60 volts, each ungrounded conductor of 4 AWG or larger shall be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means; each ungrounded conductor of 6 AWG or smaller shall be identified by polarity at all termination, connection, and splice points in compliance with 215.12(C)(2)(a) and (C)(2)(b). The identification methods utilized for conductors originating ~~within from~~ each ~~feeder~~-panelboard or similar ~~feeder~~-distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each ~~feeder~~-panelboard or similar ~~feeder~~-distribution equipment.

- (a) *Positive Polarity, Sizes 6 AWG or Smaller.* Where the positive polarity of a dc system does not serve as the connection for the grounded conductor, each positive ungrounded conductor shall be identified by one of the following means:
- (1) A continuous red outer finish
 - (2) A continuous red stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or black
 - (3) Imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.8(B)
 - (4) An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black
- (b) *Negative Polarity, Sizes 6 AWG or Smaller.* Where the negative polarity of a dc system does not serve as the connection for the grounded conductor, each negative ungrounded conductor shall be identified by one of the following means:
- (1) A continuous black outer finish
 - (2) A continuous black stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or red
 - (3) Imprinted minus signs (–) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.8(B)
 - (4) An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted minus signs (–) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red

**First Revision No. 9015-NFPA 70-2024 [Section No. 215.15]****215.15 Barriers.**

Barriers shall be placed such that no energized, uninsulated, ungrounded busbar or terminal is exposed to inadvertent contact by persons or maintenance equipment while servicing load terminations in panelboards, switchboards, switchgear, or motor control centers supplied by feeder taps in 240.21(B) or transformer secondary conductors in 240.21(C) when the disconnecting device, to which the ~~tap~~ conductors are terminated, is in the open position.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:49:48 EST 2024

Committee Statement

Committee Statement: The word "tap" is removed to address useability and concerns with correlation of the terms being used in 215.15. The secondary conductors may or may not be a tap conductor and the revised language clarifies this.

Response Message: FR-9015-NFPA 70-2024

[Public Input No. 518-NFPA 70-2023 \[Section No. 215.15\]](#)

[Public Input No. 1338-NFPA 70-2023 \[Section No. 215.15\]](#)



First Revision No. 9061-NFPA 70-2024 [Section No. 215.18(A)]

(A) Surge-Protective Device.

~~Where a feeder supplies~~ If feeders supply any of the following, ~~a~~ surge-protective device ~~devices~~ (SPD ~~SPDs~~) shall be installed:

- (1) Dwelling units
- (2) ~~Dormitory units~~ Dormitories
- (3) Guest rooms and guest suites of hotels, motels, and ~~motels~~ dormitories
- (4) Areas of nursing homes and limited-care facilities used exclusively as patient sleeping rooms
- (5) Areas designed for use exclusively as sleeping quarters in fire stations, police stations, ambulance stations, rescue stations, ranger stations, and similar locations

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 09:10:56 EST 2024

Committee Statement

Committee Statement: The revised language brings the terms in alignment with building code and other standards. The first sentence is revised to comply with the NEC Style Manual section 3.5.3.

Proposed item (5) from PI 1306 was not accepted as it does not include providing protection for safety devices in the infrastructure. Proposed item (6) from PI 1306 was not accepted as it is vague and not enforceable.

Item (5) from PI 3367 was accepted to align with the addition of 210.12(D)(3). Surge protection was included in the 2023 NEC to address the recognized need for surge protection to protect the sensitive electronics and systems found in safety devices (such as AFCI, GFCI and smoke alarms).

The Correlating Committee will need to review the use of the term "Dormitories" so it is applied uniformly across the NEC.

CMP-2 is has proposed to revise the definition for "Dormitories."

Response Message: FR-9061-NFPA 70-2024

[Public Input No. 1306-NFPA 70-2023 \[Section No. 215.18\(A\)\]](#)

[Public Input No. 803-NFPA 70-2023 \[Section No. 215.18\(A\)\]](#)

[Public Input No. 3367-NFPA 70-2023 \[Section No. 215.18\(A\)\]](#)

**First Revision No. 9064-NFPA 70-2024 [Section No. 215.18(E)]**

~~(E) Ratings:~~

~~SPDs shall have a nominal discharge current rating (In) of not less than 10kA.~~

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 09:16:24 EST 2024

Committee Statement

Committee Statement: The informational note is not necessary. The language is (B) and (C) is correct as written.

Minimum I(n) requirements were added to the NEC in 2023 due to concerns that SPD status was unknown by NEC users. Data indicates that nearly all SPD failures are caused by temporary overvoltage (TOV) events. SPDs with increasing I(n) values fail in TOV events. Therefore requiring I(n) values has very little, if any impact on the number of SPDs of unknown status being active.

Additionally, I(n) is often mistaken for SCCR. This results in misapplication and coordination with system available fault current.

Further, U(p) values at higher I(n) values such as the currently mandated 10kA level exceed the immunity levels of life saving equipment such as GFCI's, AFCI's, and smoke detectors. This contradicts the original intent of mandating the use of SPDs in the NEC.

To this point, science and technology have not advanced enough to develop SPDs that can withstand TOV events, remain online, and provide U(p) levels adequate to provide equipment protection in TOV conditions. NEC users should follow manufacturers' maintenance guidelines in order to monitor SPD status.

Response Message: FR-9064-NFPA 70-2024

[Public Input No. 75-NFPA 70-2023 \[Section No. 215.18\]](#)

**First Revision No. 9066-NFPA 70-2024 [Section No. 225.1]****225.1 Scope.**

This article covers requirements for outside branch circuits and feeders not over 1000 volts ac or 1500 volts dc, nominal, run on or between buildings, structures, or poles on the premises; and electrical equipment and wiring for the supply of utilization equipment that is located on or attached to the outside of buildings, structures, or poles.

Informational Note: See ~~Part IV~~ of Article 235, Part IV, for outside branch circuits and feeders over 1000 volts ac or 1500 volts dc.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 09:22:26 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4, regarding the use of parts.

Response Message: FR-9066-NFPA 70-2024

Public Input No. 2631-NFPA 70-2023 [Section No. 225.1]



First Revision No. 9068-NFPA 70-2024 [Section No. 225.3]

225.3- Other Articles:

Application of other articles, including additional requirements to specific cases of equipment and conductors, is shown in Table 225.3 :

Table 225.3 Other Articles

Equipment/Conductors Article Branch circuits 210 Class 1 power-limited circuits and Class 1 power-limited remote-control and signaling circuits 724 Class 2 and Class 3 remote-control, signaling, and power-limited circuits 725 Conductors for general wiring 310 Electrically driven or controlled irrigation machines 675 Electric signs and outline lighting 600 Feeders 215 Fire alarm systems 760 Fixed outdoor electric deicing and snow-melting equipment 426 Grounding and bonding 250 Hazardous (classified) locations 500 Hazardous (classified) locations—specific 510 Marinas and boatyards 555 Medium-voltage conductors and cable 311 Messenger-supported wiring 396 Mobile homes, manufactured homes, and mobile home parks 550 Open wiring on insulators 398 Over 1000 volts, general 495 Overcurrent protection 240 Overcurrent protection for systems rated over 1000 volts ac, 1500 volts dc 245 Services 230 Services, feeders, and branch circuits over 1000 volts ac, 1500 volts dc 235 Solar photovoltaic systems 690 Swimming pools, fountains, and similar installations 680 Use and identification of grounded conductors 200

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 09:23:36 EST 2024

Committee Statement

Committee Statement: 225.3 is deleted to comply with the NEC Style Manual section 4.1.4.

Response Message: FR-9068-NFPA 70-2024

Public Input No. 980-NFPA 70-2023 [Section No. 225.3]



First Revision No. 8927-NFPA 70-2024 [Section No. 225.10]

225.10 Wiring on Buildings (or Other Structures).

The installation of outside wiring on surfaces of buildings (or other structures) shall be permitted ~~for circuits not exceeding 1000 volts, nominal,~~ as the following:

- (1) Auxiliary gutters
- (2) Busways
- (3) Cable trays
- (4) Cablebus
- (5) Electrical metallic tubing (EMT)
- (6) Flexible metal conduit (FMC)
- (7) Intermediate metal conduit (IMC)
- (8) Liquidtight flexible metal conduit (LFMC)
- (9) Liquidtight flexible nonmetallic conduit (LFNC)
- (10) Messenger-supported wiring
- (11) Open wiring on insulators
- (12) Reinforced thermosetting resin conduit (RTRC)
- (13) Rigid metal conduit (RMC)
- (14) Rigid polyvinyl chloride conduit (PVC)
- (15) Type MC cable
- (16) Type MI cable
- (17) Type SE cable
- (18) Type TC-ER cable
- (19) Type UF cable
- (20) Wireways

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:05:41 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000 volts ac and 1500 volts dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-8927-NFPA 70-2024

[Public Input No. 2426-NFPA 70-2023 \[Global Input\]](#)

**First Revision No. 8928-NFPA 70-2024 [Section No. 225.18]****225.18 Clearance for Overhead Conductors and Cables.**

Overhead spans of open conductors and open multiconductor cables ~~of not over 1000 volts, nominal,~~ shall have a clearance of not less than the following:

- (1) 3.0 m (10 ft) — above finished grade, sidewalks, or from any platform or projection that will permit personal contact where the voltage does not exceed 150 volts to ground and accessible to pedestrians only
- (2) 3.7 m (12 ft) — over residential property and driveways, and those commercial areas not subject to truck traffic where the voltage does not exceed 300 volts to ground
- (3) 4.5 m (15 ft) — for those areas listed in the 3.7 m (12 ft) classification where the voltage exceeds 300 volts to ground
- (4) 5.5 m (18 ft) — over public streets, alleys, roads, parking areas subject to truck traffic, driveways on other than residential property, and other land traversed by vehicles, such as cultivated, grazing, forest, and orchard
- (5) 7.5 m (24½ ft) — over track rails of railroads

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:07:10 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-8928-NFPA 70-2024

**First Revision No. 8930-NFPA 70-2024 [Section No. 225.19]****225.19 Clearances from Buildings—~~for Conductors of Not over 1000 Volts, Nominal.~~**

Overhead spans of open conductors and open multiconductor cables shall comply with 225.19(A), (B), (C), and (D).

(A) Above Roofs.

Overhead spans of open conductors and open multiconductor cables shall have a vertical clearance of not less than 2.6 m (8 ft 6 in.) above the roof surface. The vertical clearance above the roof level shall be maintained for a distance not less than 900 mm (3 ft) in all directions from the edge of the roof.

Exception No. 1: The area above a roof surface subject to pedestrian or vehicular traffic shall have a vertical clearance from the roof surface in accordance with the clearance requirements of 225.18.

Exception No. 2: Where the voltage between conductors does not exceed 300, and the roof has a slope of 100 mm in 300 mm (4 in. in 12 in.) or greater, a reduction in clearance to 900 mm (3 ft) shall be permitted.

Exception No. 3: Where the voltage between conductors does not exceed 300, a reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.8 m (6 ft) of the conductors, 1.2 m (4 ft) horizontally, pass above the roof overhang, and (2) they are terminated at a through-the-roof raceway or approved support.

Exception No. 4: The requirement for maintaining the vertical clearance 900 mm (3 ft) from the edge of the roof shall not apply to the final conductor span where the conductors are attached to the side of a building.

(B) From Nonbuilding or Nonbridge Structures.

From signs, chimneys, radio and television antennas, tanks, and other nonbuilding or nonbridge structures, clearances — vertical, diagonal, and horizontal — shall not be less than 900 mm (3 ft).

(C) Horizontal Clearances.

Clearances shall not be less than 900 mm (3 ft).

(D) Final Spans.

Final spans of feeders or branch circuits shall comply with 225.19(D)(1), (D)(2), and (D)(3).

(1) Clearance from Windows.

Final spans to the building they supply, or from which they are fed, shall be permitted to be attached to the building, but they shall be kept not less than 900 mm (3 ft) from windows that are designed to be opened, and from doors, porches, balconies, ladders, stairs, fire escapes, or similar locations.

Exception: Conductors run above the top level of a window shall be permitted to be less than the 900 mm (3 ft) requirement.

(2) Vertical Clearance.

The vertical clearance of final spans above or within 900 mm (3 ft) measured horizontally of platforms, projections, or surfaces that will permit personal contact shall be maintained in accordance with 225.18.

(3) Building Openings.

The overhead branch-circuit and feeder conductors shall not be installed beneath openings through which materials may be moved, such as openings in farm and commercial buildings, and shall not be installed where they obstruct entrance to these openings.

(E) Zone for Fire Ladders.

Where buildings exceed three stories or 15 m (50 ft) in height, overhead lines shall be arranged, where practicable, so that a clear space (or zone) at least 1.8 m (6 ft) wide will be left either adjacent to the buildings or beginning not over 2.5 m (8 ft) from them to facilitate the raising of ladders when necessary for fire fighting.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:09:25 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-8930-NFPA 70-2024

**First Revision No. 8933-NFPA 70-2024 [Section No. 225.30(D)]****(D) Capacity Requirements.**

Additional feeders or branch circuits shall be permitted where the capacity requirements are in excess of 2000 amperes- ~~at a supply voltage of 1000 volts or less .~~

Submitter Information Verification**Committee:** NEC-P10**Submittal Date:** Wed Jan 24 13:10:41 EST 2024**Committee Statement****Committee Statement:** Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.**Response Message:** FR-8933-NFPA 70-2024



First Revision No. 9289-NFPA 70-2024 [Section No. 225.31]

225.31 Disconnecting Means.

(A) General.

Means shall be provided for disconnecting all ungrounded conductors that supply or pass through the building or structure. If this disconnecting means is used as the emergency disconnect, it shall be in accordance with 225.41.

(B) Location.

The disconnecting means shall be installed either inside or outside of the building or structure served or where the conductors pass through the building or structure. The If located inside the building, the disconnecting means shall be at a readily accessible location nearest the point of entrance of the conductors. If the disconnecting means is located outside of the building, the disconnecting means shall be located at a readily accessible location on or within sight of the building in accordance with 110.29. For the purposes of this section, the requirements in 230.6 shall apply.

Exception No. 1: For installations under single management, where documented safe switching procedures are established and maintained, and where the installation is monitored by qualified individuals, the disconnecting means shall be permitted to be located elsewhere on the premises.

Exception No. 2: For buildings or other structures qualifying under 685.1, the disconnecting means shall be permitted to be located elsewhere on the premises.

Exception No. 3: For towers or poles used as lighting standards, the disconnecting means shall be permitted to be located elsewhere on the premises.

Exception No. 4: For poles or similar structures used only for support of signs installed in accordance with 600.1, the disconnecting means shall be permitted to be located elsewhere on the premises.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Feb 09 10:37:42 EST 2024

Committee Statement

Committee Statement: The revision to 225.31(A) permits this disconnect to act as the emergency disconnecting means for the outside feeder or branch circuit. The revision to 225.31(B) adds clarity for the requirements regarding the disconnecting means depending on if it is located inside or outside of the building.

Response Message: FR-9289-NFPA 70-2024



First Revision No. 9076-NFPA 70-2024 [Section No. 225.39 [Excluding any Sub-Sections]]

The ~~feeder or branch circuit~~ disconnecting means specified in 225.31 shall have a rating of not less than the calculated load to be supplied, determined in accordance with Article 220, Parts I and II of Article 220 - , for branch circuits, Article 220, Part III or IV of Article 220 - , for feeders, or Part V of Article 220, Part V, for farm loads. ~~Where~~ If the branch circuit or feeder disconnecting means consists of more than one switch or circuit breaker, as permitted by 225.33, combining the ratings of all the switches or circuit breakers for determining the rating of the disconnecting means shall be permitted. In no case shall the rating be lower than specified in 225.39(A), (B), (C), or (D).

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 09:39:39 EST 2024

Committee Statement

Committee Statement: The revision clarifies which disconnecting means that this requirement applies to. The text is also revised to comply with the NEC Style Manual section 4.1.4.

Response Message: FR-9076-NFPA 70-2024

[Public Input No. 1003-NFPA 70-2023 \[Section No. 225.39 \[Excluding any Sub-Sections\]\]](#)

[Public Input No. 2577-NFPA 70-2023 \[Section No. 225.39 \[Excluding any Sub-Sections\]\]](#)

[Public Input No. 2632-NFPA 70-2023 \[Section No. 225.39 \[Excluding any Sub-Sections\]\]](#)



First Revision No. 9187-NFPA 70-2024 [Section No. 225.41]

225.41 Emergency Disconnects.

For one- and two-family dwelling units, an emergency disconnecting means shall be installed.

(A) General.

(1) Location.

The disconnecting means shall be installed in a readily accessible outdoor location on or within sight of the dwelling unit.

Exception: If the service disconnecting means is in accordance with 230.70 (A)(2) or the disconnecting means in accordance with 225.31 is in a readily accessible outdoor location, on or within sight of the one- and two-family dwelling unit, an additional emergency disconnect shall not be required.

(2) Rating.

The equipment within which the disconnecting means is installed shall have a short-circuit current rating equal to or greater than the available fault current.

(3) Grouping.

If more than one disconnecting means is provided, they shall be grouped.

(B) Identification of Other ~~Isolation~~ Source Disconnects.

Where equipment for ~~isolation~~ disconnection of other energy source systems is not located adjacent to the emergency disconnect required by this section, a plaque or directory identifying the location of all equipment for ~~isolation~~ disconnection of other energy sources shall be located adjacent to the disconnecting means required by this section.

Informational Note: See 445.18, 480.7, 705.20, and 706.15 for examples of other energy source system ~~isolation~~ disconnection means.

(C) Marking.

The disconnecting means enclosure shall be marked as EMERGENCY DISCONNECT.

Markings shall comply with 110.21(B) and all of the following:

- (1) The marking or labels shall be located on the outside front of the ~~disconnect~~ disconnecting means enclosure with red background and white text.
- (2) The letters shall be least 13 mm (½ in.) high.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 16:14:31 EST 2024

Committee Statement

Committee Statement: The proposed change is necessary in order to clarify that the equipment that the disconnect is part of must have a short-circuit current rating (SCCR) not less than the available fault current. In addition, it has been clarified that the enclosure which the disconnect is part of must include the marking "emergency disconnect" and not necessarily the disconnect itself. The proposed exception to 225.41(A)(1) ensures that

two disconnecting means are not required when the service or outside feeder or branch circuit disconnecting means are used as the emergency disconnecting means.

Response FR-9187-NFPA 70-2024
Message:

Public Input No. 536-NFPA 70-2023 [Section No. 225.41]

FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

**First Revision No. 9091-NFPA 70-2024 [Section No. 225.42(A)]****(A) Surge-Protective Device.**

~~Where a feeder supplies~~ If feeders supply any of the following, ~~a surge-protective device~~
~~devices~~ (SPD SPDs) shall be installed:

- (1) Dwelling units
- (2) ~~Dormitory units~~ Dormitories
- (3) Guest rooms and guest suites of hotels, motels, and ~~motels~~ dormitories
- (4) Areas of nursing homes and limited-care facilities used exclusively as patient sleeping rooms
- (5) Areas designed for use exclusively as sleeping quarters in fire stations, police stations, ambulance stations, rescue stations, ranger stations, and similar locations

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 10:33:20 EST 2024

Committee Statement

Committee Statement: The revised language brings the terms in alignment with building code and other standards. The Correlating Committee will need to review that the use of the term "Dormitories" is applied uniformly across the NEC, as CMP 2 has proposed to revise the definition for "Dormitories."

Added item (5) to align with proposed changes in 215.18.

Response Message: FR-9091-NFPA 70-2024

Public Input No. 804-NFPA 70-2023 [Section No. 225.42(A)]

**First Revision No. 8910-NFPA 70-2024 [Section No. 225.42(E)]****(E) Ratings.**

SPDs shall have a nominal discharge current rating (I_n) of not less than 10kA.

Informational Note: ~~Lead lengths of conductors to the SPD should be kept as short as possible to reduce let-through voltages~~ See 242.24 for routing of conductors for SPDs .

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 11:42:14 EST 2024

Committee Statement

Committee Statement: The informational note under 225.42(E) has been updated for compliance with 2.1.10 of the NEC Style Manual.

Response Message: FR-8910-NFPA 70-2024



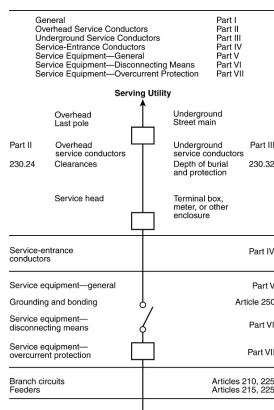
First Revision No. 9096-NFPA 70-2024 [Section No. 230.1]

230.1 Scope.

This article covers service conductors and equipment for control and protection of services not over 1000 volts ac or 1500 volts dc, nominal and their installation requirements.

Informational Note No. 1: See Informational Note Figure 230.1.

**Figure Informational Note Figure
230.1 Services.**



Informational Note No. 2: See Part V of Article 235, Part V for services over 1000 volts ac or 1500 volts dc, nominal.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 10:45:48 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4, regarding the use of parts.

Response Message: FR-9096-NFPA 70-2024

Public Input No. 2633-NFPA 70-2023 [Section No. 230.1]

**First Revision No. 9097-NFPA 70-2024 [Section No. 230.2]****230.2- 4 _ Number of Services.**

A building or other structure served shall be supplied by only one service unless permitted in 230.2(A) through (D). For the purpose of 230.40, Exception No. 2 only, underground sets of conductors, 1/0 AWG and larger, running to the same location and connected together at their supply end but not connected together at their load end shall be considered to be supplying one service.

(A) Special Conditions.

Additional services shall be permitted to supply the following:

- (1) Fire pumps
- (2) Emergency systems
- (3) Legally required standby systems
- (4) Optional standby systems
- (5) Interconnected electric power production sources
- (6) Systems designed for connection to multiple sources of supply for the purpose of enhanced reliability

(B) Special Occupancies.

By special permission, additional services shall be permitted for either of the following:

- (1) Multiple-occupancy buildings where there is no available space for service equipment accessible to all occupants
- (2) A single building or other structure sufficiently large to make two or more services necessary

(C) Capacity Requirements.

Additional services shall be permitted under any of the following:

- (1) Where the capacity requirements are in excess of 2000 amperes at a supply voltage of 1000 volts or less
- (2) Where the load requirements of a single-phase installation are greater than the serving agency normally supplies through one service
- (3) By special permission

(D) Different Characteristics.

Additional services shall be permitted for different voltages, frequencies, or phases, or for different uses, such as for different rate schedules.

(E) Identification.

Where a building or structure is supplied by more than one service, or any combination of branch circuits, feeders, and services, a permanent plaque or directory shall be installed at each service disconnect location denoting all other services, feeders, and branch circuits supplying that building or structure and the area served by each. See 225.37.

Submitter Information Verification

Committee: NEC-P10**Submittal Date:** Thu Jan 25 10:48:37 EST 2024**Committee Statement****Committee Statement:** This section is being renumbered from 230.2 to 230.4 to comply with the NEC Style Manual section 2.2.1.**Response Message:** FR-9097-NFPA 70-2024[Public Input No. 3148-NFPA 70-2023 \[Section No. 230.2\]](#)[Public Input No. 3677-NFPA 70-2023 \[Section No. 230.2\]](#)FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

**First Revision No. 9106-NFPA 70-2024 [Section No. 230.3]****230.3– 5 _ One Building or Other Structure Not to Be Supplied Through Another.**

Service conductors supplying a building or other structure shall not pass through the interior of another building or other structure.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:05:24 EST 2024

Committee Statement

Committee Statement: This section is being renumbered from 230.3 to 230.5 to comply with the NEC Style Manual section 2.2.1.

Response Message: FR-9106-NFPA 70-2024

[Public Input No. 3206-NFPA 70-2023 \[Section No. 230.3\]](#)

[Public Input No. 3678-NFPA 70-2023 \[Section No. 230.3\]](#)

**First Revision No. 9107-NFPA 70-2024 [Section No. 230.6]****230.6 Conductors Considered Outside the Building.**

Conductors shall be considered outside of a building or other structure under any of the following conditions:

- (1) Where installed under not less than 50 mm (2 in.) of concrete beneath a building or other structure
- (2) Where installed within a building or other structure in a raceway that is encased in concrete or brick not less than 50 mm (2 in.) thick
- (3) Where installed in any vault that meets the construction requirements of ~~Part III of Article 450, Part III~~
- (4) Where installed in conduit and under not less than 450 mm (18 in.) of earth beneath a building or other structure
- (5) Where installed within rigid metal conduit (RMC) or intermediate metal conduit (IMC) used to accommodate the clearance requirements in 230.24 and routed directly through an eave but not a wall of a building

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:07:13 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4, regarding the use of parts.

Response Message: FR-9107-NFPA 70-2024

[Public Input No. 2634-NFPA 70-2023 \[Section No. 230.6\]](#)

**First Revision No. 9108-NFPA 70-2024 [Section No. 230.7]****230.7 Other Conductors.**

Circuit conductors other than service conductors shall not be installed in the same raceway, cable, handhole enclosure, or underground box as the service conductors.

Exception No. 1: Grounding electrode conductors or supply side bonding jumpers or conductors shall be permitted within service raceways.

Exception No. 2: Load management control conductors having overcurrent protection shall be permitted within service raceways.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:09:30 EST 2024

Committee Statement

Committee Statement: The deletion of the comma was accepted.

The deletion of Exception 1 is not accepted to avoid confusion with regards to grounding electrode conductors.

Response Message: FR-9108-NFPA 70-2024

Public Input No. 597-NFPA 70-2023 [Section No. 230.7]

**First Revision No. 9111-NFPA 70-2024 [Section No. 230.23(A)]****(A) General.**

Conductors shall have sufficient ampacity to carry the current for the load as calculated in accordance with Article 220, Parts II through V of ~~Article 220~~ - and shall have adequate mechanical strength.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:11:08 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4, regarding the use of parts.

Response Message: FR-9111-NFPA 70-2024

Public Input No. 2635-NFPA 70-2023 [Section No. 230.23(A)]

**First Revision No. 9113-NFPA 70-2024 [Section No. 230.23(B)]****(B) Minimum Size.**

The conductors shall not be smaller than 8 AWG copper or 6 AWG aluminum or copper-clad aluminum.

Exception:- ~~Conductors~~ Service conductors supplying only limited loads of a single branch circuit — such as small polyphase power, controlled water heaters, and similar loads — shall not be smaller than 12 AWG hard-drawn copper or equivalent.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:13:16 EST 2024

Committee Statement

Committee Statement: The language is revised for clarity; examples of a single branch circuit are unnecessary. The removal of hard-drawn copper was not made due to the lack of substantiation. It is unclear if that would have negative implications.

Response Message: FR-9113-NFPA 70-2024

Public Input No. 854-NFPA 70-2023 [Section No. 230.23(B)]

**First Revision No. 9021-NFPA 70-2024 [Section No. 230.24(B)]****(B) Vertical Clearance for Overhead Service Conductors.**

Overhead service conductors ~~, where not in excess of 1000 volts, nominal,~~ shall have the following minimum clearance from final grade:

- (1) 3.0 m (10 ft) — at the electrical service entrance to buildings, also at the lowest point of the drip loop of the building electrical entrance, and above areas or sidewalks accessible only to pedestrians, measured from final grade or other accessible surface only for overhead service conductors supported on and cabled together with a grounded bare messenger where the voltage does not exceed 150 volts to ground
- (2) 3.7 m (12 ft) — over residential property and driveways, and those commercial areas not subject to truck traffic where the voltage does not exceed 300 volts to ground
- (3) 4.5 m (15 ft) — for those areas listed in the 3.7 m (12 ft) classification where the voltage exceeds 300 volts to ground
- (4) 5.5 m (18 ft) — over public streets, alleys, roads, parking areas subject to truck traffic, driveways on other than residential property, and other land such as cultivated, grazing, forest, and orchard
- (5) 7.5 m (24½ ft) over tracks of railroads

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 17:08:28 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-9021-NFPA 70-2024



First Revision No. 9020-NFPA 70-2024 [Section No. 230.24 [Excluding any Sub-Sections]]

Overhead service conductors shall not be readily accessible and shall comply with 230.24(A) through (E) ~~for services not over 1000 volts, nominal.~~

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 17:07:07 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-9020-NFPA 70-2024

**First Revision No. 9116-NFPA 70-2024 [Section No. 230.31(A)]****(A) General.**

Underground service conductors shall have sufficient ampacity to carry the current for the load as calculated in accordance with Article 220, Parts II through V- of ~~Article 220~~.

Submitter Information Verification**Committee:** NEC-P10**Submittal Date:** Thu Jan 25 11:18:14 EST 2024**Committee Statement****Committee Statement:** The text is revised to comply with the NEC Style Manual section 4.1.4, regarding the use of parts.**Response Message:** FR-9116-NFPA 70-2024[Public Input No. 2636-NFPA 70-2023 \[Section No. 230.31\(A\)\]](#)



First Revision No. 9119-NFPA 70-2024 [Section No. 230.42(A)(1)]

(1) Continuous and Noncontinuous Loads.

Where the service-entrance conductors supply continuous loads or any combination of noncontinuous and continuous loads, the minimum service-entrance conductor size shall have an ampacity not less than the sum of the noncontinuous loads plus 125 percent of continuous loads.

Exception No. 1: Grounded conductors that are not connected to an overcurrent device shall be permitted to be sized at 100 percent of the sum of the continuous and noncontinuous load.

Exception No. 2:- ~~The~~ Conductors shall be permitted to be sized at 100 percent of the sum of the continuous and noncontinuous load and the continuous load if the service-entrance conductors terminate in if they terminate to an overcurrent device where both the overcurrent device and its assembly are listed for operation at 100 percent of their rating- shall be permitted .

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:24:18 EST 2024

Committee Statement

Committee Statement: The text of exception 2 is revised for clarity. The exception is revised into a complete sentence.

Response Message: FR-9119-NFPA 70-2024

Public Input No. 857-NFPA 70-2023 [Section No. 230.42(A)(1)]



First Revision No. 9117-NFPA 70-2024 [Section No. 230.42(A) [Excluding any Sub-Sections]]

Service-entrance conductors shall have an ampacity of not less than the maximum load to be served. Conductors shall be sized not less than the largest of 230.42(A)(1) or (A)(2). Loads shall be determined in accordance with Article 220, Part III, IV, or V- of ~~Article 220~~, as applicable. Ampacity shall be determined from 310.14 and shall comply with 110.14(C). The maximum current of busways shall be that value for which the busway has been listed or labeled.

Informational Note: See UL 857, *Standard for Safety for Busways*, for information on busways.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 11:21:22 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4, regarding the use of parts.

Response Message: FR-9117-NFPA 70-2024

Public Input No. 2638-NFPA 70-2023 [Section No. 230.42(A) [Excluding any Sub-Sections]]



First Revision No. 9022-NFPA 70-2024 [Section No. 230.43]

230.43 Wiring Methods- for 1000 Volts, Nominal, or Less .

Service-entrance conductors shall be installed in accordance with the applicable requirements of this *Code* covering the type of wiring method used and shall be limited to the following methods:

- (1) Open wiring on insulators
- (2) Type IGS cable
- (3) Rigid metal conduit (RMC)
- (4) Intermediate metal conduit (IMC)
- (5) Electrical metallic tubing (EMT)
- (6) Electrical nonmetallic tubing
- (7) Service-entrance cables
- (8) Wireways
- (9) Busways
- (10) Auxiliary gutters
- (11) Rigid polyvinyl chloride conduit (PVC)
- (12) Cablebus
- (13) Type MC cable
- (14) Mineral-insulated, metal-sheathed cable, Type MI
- (15) Flexible metal conduit (FMC) not over 1.8 m (6 ft) long or liquidtight flexible metal conduit (LFMC) not over 1.8 m (6 ft) long between a raceway, or between a raceway and service equipment, with a supply-side bonding jumper routed with the flexible metal conduit (FMC) or the liquidtight flexible metal conduit (LFMC) according to 250.102(A), (B), (C), and (E)
- (16) Liquidtight flexible nonmetallic conduit (LFNC)
- (17) High density polyethylene conduit (HDPE)
- (18) Nonmetallic underground conduit with conductors (NUCC)
- (19) Reinforced thermosetting resin conduit (RTRC)
- (20) Type TC-ER cable where identified for use as service entrance conductors
- (21) Flexible bus systems

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 17:09:56 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

**Response
Message:**

FR-9022-NFPA 70-2024

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First Revision No. 9125-NFPA 70-2024 [Section No. 230.46]

230.46 Spliced and Tapped Conductors.

Service-entrance conductors shall be permitted to be spliced or tapped in accordance with 110.14, 300.5(E), 300.13, and 300.15. ~~Power distribution blocks, pressure connectors, and devices for splices and taps shall be listed. Power distribution blocks.~~

The following equipment installed on service conductors shall be listed and be marked or identified as "suitable for use on the line side of the service equipment" or equivalent: ~~Pressure connectors and devices for splices and taps installed on service conductors shall be marked:~~

(1) Power distribution blocks

(2) Pressure Connectors

(3) Devices for splices and taps

Informational Note: SVC is an industry identification that is considered equivalent to "suitable for use on the line side of the service equipment" or equivalent equipment. ~~Informational Note: SVC is an industry identification that is considered equivalent to "suitable for use on the line side of the service equipment" or equivalent equipment.~~

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9125_230.46.docx	For Staff Use	
NEC_CMP10_FR-9125_230.46.docx	For prod use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 12:57:54 EST 2024

Committee Statement

Committee Statement: The requirements were moved into a list format per the NEC Style Manual section 2.1.8 and 3.5.1. An informational note was added for additional information to describe standard industry identification. Short circuit rating was not added because it was considered to be too restrictive, and no technical substantiation for its inclusion was provided.

Response Message: FR-9125-NFPA 70-2024

[Public Input No. 1307-NFPA 70-2023 \[Section No. 230.46\]](#)

[Public Input No. 3026-NFPA 70-2023 \[Section No. 230.46\]](#)

[Public Input No. 858-NFPA 70-2023 \[Section No. 230.46\]](#)

[Public Input No. 3622-NFPA 70-2023 \[Section No. 230.46\]](#)

[Public Input No. 1955-NFPA 70-2023 \[Section No. 230.46\]](#)

[Public Input No. 3744-NFPA 70-2023 \[Section No. 230.46\]](#)

230.46 Spliced and Tapped Conductors.

Service-entrance conductors shall be permitted to be spliced or tapped in accordance with 110.14, 300.5(E), 300.13, and 300.15. ~~Power distribution blocks, pressure connectors, and devices for splices and taps shall be listed. Power distribution blocks~~

~~The following equipment~~ installed on service conductors shall be ~~marked "suitable for use on the line side of the service equipment" or equivalent, listed, and~~

~~Pressure connectors and devices for splices and taps installed on service conductors shall~~ be marked ~~or identified as~~ "suitable for use on the line side of the service equipment" or equivalent.

- (1) ~~Power distribution blocks~~
- (2) ~~Pressure connectors~~
- (3) ~~Devices for splices and taps~~

~~Informational Note: SVC is an industry identification that is considered equivalent to "suitable for use on the line side of service equipment."~~

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**First Revision No. 9132-NFPA 70-2024 [Section No. 230.62]****230.62 Service Equipment — Enclosed or Guarded, and Barrier Placement .**

Energized parts of service equipment shall be enclosed as specified in 230.62(A) or guarded as specified in 230.62(B). Barriers shall be placed as specified in 230.62(C).

(A) Enclosed.

Energized parts shall be enclosed so that they will not be exposed to accidental contact or shall be guarded as in 230.62(B).

(B) Guarded.

Energized parts that are not enclosed shall be installed on a switchboard, panelboard, or control board and guarded in accordance with 110.18 and 110.27. Where energized parts are guarded as provided in 110.27(A)(1) and (A)(2), a means for locking or sealing doors providing access to energized parts shall be provided.

(C) Barriers.

Barriers shall be placed in service equipment such that no energized, uninsulated, ungrounded service busbar or service terminal is exposed to inadvertent contact by persons or maintenance equipment while servicing load terminations with the service disconnect in the open position.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 13:30:17 EST 2024

Committee Statement

Committee Statement: The general paragraph is revised to ensure Item (C) is always required. The text in 230.62(C) was revised to clarify that barriers are required to protect against contact with energized parts. The action in 230.62(C) correlates with 215.15.

Response Message: FR-9132-NFPA 70-2024

Public Input No. 517-NFPA 70-2023 [Section No. 230.62]

Public Input No. 1339-NFPA 70-2023 [Section No. 230.62 [Excluding any Sub-Sections]]

**First Revision No. 9137-NFPA 70-2024 [Section No. 230.66(A)]****(A) General.**

Service equipment ~~rated at 1000 volts or less~~ shall be marked to identify it as being suitable for use as service equipment. ~~All service equipment shall be listed or field evaluated.~~

Submitter Information Verification**Committee:** NEC-P10**Submittal Date:** Thu Jan 25 13:38:32 EST 2024**Committee Statement**

Committee Statement: Listing requirements are being relocated to 230.2 for compliance with the NEC Style Manual section 2.2.1. Removal of "rated at 1000 volts or less" aligns with other proposed actions throughout the scope of CMP 10.

Response Message: FR-9137-NFPA 70-2024

[Public Input No. 3675-NFPA 70-2023 \[Section No. 230.66\(A\)\]](#)



First Revision No. 9142-NFPA 70-2024 [Section No. 230.67(A)]

(A) Surge-Protective Device.

All services supplying the following occupancies shall be provided with a surge-protective device (SPD):

- (1) Dwelling units
- (2) ~~Dormitory units~~ Dormitories
- (3) Guest rooms and guest suites of hotels, motels, and ~~motels~~ dormitories
- (4) Areas of nursing homes and limited-care facilities used exclusively as patient sleeping rooms

~~Informational Note: See 517.10(B)(2) :~~

- (1) Areas designed for use exclusively as sleeping quarters in fire stations, police stations, ambulance stations, rescue stations, ranger stations, and similar locations

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9142_230.67_A_.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 14:10:44 EST 2024

Committee Statement

Committee Statement: The language is revised to coordinate with the proposed revised definition for Dormitory which is found in NFPA 101. The Correlating Committee will need to review the decisions made on the revisions proposed for the definition of Dormitory. The informational note under 230.67(A) has been deleted for compliance with section 2.1.10 of the NEC Style Manual. Added a new item (5) to align with other proposed action taken in Articles 215 and 225.

Response Message: FR-9142-NFPA 70-2024

Public Input No. 805-NFPA 70-2023 [Section No. 230.67(A)]

230.67 Surge Protection.

(A) Surge-Protective Device.

All services supplying the following occupancies shall be provided with a surge-protective device (SPD):

- (1) Dwelling units
- (2) ~~Dormitory units~~Dormitories
- (3) Guest rooms and guest suites of hotels, ~~and~~ motels, and dormitories
- (4) Areas of nursing homes and limited-care facilities used exclusively as patient sleeping rooms
- (5) Areas designed for use exclusively as sleeping quarters in fire stations, police stations, ambulance stations, rescue stations, ranger stations, and similar locations

~~Informational Note: See 517.10(B)(2).~~

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First Revision No. 9155-NFPA 70-2024 [Section No. 230.70]

[See attached word document "70_NEC_CMP10_A2025NEC_230.70_FR9155" for clarification of the proposed revisions]

230.70 General.

Means shall be provided to disconnect all ungrounded conductors in a building or other structure from the service conductors.

(A) Service Disconnect Location.

~~The service disconnecting means~~ Service disconnects shall be installed in accordance with 230.70(A)(1), (A)(2), ~~and (A)(3) and (A)(4).~~

(1) Readily Accessible Location.

~~The service disconnecting means~~ Service disconnects shall be installed at a readily accessible location either outside of a building or structure or inside nearest the point of entrance of the service conductors.

(2) One- and Two-Family Dwellings.

Service disconnects shall be installed in a readily accessible outdoor location on or within sight of the dwelling unit.

(3) Bathrooms.

Service disconnecting means shall not be installed in bathrooms.

(3.4) Remote Control.

~~Where a~~ If remote control device(s) ~~is~~ are used to actuate the service disconnecting means ~~disconnect~~, the service disconnecting means ~~disconnect~~ shall be located in accordance with 230.70(A)(1). Remote control devices shall not be used as a service disconnect for one- and two-family dwellings.

(B) Service Disconnect Marking.

~~Each service disconnect~~ Service disconnects shall be ~~permanently marked to identify it as a service disconnect.~~

{

marked in accordance with 230.70(B)(1) and (B)(2).

(1) Marking.

Service disconnects shall be marked as "SERVICE DISCONNECT" and the marking shall comply with 110.21(B).

(2) One- and Two-Family Dwellings

Service disconnects for one- and two-family dwellings shall be marked as follows:

EMERGENCY DISCONNECT, SERVICE DISCONNECT

Marking shall comply with 110.21(B) and both of the following:

(1) The markings shall be located on the outside of the front of the disconnect enclosure with a red background and white text.

(2) The letters shall be at least 13mm (1/2 in.) high.

(C) Suitable for Use.

~~Each service disconnecting means shall be suitable for the prevailing conditions.~~ Service equipment installed in hazardous (classified) locations shall comply with the hazardous location requirements.

(D) Identification of Other Source Disconnects.

Where equipment for disconnection of other energy source systems is not located adjacent to the service disconnect required by this section, a plaque or directory identifying the location of all equipment for disconnection of other energy sources shall be located adjacent to the service disconnect.

Informational Note: See 445.18, 480.7, 705.20, and 706.15 for examples of other energy source system disconnection means.

(E) Replacement.

Replacement of service equipment for one- and two- family dwellings shall comply with 230.70(A), (B), and (C).

Exception: If only meter sockets, service entrance conductors, or related raceways and fittings are replaced, the requirements of 230.70(A)(2) and 230.70(B)(2) shall not apply.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70_NEC_CMP10_A2025NEC_230.70_FR9155.docx	For staff use only	
70_NEC_CMP10_A2025NEC_230.70_FR9155.docx	For prod use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 15:02:03 EST 2024

Committee Statement

Committee Statement: Requirements related to emergency disconnects found in Section 230.85 of the NEC have caused confusion for the electrical industry since it was not clear what specific types of disconnects were allowed to meet the requirements. It was also unclear how to ensure the emergency disconnect equipment is protected from available fault current. In addition, there has been confusion when applying the requirements for grounding and bonding of Article 250 when an emergency disconnect is installed on the supply-side of a service disconnecting means. This First Revision in conjunction with other First Revisions to 230.82 and 230.85, do not delete requirements for emergency disconnects for one-and two family dwellings, rather the requirements are greatly simplified by requiring the service disconnecting means for the dwelling to be located at a readily accessible location on the outside of the dwelling. Such service disconnecting means will also serve as the emergency disconnect for one- and- two family dwellings. This change will resolve issues related to what type of equipment can be installed for the emergency disconnect, how grounding and bonding is required to be installed, and the issues related to available fault current are addressed by the fact that service equipment is required to have appropriate overcurrent protection.

The concerns of the submitter for Public Input 2191 have been addressed with the First Revision of 230.70. The specific marking is added to better align with the requirement in 230.70(B)(2).

Concerning Public Input 2512, removing the existing requirement does not change the requirements already specified in the NEC. Such existing text is unnecessary. The

second sentence is retained as it's considered to provide clarity.

Response FR-9155-NFPA 70-2024
Message:

[Public Input No. 2191-NFPA 70-2023 \[Section No. 230.70\(B\)\]](#)

[Public Input No. 2023-NFPA 70-2023 \[Section No. 230.70\(C\)\]](#)

[Public Input No. 2512-NFPA 70-2023 \[Section No. 230.70\(C\)\]](#)

[Public Input No. 2022-NFPA 70-2023 \[Section No. 230.70\(B\)\]](#)

[Public Input No. 2021-NFPA 70-2023 \[Section No. 230.70\(A\)\]](#)

[Public Input No. 2582-NFPA 70-2023 \[Section No. 230.70\(A\)\(1\)\]](#)

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230.70 General.

Means shall be provided to disconnect all ungrounded conductors in a building or other structure from the service conductors.

(A) Service Disconnect Location.

~~The service disconnecting means~~Service disconnects shall be installed in accordance with 230.70(A)(1), (A)(2), ~~and (A)(3), and (A)(4).~~

(1) Readily Accessible Location.

~~The service disconnecting means~~Service disconnects shall be installed at a readily accessible location either outside of a building or structure or inside nearest the point of entrance of the service conductors.

(2) One- and Two-Family Dwellings.

Service disconnects shall be installed in a readily accessible outdoor location on or within sight of the dwelling unit.

(23) Bathrooms.

Service disconnecting means shall not be installed in bathrooms.

(34) Remote Control.

~~Where a~~ If remote control device(s) ~~is are~~ used to actuate the service ~~disconnecting means disconnect~~, the service ~~disconnecting means disconnect~~ shall be located in accordance with 230.70(A)(1). Remote controls devices shall not be used as a service disconnect for one- and two-family dwellings.

(B) Service Disconnect Marking.

Service disconnects shall be marked in accordance with 230.70(B)(1) and (B)(2).

(1) Marking.

Service disconnects shall be marked as "SERVICE DISCONNECT" and the marking shall comply with 110.21(B).

(2) One- and Two-Family Dwellings.

Service disconnects for one- and two-family dwellings shall be marked as follows:

EMERGENCY DISCONNECT, SERVICE DISCONNECT

Marking shall comply with 110.21(B) and both of the following:

- (1) The markings shall be located on the outside of the front of the disconnect enclosure with a red background and white text.
- (2) The letters shall be at least 13mm (1/2 in.) high.

(C) Suitable for Use.

~~Each service disconnecting means shall be suitable for the prevailing conditions.~~ Service equipment installed in hazardous (classified) locations shall comply with the hazardous location requirements.

(D) Identification of Other Source Disconnects.

Where equipment for disconnection of other energy source systems is not located adjacent to the service disconnect required by this section, a plaque or directory identifying the location of all equipment for disconnection of other energy sources shall be located adjacent to the service disconnect.

Informational Note: See 445.18, 480.7, 705.20, and 706.15 for examples of other energy source system disconnection means.

(E) Replacement.

Replacement of service equipment for one- and two- family dwellings shall comply with 230.70(A), (B), and (C).

Exception: If only meter sockets, service entrance conductors, or related raceways and fittings are replaced, the requirements of 230.70(A)(2) and 230.70(B)(2) shall not apply.

**First Revision No. 9167-NFPA 70-2024 [Section No. 230.71]****230.71** Maximum Number of Service Disconnects.

Each service shall have only one ~~disconnecting means~~ service disconnect unless the requirements of 230.71(B) are met.

(A) General.

For the purpose of this section, ~~disconnecting means~~ disconnects installed as part of listed equipment and used solely for the following shall not be considered a ~~service disconnecting means~~ Power counted as one of the permitted service disconnects:

- (1) Disconnection of power monitoring equipment
- (2) Surge Disconnection of surge protective device(s)
- (3) Control Disconnection of control circuit of the ground-fault protection system
- (4) Power Disconnection of control circuit for power-operable service disconnecting means disconnect

(B) Two to Six Service Disconnecting Means Disconnects .

Two to six service disconnects shall be permitted for each service permitted by 230.2 or for each set of service-entrance conductors permitted by 230.40, Exception No. 1, 3, 4, or 5. The two to six service ~~disconnecting means~~ disconnects shall be permitted to consist of a combination of any of the following:

- (1) Separate enclosures with a ~~main single service disconnecting means~~ disconnect in each enclosure
- (2) ~~Panelboards with a main service disconnecting means in each panelboard enclosure~~
- (3) ~~Switchboard(s)~~ Switchboards where there is only one service disconnect in each separate vertical section with barriers provided between each vertical section to maintain the inadvertent contact protection required in 230.62 based on access from the adjacent section(s)
- (4) ~~Service disconnects in switchgear, Switchgear and transfer switches, or metering centers where each service disconnect is located in a separate compartment~~
- (5) Metering centers with a ~~main service disconnecting means in each metering center~~ each service disconnect located in a separate compartment or in separate enclosures
- (6) Motor control center(s) where there is only one service disconnect in a motor control center unit and a maximum of two service disconnects provided in a single motor control center with barriers provided between each motor control center unit or compartment containing a service disconnect to maintain the inadvertent contact protection required in 230.62 based on access from adjacent motor control center unit(s) or compartment(s)

Exception to (2), (3), (4), (5), and (6) Exception : Existing service equipment, installed in compliance with previous editions of this Code that permitted multiple service ~~disconnecting means~~ disconnects in a single enclosure, section, or compartment, shall be permitted to contain a maximum of six service ~~disconnecting means~~ disconnects .

Informational Note No. 1: See UL 67, 13th edition, Standard for Panelboards, for information on metering centers.

Informational Note No. 2: Examples of separate enclosures with a ~~main single service disconnecting means~~ disconnect in each enclosure include but are not limited to panelboards, motor control centers, fused disconnects, and circuit breaker enclosures.

Informational Note No. 3: Transfer switches ~~are~~ may be provided with one service disconnect in the transfer switch enclosure, or multiple service disconnects in separate compartments within the transfer switch enclosure .

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9167_230.71.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 15:26:07 EST 2024

Committee Statement

Committee Statement: The revised text aligns terminology to improve the clarity in the Section.

Informational Note No. 1 is being updated with the current edition of UL 67 in accordance with Section 3.3.6.2 of the Regulations Governing the Development of NFPA Standards.

Response FR-9167-NFPA 70-2024

Message:

[Public Input No. 1531-NFPA 70-2023 \[Section No. 230.71\(B\)\]](#)

[Public Input No. 2562-NFPA 70-2023 \[Section No. 230.71\]](#)

FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

230.71 Maximum Number of **Service Disconnects**.

Each service shall have only one ~~disconnecting means~~service disconnect unless the requirements of 230.71(B) are met.

(A) General.

For the purpose of this section, ~~disconnecting means~~disconnect installed as part of listed equipment and used solely for the following shall not be ~~considered~~accounted as one of the permitted service ~~disconnecting means~~disconnects:

- (1) ~~Disconnection of p~~Power monitoring equipment
- (2) ~~Disconnection of s~~Surge-protective device(s)
- (3) ~~Disconnection of c~~Control circuit of the ground-fault protection system
- (4) ~~Disconnection of control circuit for P~~power-operable service ~~disconnecting means~~disconnect

(B) Two to Six Service ~~Disconnecting Means~~Disconnects.

Two to six service disconnects shall be permitted for each service permitted by 230.2 or for each set of service-entrance conductors permitted by 230.40, Exception No. 1, 3, 4, or 5. The two to six service ~~disconnecting means~~disconnects shall be permitted to consist of a combination of any of the following:

- (1) Separate enclosures with a ~~main single~~service disconnecting disconnect means in each enclosure
- ~~(2) Panelboards with a main service disconnecting means in each panelboard enclosure~~
- ~~(23)~~ Switchboard~~s(s)~~ where there is only one service disconnect in each separate vertical section with barriers provided between each vertical section to maintain the inadvertent contact protection required in 230.62 based on access from the adjacent section(s)
- ~~(43)~~ ~~Service disconnects in s~~Switchgear, and transfer switches, ~~or metering centers~~ where each service disconnect is located in a separate compartment
- ~~(54)~~ Metering centers with each service disconnect located in a separate compartment or in separate enclosures a main service disconnecting means in each metering center
- ~~(65)~~ Motor control center(s) where there is only one service disconnect in a motor control center unit and a maximum of two service disconnects provided in a single motor control center with barriers provided between each motor control center unit or compartment containing a service disconnect to maintain the inadvertent contact protection required in 230.62 based on access from adjacent motor control center unit(s) or compartment(s)

~~Exception to (2), (3), (4), (5), and (6): Existing service equipment, installed in compliance with previous editions of this Code that permitted multiple service disconnecting means~~disconnects in a single enclosure, section, or compartment, shall be permitted to contain a maximum of six service ~~disconnecting means~~disconnects.

Informational Note No. 1: See UL 67, 13th edition, Standard for Panelboards, for information on metering centers.

Informational Note No. 2: Examples of separate enclosures with a ~~main single~~service disconnecting meansdisconnect in each enclosure include but are not limited to panelboards, motor control centers, fused disconnects, and circuit breaker enclosures.

Formatted: Superscript

Informational Note No. 3: Transfer switches are provided with one service disconnect in the transfer switch enclosure, or multiple service disconnects in separate compartments within the transfer switch enclosure.

FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

**First Revision No. 9171-NFPA 70-2024 [Section No. 230.79(C)]****(C) One-Family Dwellings.**

For a one-family dwelling, the service disconnecting means shall have a rating of not less than 100 amperes, ~~3-wire~~.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 15:42:26 EST 2024

Committee Statement

Committee Statement: The text is revised to remove 3-wire as this is not a rating, and other wire configurations may also be suitable for one-family dwellings.

Response Message: FR-9171-NFPA 70-2024

[Public Input No. 861-NFPA 70-2023 \[Section No. 230.79\(C\)\]](#)



First Revision No. 9169-NFPA 70-2024 [Section No. 230.79 [Excluding any Sub-Sections]]

The service disconnecting means shall have a rating not less than the calculated load to be carried, determined in accordance with Article 220, Part III, IV, or V- of ~~Article 220~~ , as applicable. In no case shall the rating be lower than specified in 230.79(A), (B), (C), or (D).

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 15:39:37 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4.

Response Message: FR-9169-NFPA 70-2024

Public Input No. 2639-NFPA 70-2023 [Section No. 230.79 [Excluding any Sub-Sections]]



First Revision No. 9174-NFPA 70-2024 [Section No. 230.82]

FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

230.82 Equipment Connected to the Supply Side of Service Disconnect.

Only the following equipment shall be permitted to be connected to the supply side of the service disconnecting means:

- (1) Cable limiters.
- (2) Meters and meter sockets ~~nominally rated not in excess of 1000 volts~~, if all metal housings and service enclosures are grounded in accordance with Article 250, Part VII and bonded in accordance with ~~Part V of Article 250, Part V~~.
- (3) Meter disconnect switches ~~nominally rated not in excess of 1000 volts~~ that have a short-circuit current rating equal to or greater than the available fault current, if all metal housings and service enclosures are grounded in accordance with Article 250, Part VII and bonded in accordance with ~~Part V of Article 250, Part V~~. A meter disconnect switch shall be capable of interrupting the load served. A meter disconnect shall be in equipment legibly field marked on its exterior in a manner suitable for the environment as follows:

METER DISCONNECT NOT DISCONNECT NOT SERVICE EQUIPMENT

- (4) Instrument transformers (current and voltage), impedance shunts, load management devices, surge arresters, and Type 1 surge-protective devices.
- (5) Conductors used to supply energy management systems, circuits for standby power systems, fire pump equipment, and fire and sprinkler alarms, if provided with service equipment and installed in accordance with requirements for service-entrance conductors.
- (6) Solar photovoltaic systems, fuel cell systems, wind electric systems, energy storage systems, or interconnected electric power production sources, if provided with a disconnecting means in equipment listed as suitable for use as service equipment, and overcurrent protection as specified in ~~Part VII of Article 230, Part VII~~.
- (7) Control circuits for power-operable service disconnecting means, if suitable overcurrent protection and disconnecting means are provided.
- (8) Ground-fault protection systems or Type 2 surge-protective devices, where installed as part of listed equipment, if suitable overcurrent protection and disconnecting means are provided.
- (9) Connections used only to supply listed communications equipment under the exclusive control of the serving electric utility, if suitable overcurrent protection and disconnecting means are provided. For installations of equipment by the serving electric utility, a disconnecting means is not required if the supply is installed as part of a meter socket, such that access can only be gained with the meter removed.
- (10) ~~Emergency disconnects in accordance with 230.85 (B)(2) and (B)(3), if all metal housings and enclosures are grounded in accordance with Part VII and bonded in accordance with Part V of Article 250.~~
- (11) Meter-mounted transfer switches ~~nominally rated not in excess of 1000 volts~~ that have a short-circuit current rating equal to or greater than the available fault current. A meter-mounted transfer switch shall be listed and be capable of transferring the load served. A meter-mounted transfer switch shall be marked on its exterior with both of the following:
 - (12) Meter-mounted transfer switch
 - (13) Not service equipment
- (14) Control power circuits for protective relays where installed as part of listed equipment, if overcurrent protection and disconnecting means are provided.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9174_230.82.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 15:49:03 EST 2024

Committee Statement

Committee Statement: List item (10) is deleted as the service disconnect is now required to be the emergency disconnect in conjunction with the First Revision to Section 230.70.

Additionally, the text for list items (2), (3) and (6) is revised to comply with the NEC Style Manual, Section 4.1.4.

Concerning Public Input No. 531, the revised text provides clarity that the equipment housing the disconnect or disconnecting means is suitably marked.

With the identification in the title and scope of the Article that the requirements apply to certain voltage ranges, the inclusion of this detail in this section is unnecessary.

Response Message: FR-9174-NFPA 70-2024

[Public Input No. 2641-NFPA 70-2023 \[Section No. 230.82\]](#)

[Public Input No. 531-NFPA 70-2023 \[Section No. 230.82\]](#)

[Public Input No. 2584-NFPA 70-2023 \[Section No. 230.82\]](#)

[Public Input No. 2025-NFPA 70-2023 \[Section No. 230.82\]](#)

230.82 Equipment Connected to the Supply Side of Service Disconnect.

Only the following equipment shall be permitted to be connected to the supply side of the service disconnecting means:

- (1) Cable limiters.
- (2) Meters and meter sockets ~~nominally rated not in excess of 1000 volts~~, if all metal housings and service enclosures are grounded in accordance with Article 250, Part VII and bonded in accordance with Article 250, Part V ~~of Article 250~~.
- (3) Meter disconnect switches ~~nominally rated not in excess of 1000 volts~~ that have a short-circuit current rating equal to or greater than the available fault current, if all metal housings and service enclosures are grounded in accordance with Article 250, Part VII and bonded in accordance with Article 250, Part V ~~of Article 250~~. A meter disconnect switch shall be capable of interrupting the load served. A meter disconnect shall be in equipment legibly field marked on its exterior in a manner suitable for the environment as follows:

METER DISCONNECT NOT SERVICE EQUIPMENT

- (4) Instrument transformers (current and voltage), impedance shunts, load management devices, surge arresters, and Type 1 surge-protective devices.
- (5) Conductors used to supply energy management systems, circuits for standby power systems, fire pump equipment, and fire and sprinkler alarms, if provided with service equipment and installed in accordance with requirements for service-entrance conductors.
- (6) Solar photovoltaic systems, fuel cell systems, wind electric systems, energy storage systems, or interconnected electric power production sources, if provided with a disconnecting means in equipment listed as suitable for use as service equipment, and overcurrent protection as specified in Article 230, Part VII ~~of Article 230~~.
- (7) Control circuits for power-operable service disconnecting means, if suitable overcurrent protection and disconnecting means are provided.
- (8) Ground-fault protection systems or Type 2 surge-protective devices, where installed as part of listed equipment, if suitable overcurrent protection and disconnecting means are provided.
- (9) Connections used only to supply listed communications equipment under the exclusive control of the serving electric utility, if suitable overcurrent protection and disconnecting means are provided. For installations of equipment by the serving electric utility, a disconnecting means is not required if the supply is installed as part of a meter socket, such that access can only be gained with the meter removed.
- ~~(10) Emergency disconnects in accordance with 230.85(B)(2) and (B)(3), if all metal housings and enclosures are grounded in accordance with Part VII and bonded in accordance with Part V of Article 250.~~
- (10~~1~~) Meter-mounted transfer switches ~~nominally rated not in excess of 1000 volts~~ that have a short-circuit current rating equal to or greater than the available fault current. A meter-mounted transfer switch shall be listed and be capable of transferring the load served. A meter-mounted transfer switch shall be marked on its exterior with both of the following:
 - a. Meter-mounted transfer switch

b. Not service equipment

- | (1~~1~~2) Control power circuits for protective relays where installed as part of listed equipment, if overcurrent protection and disconnecting means are provided.

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SUBJECT TO REVISION - NOT FOR PUBLICATION

**First Revision No. 9179-NFPA 70-2024 [Section No. 230.85]****230.85– Emergency Disconnects:**

~~For one- and two-family dwelling units, an emergency disconnecting means shall be installed.~~

(A)– General:**(1)– Location:**

~~The disconnecting means shall be installed in a readily accessible outdoor location on or within sight of the dwelling unit.~~

~~Exception: Where the requirements of 225.41 are met, this section shall not apply.~~

(2)– Rating:

~~The disconnecting means shall have a short-circuit current rating equal to or greater than the available fault current.~~

(3)– Grouping:

~~If more than one disconnecting means is provided, they shall be grouped.~~

(B)– Disconnects:

~~Each disconnect shall be one of the following:~~

- ~~(1) Service disconnect~~
- ~~(2) A meter disconnect integral to the meter mounting equipment not marked as suitable only for use as service equipment installed in accordance with 230.82~~
- ~~(3) Other listed disconnect switch or circuit breaker that is marked suitable for use as service equipment, but not marked as suitable only for use as service equipment, installed on the supply side of each service disconnect~~

~~Informational Note 1: Conductors between the emergency disconnect and the service disconnect in 230.85(2) and 230.85(3) are service conductors.~~

~~Informational Note 2: Equipment marked “Suitable only for use as service equipment” includes the factory marking “Service Disconnect”.~~

(C)– Replacement:

~~Where service equipment is replaced, all of the requirements of this section shall apply.~~

~~Exception: Where only meter sockets, service entrance conductors, or related raceways and fittings are replaced, the requirements of this section shall not apply.~~

(D)– Identification of Other Isolation Disconnects:

~~Where equipment for isolation of other energy source systems is not located adjacent to the emergency disconnect required by this section, a plaque or directory identifying the location of all equipment for isolation of other energy sources shall be located adjacent to the disconnecting means required by this section.~~

~~Informational Note: See 445.18 , 480.7 , 705.20 , and 706.15 for examples of other energy source system isolation means.~~

(E)– Marking:

(1) – Marking Text:

The disconnecting means shall be marked as follows:

(1) Service disconnect

EMERGENCY DISCONNECT, SERVICE DISCONNECT

(2) Meter disconnects installed in accordance with 230.82 (3) and marked as follows:

EMERGENCY DISCONNECT, METER DISCONNECT, NOT SERVICE EQUIPMENT

(3) Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are marked suitable for use as service equipment and marked as follows:

EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT

(2) – Marking Location and Size:

Markings shall comply with 110.21(B) and both of the following:

(1) The marking or labels shall be located on the outside front of the disconnect enclosure with red background and white text.**(2) The letters shall be at least 13 mm ($\frac{1}{2}$ in.) high.**

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 16:00:42 EST 2024

Committee Statement

Committee Statement: In conjunction with the proposed First Revision to section 230.70, section 230.85 has been proposed to be deleted as emergency disconnects are now service disconnects.

Response Message: FR-9179-NFPA 70-2024

[Public Input No. 2578-NFPA 70-2023 \[Section No. 230.85\]](#)

[Public Input No. 2583-NFPA 70-2023 \[Section No. 230.85\]](#)

[Public Input No. 3801-NFPA 70-2023 \[Section No. 230.85\]](#)

[Public Input No. 1925-NFPA 70-2023 \[Sections 230.85, 230.85\]](#)

[Public Input No. 4427-NFPA 70-2023 \[Section No. 230.85\(B\)\]](#)



First Revision No. 9176-NFPA 70-2024 [Section No. 230.95]

230.95 Ground-Fault Protection of Equipment.

(A) AC Systems.

Ground-fault protection of equipment shall be provided for solidly grounded wye electric services of more than 150 volts to ground but not exceeding 1000 volts phase-to-phase for each service disconnect rated 1000 amperes or more. The grounded conductor for the solidly grounded wye system shall be connected directly to ground through a grounding electrode system, as specified in 250.50, without inserting any resistor or impedance device.

The rating of the service disconnect shall be considered to be the rating of the largest fuse that can be installed or the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated or can be adjusted.

Exception: The ground-fault protection provisions of this section shall not apply to a service disconnect for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.

(

A)

B) DC Systems.

Ground-fault protection of equipment shall be provided for solidly grounded dc electric services of more than 150 volts to ground but not exceeding 1500 volts dc line-to-line for each service disconnect rated 1000 amperes or more. The grounded conductor for the solidly grounded dc system shall be connected directly to ground through a grounding electrode system, as specified in 250.50, without inserting any resistor or impedance device.

The rating of the service disconnect shall be considered to be the rating of the largest fuse that can be installed or the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated or can be adjusted.

Exception: The ground-fault protection provisions of this section shall not apply to a service disconnect for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.

(C) Setting.

The ground-fault protection system shall operate to cause the service disconnect to open all ungrounded conductors of the faulted circuit. The maximum setting of the ground-fault protection shall be 1200 amperes, and the maximum time delay shall be one second for ground-fault currents equal to or greater than 3000 amperes.

(B D) Fuses.

If a switch and fuse combination is used, the fuses employed shall be capable of interrupting any current higher than the interrupting capacity of the switch during a time that the ground-fault protective system will not cause the switch to open.

(G E) Performance Testing.

The ground-fault protection system shall be performance tested when first installed on site. This testing shall be conducted by a qualified person(s) using a test process of primary current injection, in accordance with instructions that shall be provided with the equipment. A written record of this testing shall be made and shall be available to the authority having jurisdiction.

Informational Note No. 1: Ground-fault protection that functions to open the service disconnect affords no protection from faults on the line side of the protective element. It serves only to limit damage to conductors and equipment on the load side in the event of an arcing ground fault on the load side of the protective element.

Informational Note No. 2: This added protective equipment at the service equipment could make it necessary to review the overall wiring system for proper selective overcurrent protection coordination. Additional installations of ground-fault protective equipment might be needed on feeders and branch circuits where maximum continuity of electric service is necessary.

Informational Note No. 3: Where ground-fault protection is provided for the service disconnect and interconnection is made with another supply system by a transfer device, means or devices could be needed to ensure proper ground-fault sensing by the ground-fault protection equipment.

Informational Note No. 4: See 517.17(A) for information on where an additional step of ground-fault protection is required for hospitals and other buildings with critical areas or life support equipment.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9176_230.95.docx		

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 15:55:23 EST 2024

Committee Statement

Committee Statement: The committee is including DC in 230.95 to ensure the hazards for arcing faults are also addressed in DC systems from 150V to ground up to 1500V line-to-line.

Response Message: FR-9176-NFPA 70-2024

Public Input No. 4280-NFPA 70-2023 [Section No. 230.95]

230.95 Ground-Fault Protection of Equipment. [Move text to (A)]

~~Ground-fault protection of equipment shall be provided for solidly grounded wye electric services of more than 150 volts to ground but not exceeding 1000 volts phase-to-phase for each service disconnect rated 1000 amperes or more. The grounded conductor for the solidly grounded wye system shall be connected directly to ground through a grounding electrode system, as specified in 250.50, without inserting any resistor or impedance device.~~

~~The rating of the service disconnect shall be considered to be the rating of the largest fuse that can be installed or the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated or can be adjusted.~~

~~*Exception: The ground-fault protection provisions of this section shall not apply to a service disconnect for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.*~~

(A) AC Systems.

Ground-fault protection of equipment shall be provided for solidly grounded wye electric services of more than 150 volts to ground but not exceeding 1000 volts phase-to-phase for each service disconnect rated 1000 amperes or more. The grounded conductor for the solidly grounded wye system shall be connected directly to ground through a grounding electrode system, as specified in 250.50, without inserting any resistor or impedance device.

The rating of the service disconnect shall be considered to be the rating of the largest fuse that can be installed or the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated or can be adjusted.

Exception: The ground-fault protection provisions of this section shall not apply to a service disconnect for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.

(B) DC Systems.

Ground-fault protection of equipment shall be provided for solidly grounded dc electric services of more than 150 volts to ground but not exceeding 1500 volts dc line-to-line for each service disconnect rated 1000 amperes or more. The grounded conductor for the solidly grounded dc system shall be connected directly to ground through a grounding electrode system, as specified in 250.50, without inserting any resistor or impedance device.

The rating of the service disconnect shall be considered to be the rating of the largest fuse that can be installed or the highest continuous current trip setting for which the actual overcurrent device installed in a circuit breaker is rated or can be adjusted.

Exception: The ground-fault protection provisions of this section shall not apply to a service disconnect for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.

(AC) Setting.

The ground-fault protection system shall operate to cause the service disconnect to open all ungrounded conductors of the faulted circuit. The maximum setting of the ground-fault protection shall be 1200 amperes, and the maximum time delay shall be one second for ground-fault currents equal to or greater than 3000 amperes.

(BD) Fuses.

If a switch and fuse combination is used, the fuses employed shall be capable of interrupting any current higher than the interrupting capacity of the switch during a time that the ground-fault protective system will not cause the switch to open.

(CE) Performance Testing.

The ground-fault protection system shall be performance tested when first installed on site. This testing shall be conducted by a qualified person(s) using a test process of primary current injection, in accordance with instructions that shall be provided with the equipment. A written record of this testing shall be made and shall be available to the authority having jurisdiction.

Informational Note No. 1: Ground-fault protection that functions to open the service disconnect affords no protection from faults on the line side of the protective element. It serves only to limit damage to conductors and equipment on the load side in the event of an arcing ground fault on the load side of the protective element.

Informational Note No. 2: This added protective equipment at the service equipment could make it necessary to review the overall wiring system for proper selective overcurrent protection coordination. Additional installations of ground-fault protective equipment might be needed on feeders and branch circuits where maximum continuity of electric service is necessary.

Informational Note No. 3: Where ground-fault protection is provided for the service disconnect and interconnection is made with another supply system by a transfer device, means or devices could be needed to ensure proper ground-fault sensing by the ground-fault protection equipment.

Informational Note No. 4: See 517.17(A) for information on where an additional step of ground-fault protection is required for hospitals and other buildings with critical areas or life support equipment.

**First Revision No. 8920-NFPA 70-2024 [Section No. 240.1]****240.1 Scope.**

Parts I through VII of this article provide the general requirements for overcurrent protection and overcurrent protective devices not ~~more than over~~ 1000 volts ac , 1500 volts dc, nominal. Part VIII covers overcurrent protection for those portions of supervised industrial installations operating at voltages of not ~~more than over~~ 1000 volts ac , 1500 volts dc, nominal.

Informational Note No. 1: Overcurrent protection for conductors and equipment is provided to open the circuit if the current reaches a value that will cause an excessive or dangerous temperature in conductors or conductor insulation.

Informational Note No. 2: See 110.9 for requirements for interrupting ratings and 110.10 for requirements for protection against fault currents.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 12:55:09 EST 2024

Committee Statement

Committee Statement: References to voltages were also updated for accuracy.

Response Message: FR-8920-NFPA 70-2024



First Revision No. 9197-NFPA 70-2024 [Section No. 240.2]

240.2- 3 _ Reconditioned Equipment.

(A)- Reconditioning Not Permitted _ _ Permitted to be Installed.

The following reconditioned equipment shall be permitted to be installed:

- (1) Low-voltage power circuit breakers
- (2) Electromechanical protective relays and current transformers

(B) _ Not Permitted to be Installed _

The following reconditioned equipment shall not be ~~reconditioned~~: installed.

- (1) _ Equipment providing ground-fault protection of equipment
- (2) Ground-fault circuit interrupters
- (3) Low-voltage fuseholders and low-voltage nonrenewable fuses
- (4) Molded-case circuit breakers
- (5) Low-voltage power circuit breaker electronic trip units

:-

(6)

(B)- Reconditioning Permitted.

The following equipment shall be permitted to be ~~reconditioned~~:

- (1) ~~Low-voltage power circuit breakers~~
- (2) ~~Electromechanical protective relays and current transformers~~

~~Reconditioned equipment shall be listed as reconditioned and comply with- 110.21(A)(2) :-~~

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9197_240.2.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 16:34:51 EST 2024

Committee Statement

Committee Statement: The text and numbering has been revised to comply with the NEC Style Manual section 2.2.1.

Response Message: FR-9197-NFPA 70-2024

Public Input No. 2599-NFPA 70-2023 [Section No. 240.2]

Public Input No. 1318-NFPA 70-2023 [Section No. 240.2]

[Public Input No. 1954-NFPA 70-2023 \[Section No. 240.2\]](#)

[Public Input No. 3692-NFPA 70-2023 \[Section No. 240.2\]](#)

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[Move 240.2 to 240.3]

240.32 Reconditioned Equipment.

(A) ~~Reconditioning Not Permitted.~~ Permitted to be Installed.

The following reconditioned equipment shall be permitted to be installed; ~~not be reconditioned~~:

- ~~(1) Equipment providing ground-fault protection of equipment~~
- ~~(2) Ground-fault circuit interrupters~~
- ~~(3) Low-voltage fuseholders and low-voltage nonrenewable fuses~~
- ~~(4) Molded-case circuit breakers~~
- ~~(5) Low-voltage power circuit breaker electronic trip units.~~
- (1) Low-voltage power circuit breakers
- (2) Electromechanical protective relays and current transformers

(B) ~~Reconditioning Permitted.~~ Not Permitted to be Installed.

The following reconditioned equipment shall ~~be permitted to be reconditioned~~ not be installed:

- ~~(1) Low-voltage power circuit breakers~~
- ~~(2) Electromechanical protective relays and current transformers~~
- (1) Equipment providing ground-fault protection of equipment
- (2) Ground-fault circuit interrupters
- (3) Low-voltage fuseholders and low-voltage nonrenewable fuses
- (4) Molded-case circuit breakers
- (5) Low-voltage power circuit breaker electronic trip units

~~Reconditioned equipment shall be listed as reconditioned and comply with 110.21(A)(2).~~



First Revision No. 9201-NFPA 70-2024 [Section No. 240.3]

~~240.3~~ Other Articles:

Equipment shall be protected against overcurrent in accordance with the article in this Code that covers the type of equipment specified in Table 240.3 :

Table 240.3 Other Articles

Equipment Article Air-conditioning and refrigerating equipment 440 Appliances 422 Assembly occupancies 518 Audio-signal processing, amplification, and reproduction equipment 640 Branch circuits 240 Busways 368 Capacitors 460 Class 1 power-limited circuits and Class 1 power-limited remote-control and signaling circuits 724 Class 2 and Class 3 remote-control, signaling, and power-limited circuits 725 Cranes and hoists 610 Electric signs and outline lighting 600 Electric welders 630 Electrolytic cells 668 Elevators, dumbwaiters, escalators, moving walks, wheelchair lifts, and stairway chairlifts 620 Emergency systems 700 Fire alarm systems 760 Fire pumps 695 Fixed electric heating equipment for pipelines and vessels 427 Fixed electric space-heating equipment 424 Fixed outdoor electric deicing and snow-melting equipment 426 Generators 445 Health care facilities 517 Induction and dielectric heating equipment 665 Industrial machinery 670 Luminaires, lampholders, and lamps 410 Motion picture and television studios and similar locations 530 Motors, motor circuits, and controllers 430 Phase converters 455 Pipe organs 650 Receptacles 406 Services 230 Solar photovoltaic systems 690 Switchboards, switchgear, and panelboards 408 Theaters, audience areas of motion picture and television studios, and similar locations 520 Transformers and transformer vaults 450 X-ray equipment 660

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 16:48:17 EST 2024

Committee Statement

Committee Statement: The existing Section 240.3 is removed as the NEC is intended for use by qualified people. The information in 240.3 can be found by using the table of contents or the index. The section is also removed for compliance with the NEC Style Manual section 2.2.1.

Response Message: FR-9201-NFPA 70-2024

[Public Input No. 982-NFPA 70-2023 \[Section No. 240.3\]](#)

[Public Input No. 3693-NFPA 70-2023 \[Section No. 240.3\]](#)

**First Revision No. 9202-NFPA 70-2024 [Section No. 240.4(A)]****(A) Power Loss Hazard.**

Conductor overload protection shall not be required where the interruption of the circuit would create a hazard, ~~such as in a material-handling magnet circuit or fire pump circuit~~. Short-circuit protection shall be provided.

Informational Note No. 1 : See NFPA 20-2019, *Standard for the Installation of Stationary Pumps for Fire Protection*.

Informational Note No. 2: Examples of such circuits include material-handling magnet circuits or fire pump circuits.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 16:52:04 EST 2024

Committee Statement

Committee Statement: The examples are moved to Informational Note No. 2 in accordance with the NEC Style Manual section 2.1.10, as they improve usability of the associated requirement.

Response Message: FR-9202-NFPA 70-2024

Public Input No. 1983-NFPA 70-2023 [Section No. 240.4(A)]



First Revision No. 9208-NFPA 70-2024 [Section No. 240.5 [Excluding any Sub-Sections]]

Flexible cord and flexible cable, including tinsel cord and ~~extension cords~~ cord sets , and fixture wires shall ~~be protected against overcurrent by either~~ have overcurrent protection in accordance with 240.5(A) or (B) .

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 08:53:39 EST 2024

Committee Statement

Committee Statement: The proposed change is necessary to align with the defined term "cord sets."
The overcurrent protection reference to 240.5(A) or (B) was revised to comply with the NEC Style Manual section 4.1.3.

Response Message: FR-9208-NFPA 70-2024

Public Input No. 2087-NFPA 70-2023 [Section No. 240.5 [Excluding any Sub-Sections]]



First Revision No. 9210-NFPA 70-2024 [Section No. 240.6]

240.6 Standard Ampere Ratings.

(A) Fuses and Fixed-Trip Circuit Breakers.

The standard ampere ratings for fuses and inverse time circuit breakers shall be considered as shown in Table 240.6(A). Additional standard ampere ratings for fuses shall be 1, 3, 6, and 601. The use of fuses and inverse time circuit breakers with nonstandard ampere ratings shall be permitted.

Table 240.6(A) Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers

Standard Ampere Ratings				
10	15	20	25	30
35	40	45	50	60
70	80	90	100	110
125	150	175	200	225
250	300	350	400	450
500	600	700	800	1000
1200	1600	2000	2500	3000
4000	5000	6000	—	—

(B) Adjustable-Trip Circuit Breakers.

The rating of adjustable-trip circuit breakers having external means for adjusting the current setting (long-time pickup setting) ~~not meeting the requirements of~~ shall be the maximum setting possible unless otherwise permitted in 240.6(C), shall be the maximum setting possible, or 240.6(D).

(C) Local Restricted Access Adjustable-Trip Circuit Breakers.

A circuit breaker(s) ~~that that cannot be adjusted remotely to modify the current setting (long-time pickup setting) and~~ has restricted access to the adjusting means shall be permitted to have an ampere rating(s) that is equal to the adjusted current setting (long-time pickup setting). Restricted access shall be achieved by one of the following methods:

- (1) Located behind removable and sealable covers over the adjusting means
- (2) Located behind bolted equipment enclosure doors
- (3) Located behind locked doors accessible only to qualified personnel
- (4) Password protected, with password accessible only to qualified personnel

Informational Note: See NFPA 730, *Guide for Premises Security*, and ANSI/TIA-5017, *Telecommunications Physical Network Security Standard*, for information regarding physical security.

(D) Remotely Accessible Adjustable-Trip Circuit Breakers.

~~A circuit breaker(s)~~ Circuit breakers that can be adjusted remotely to modify the ~~adjusting means~~ current setting (long-time pickup setting) shall be permitted to have an ampere rating(s) that is equal to the adjusted current setting (long-time pickup setting). ~~Remote access shall be only when local restricted access to the circuit breaker is achieved by 240.6(C)(1), (C)(2), (C)(3) or (C)(4), and remote access is achieved by one of the following methods:~~

- (1) Connected directly through a local nonnetworked interface.
- (2) Connected through a networked interface complying with one of the following methods:
 - (3) The circuit breaker and associated software for adjusting the settings are identified as being evaluated for cybersecurity.
 - (4) A cybersecurity assessment of the network is completed. Documentation of the assessment and certification shall be made available to those authorized to inspect, operate, and maintain the system.

Informational Note No. 1: See ANSI/ISA 62443, *Cybersecurity Standards series*, UL 2900 *Cybersecurity Standard series*, or the NIST *Framework for Improving Critical Infrastructure Cybersecurity*, Version 1.1 for assessment requirements.

Informational Note No. 2: ~~Examples of the commissioning certification~~ used to demonstrate the system has been investigated for cybersecurity vulnerabilities could be one of the following:

- (1) The ISA Security Compliance Institute (ISCI) conformity assessment program
- (2) Certification of compliance by a nationally recognized test laboratory
- (3) Manufacturer certification for the specific type and brand of system provided

Informational Note No. 3: Cybersecurity is a specialized field requiring constant, vigilant attention to security vulnerabilities that could arise due to software defects, system configuration changes, or user interactions. Installation of devices that can be secured is an important first step but not sufficient to guarantee a secure system.

Informational Note No. 4: See NEMA CY70001-2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9210_240.6.docx	For Staff Use	
NEC_CMP10_FR-9210_240.6.docx	For prod use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 09:03:10 EST 2024

Committee Statement

Committee Statement: The revisions to 240.6(B), 240.6(C) and 240.6(D) provide clarity as to the applicability of the requirements for adjustable circuit breakers which may have local or remotely accessible adjusting means.

The additional Informational Note No. 4 for 240.6(D) helps provide guidance related to cyber-security of an electrical system. Informational Note No. 4 is being updated with the current edition of NEMA CY70001 in accordance with Section 3.3.6.2 of the

Regulations Governing the Development of NFPA Standards.

Response FR-9210-NFPA 70-2024
Message:

Public Input No. 3426-NFPA 70-2023 [Section No. 240.6(D)]

Public Input No. 4060-NFPA 70-2023 [Sections 240.6(B), 240.6(C), 240.6(D)]

FOR COMMITTEE USE ONLY
SUBJECT TO REVISION - NOT FOR PUBLICATION

240.6 Standard Ampere Ratings.

(A) Fuses and Fixed-Trip Circuit Breakers.

The standard ampere ratings for fuses and inverse time circuit breakers shall be considered as shown in Table 240.6(A). Additional standard ampere ratings for fuses shall be 1, 3, 6, and 601. The use of fuses and inverse time circuit breakers with nonstandard ampere ratings shall be permitted.

Table 240.6(A) Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers

Standard Ampere Ratings				
10	15	20	25	30
35	40	45	50	60
70	80	90	100	110
125	150	175	200	225
250	300	350	400	450
500	600	700	800	1000
1200	1600	2000	2500	3000
4000	5000	6000	—	—

(B) Adjustable-Trip Circuit Breakers.

The rating of adjustable-trip circuit breakers having external means for adjusting the current setting (long-time pickup setting), ~~not meeting the requirements of 240.6(C),~~ shall be the maximum setting possible ~~unless otherwise permitted in 240.6(C) or 240.6(D).~~

(C) Local Restricted Access Adjustable-Trip Circuit Breakers.

A circuit breaker(s) that ~~cannot be adjusted remotely to modify the current setting (long-time pickup setting)~~ and has restricted access to the adjusting means shall be permitted to have an ampere rating(s) that is equal to the adjusted current setting (long-time pickup setting). Restricted access shall be achieved by one of the following methods:

- (1) Located behind removable and sealable covers over the adjusting means
- (2) Located behind bolted equipment enclosure doors
- (3) Located behind locked doors accessible only to qualified personnel
- (4) Password protected, with password accessible only to qualified personnel

Informational Note: See NFPA 730, *Guide for Premises Security*, and ANSI/TIA-5017, *Telecommunications Physical Network Security Standard*, for information regarding physical security.

(D) Remotely Accessible Adjustable-Trip Circuit Breakers.

~~A~~ ~~e~~Circuit breakers ~~(s)~~ that can be adjusted remotely to modify the ~~adjusting means current setting (long-time pickup setting)~~ shall be permitted to have an ampere rating(s) that is equal to the adjusted current setting (long-time pickup setting) ~~only when local restricted access to the circuit breaker is achieved by 240.6(C)(1), (C)(2), (C)(3) or (C)(4), and remote access. Remote access shall be~~ is achieved by one of the following methods:

- (1) Connected directly through a local nonnetworked interface.
- (2) Connected through a networked interface complying with one of the following methods:
 - a. The circuit breaker and associated software for adjusting the settings are identified as being evaluated for cybersecurity.
 - b. A cybersecurity assessment of the network is completed. Documentation of the assessment and certification shall be made available to those authorized to inspect, operate, and maintain the system.

Informational Note No. 1: See ANSI/ISA 62443, *Cybersecurity Standards series*, UL 2900 *Cybersecurity Standard series*, or the NIST *Framework for Improving Critical Infrastructure Cybersecurity*, Version 1.1 for assessment requirements.

Informational Note No. 2: Examples ~~of the commissioning certification~~ used to demonstrate the system has been investigated for cybersecurity vulnerabilities could be one of the following:

- (1) The ISA Security Compliance Institute (ISCI) conformity assessment program
- (2) Certification of compliance by a nationally recognized test laboratory
- (3) Manufacturer certification for the specific type and brand of system provided

Informational Note No. 3: Cybersecurity is a specialized field requiring constant, vigilant attention to security vulnerabilities that could arise due to software defects, system configuration changes, or user interactions. Installation of devices that can be secured is an important first step but not sufficient to guarantee a secure system.

Informational Note No. 4: See NEMA CY70001-2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

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**First Revision No. 9211-NFPA 70-2024 [Section No. 240.7]****240.7- 2 _ Listing Requirements. [Relocate to 240.2]**

The following shall be listed:

- (1) Branch-circuit overcurrent protective devices
- (2) Relays and circuit breakers providing ground-fault protection of equipment
- (3) Ground-fault circuit interrupter devices
- (4) Fuse reducers

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 09:10:55 EST 2024

Committee Statement

Committee Statement: The existing Section 240.7 is moved to 240.2 for compliance with the NEC Style Manual Section 2.2.1. Fuse reducers are added to the list as a relocation of the requirement from 240.60 for compliance with the NEC Style Manual Section 2.2.1.

Additionally, fuse reducers are moved from 240.60(E) to 240.2(4) for compliance with the NEC Style Manual Section 2.2.1.

Response Message: FR-9211-NFPA 70-2024

Public Input No. 3689-NFPA 70-2023 [Section No. 240.7]



First Revision No. 9235-NFPA 70-2024 [Section No. 240.13]

240.13 Ground-Fault Protection of Equipment.

(A) AC Systems.

Ground-fault protection of equipment shall be provided in accordance with 230.95 for solidly grounded wye electrical systems of more than 150 volts to ground but not exceeding 1000 volts phase-to-phase for each individual device used as a building or structure main disconnecting means rated 1000 amperes or more.

This section shall not apply to the disconnecting means for the following:

- (1) Continuous industrial processes where a nonorderly shutdown will introduce additional or increased hazards
- (2) Installations where ground-fault protection is provided by other requirements for services or feeders
- (3) Fire pumps

(B) DC Systems.

Ground-fault protection of equipment shall be provided in accordance with 230.95 for solidly grounded dc electrical systems of more than 150 volts to ground but not exceeding 1500 volts dc line-to-line for each individual device used as a building or structure main disconnecting means rated 1000 amperes or more.

This section shall not apply to the disconnecting means for the following:

- (1) Continuous industrial processes where a nonorderly shutdown will introduce additional or increased hazards
- (2) Installations where ground-fault protection is provided by other requirements for services or feeders
- (3) Fire pumps

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9235_240.13.docx		

Submitter Information Verification

Committee: NEC-P10
Submittal Date: Fri Jan 26 11:08:59 EST 2024

Committee Statement

Committee Statement: The committee is including DC in 240.13 to ensure the hazards for arcing faults are also addressed in DC systems from 150V to ground up to 1500V line-to-line.
Response Message: FR-9235-NFPA 70-2024

Public Input No. 4283-NFPA 70-2023 [Section No. 240.13]

240.13 Ground-Fault Protection of Equipment. [Move text to (A)]

~~Ground-fault protection of equipment shall be provided in accordance with 230.95 for solidly grounded wye electrical systems of more than 150 volts to ground but not exceeding 1000 volts phase-to-phase for each individual device used as a building or structure main disconnecting means rated 1000 amperes or more.~~

~~This section shall not apply to the disconnecting means for the following:~~

- ~~1. Continuous industrial processes where a nonorderly shutdown will introduce additional or increased hazards~~
- ~~2. Installations where ground-fault protection is provided by other requirements for services or feeders~~
- ~~3. Fire pumps~~

(A) AC Systems.

Ground-fault protection of equipment shall be provided in accordance with 230.95 for solidly grounded wye electrical systems of more than 150 volts to ground but not exceeding 1000 volts phase-to-phase for each individual device used as a building or structure main disconnecting means rated 1000 amperes or more.

This section shall not apply to the disconnecting means for the following:

1. Continuous industrial processes where a nonorderly shutdown will introduce additional or increased hazards
2. Installations where ground-fault protection is provided by other requirements for services or feeders
3. Fire pumps

(B) DC Systems.

Ground-fault protection of equipment shall be provided in accordance with 230.95 for solidly grounded dc electrical systems of more than 150 volts to ground but not exceeding 1500 volts dc line-to-line for each individual device used as a building or structure main disconnecting means rated 1000 amperes or more.

This section shall not apply to the disconnecting means for the following:

- (1) Continuous industrial processes where a nonorderly shutdown will introduce additional or increased hazards
- (2) Installations where ground-fault protection is provided by other requirements for services or feeders
- (3) Fire pumps

**First Revision No. 9196-NFPA 70-2024 [Section No. 240.15(A)]****(A) Overcurrent Device Required.**

A fuse or an overcurrent trip unit of a circuit breaker shall be connected in series with each ungrounded conductor. A combination of a current transformer and overcurrent relay shall be considered equivalent to an overcurrent trip unit.

Informational Note: See Article 430, Parts III, IV, V, and XI of Article 430, for motor circuits.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Thu Jan 25 16:32:32 EST 2024

Committee Statement

Committee Statement: The text is revised to comply with the NEC Style Manual section 4.1.4.

Response Message: FR-9196-NFPA 70-2024

Public Input No. 2648-NFPA 70-2023 [Section No. 240.15(A)]



First Revision No. 9217-NFPA 70-2024 [Section No. 240.21(B)(1)]

(1) Taps Not over 3 m (10 ft) Long.

If the length of the tap conductors does not exceed 3 m (10 ft) and the tap conductors comply with all of the following:

- (1) The ampacity of the tap conductors is as follows:
 - (2) Not less than the combined calculated loads on the circuits supplied by the tap conductors
 - (3) Not less than the rating of the equipment containing an overcurrent device(s) supplied by the tap conductors or not less than the rating of the overcurrent protective device at the termination of the tap conductors

Exception to b: Where listed equipment, such as a surge-protective device(s) [SPD(s)], is provided with specific instructions on minimum conductor sizing, the ampacity of the tap conductors supplying that equipment shall be permitted to be determined based on the manufacturer's instructions.

- (4) The tap conductors do not extend beyond the enclosure of a switchboard, switchgear, panelboard, disconnecting means, or control devices they supply.
- (5) Except at the point of connection to the feeder, the tap conductors are enclosed in a raceway, which extends from the tap to the enclosure of ~~an enclosed a~~ switchboard, switchgear, a panelboard, or control devices, or to the back of an open switchboard.
- (6) For field installations, if the tap conductors leave the enclosure or vault in which the tap is made, the ampacity of the tap conductors is not less than one-tenth of the rating of the overcurrent device protecting the feeder conductors.

Informational Note: See 408.36 for overcurrent protection requirements for panelboards.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9217_240.21_B_.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10
Submission Date: Fri Jan 26 09:37:03 EST 2024

Committee Statement

Committee Statement: The proposed change adds clarity and usability to the Code. Enclosed panelboards was not added because the definition is proposed to be deleted.

Response Message: FR-9217-NFPA 70-2024

[Public Input No. 2067-NFPA 70-2023 \[Section No. 240.21\(B\)\(1\)\]](#)

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[240.21(B)(1)]

(B) Feeder Taps.

Conductors shall be permitted to be tapped, without overcurrent protection at the tap, to a feeder as specified in 240.21(B)(1) through (B)(5). The tap shall be permitted at any point on the load side of the feeder overcurrent protective device. Section 240.4(B) shall not be permitted for tap conductors.

(1) Taps Not over 3 m (10 ft) Long.

If the length of the tap conductors does not exceed 3 m (10 ft) and the tap conductors comply with all of the following:

(1) The ampacity of the tap conductors is as follows:

- a. Not less than the combined calculated loads on the circuits supplied by the tap conductors
- b. Not less than the rating of the equipment containing an overcurrent device(s) supplied by the tap conductors or not less than the rating of the overcurrent protective device at the termination of the tap conductors

Exception to b: Where listed equipment, such as a surge-protective device(s) [SPD(s)], is provided with specific instructions on minimum conductor sizing, the ampacity of the tap conductors supplying that equipment shall be permitted to be determined based on the manufacturer's instructions.

- (2) The tap conductors do not extend beyond the enclosure of a switchboard, switchgear, panelboard, disconnecting means, or control devices they supply.
- (3) Except at the point of connection to the feeder, the tap conductors are enclosed in a raceway, which extends from the tap to the enclosure of an enclosed a switchboard, switchgear, a panelboard, or control devices, or to the back of an open switchboard.
- (4) For field installations, if the tap conductors leave the enclosure or vault in which the tap is made, the ampacity of the tap conductors is not less than one-tenth of the rating of the overcurrent device protecting the feeder conductors.

Informational Note: See 408.36 for overcurrent protection requirements for panelboards.



First Revision No. 9215-NFPA 70-2024 [Section No. 240.21(B)(4)]

(4) Taps over 7.5 m (25 ft) Long in High Bay Manufacturing Buildings .

Where the feeder is in a high bay manufacturing building over 11 m (35 ft) high at walls and the installation complies with all the following conditions:

- (1) Conditions of maintenance and supervision ensure that only qualified persons service the systems.
- (2) The tap conductors are not over 7.5 m (25 ft) long horizontally and not over 30 m (100 ft) total length.
- (3) The ampacity of the tap conductors is not less than one-third the rating of the overcurrent device protecting the feeder conductors.
- (4) The tap conductors terminate at a single circuit breaker or a single set of fuses that limit the load to the ampacity of the tap conductors. This single overcurrent device shall be permitted to supply any number of additional overcurrent devices on its load side.
- (5) The tap conductors are protected from physical damage by being enclosed in an approved raceway or by other approved means.
- (6) The tap conductors are continuous from end-to-end and contain no splices.
- (7) The tap conductors are sized 6 AWG copper or 4 AWG aluminum or larger.
- (8) The tap conductors do not penetrate walls, floors, or ceilings.
- (9) The tap is made no less than 9 m (30 ft) from the floor.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 09:26:54 EST 2024

Committee Statement

Committee Statement: The proposed change to the title of item (4) clarifies where it applies.

Response Message: FR-9215-NFPA 70-2024

Public Input No. 1515-NFPA 70-2023 [Section No. 240.21(B)(4)]

Public Input No. 3832-NFPA 70-2023 [Section No. 240.21(B)(4)]



First Revision No. 9218-NFPA 70-2024 [Section No. 240.21(C)(2)]

(2) Transformer Secondary Conductors Not over 3 m (10 ft) Long.

If the length of secondary conductor does not exceed 3 m (10 ft) and complies with all of the following:

(1) The ampacity of the secondary conductors is as follows:

- (2) Not less than the combined calculated loads on the circuits supplied by the secondary conductors
- (3) Not less than the rating of the equipment containing an overcurrent device(s) supplied by the secondary conductors or not less than the rating of the overcurrent protective device at the termination of the secondary conductors

Exception: Where listed equipment, such as a surge protective device(s) [SPD(s)], is provided with specific instructions on minimum conductor sizing, the ampacity of the tap conductors supplying that equipment shall be permitted to be determined based on the manufacturer's instructions.

- (4) The secondary conductors do not extend beyond the enclosure of a switchboard, switchgear, panelboard, disconnecting means, or control devices they supply.
- (5) The secondary conductors are enclosed in a raceway, which shall extend from the transformer to the enclosure of ~~an enclosed~~ a switchboard, switchgear, a panelboard, or control devices or to the back of an open switchboard.
- (6) For field installations where the secondary conductors leave the enclosure or vault in which the supply connection is made, the secondary conductors shall have an ampacity that is not less than the value of the primary-to-secondary voltage ratio multiplied by one-tenth of the rating of the overcurrent device protecting the primary of the transformer.

Informational Note: See 408.36 for overcurrent protection requirements for panelboards.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9218_240.21_C_.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submission Date: Fri Jan 26 09:43:19 EST 2024

Committee Statement

Committee Statement: The proposed changes add clarity and usability to the Code. Added "enclosure of a" to item (2) to align with other proposed changes to 240.21(C). Deleted "enclosed" in item (3) because it is redundant.

Response Message: FR-9218-NFPA 70-2024

[Public Input No. 2068-NFPA 70-2023 \[Section No. 240.21\(C\)\(2\)\]](#)

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[240.21(C)(2)]

(2) Transformer Secondary Conductors Not over 3 m (10 ft) Long.

If the length of secondary conductor does not exceed 3 m (10 ft) and complies with all of the following:

- (1) The ampacity of the secondary conductors is as follows:
 - a. Not less than the combined calculated loads on the circuits supplied by the secondary conductors
 - b. Not less than the rating of the equipment containing an overcurrent device(s) supplied by the secondary conductors or not less than the rating of the overcurrent protective device at the termination of the secondary conductors

Exception: Where listed equipment, such as a surge protective device(s) [SPD(s)], is provided with specific instructions on minimum conductor sizing, the ampacity of the tap conductors supplying that equipment shall be permitted to be determined based on the manufacturer's instructions.

- (2) The secondary conductors do not extend beyond the enclosure of a switchboard, switchgear, panelboard, disconnecting means, or control devices they supply.
- (3) The secondary conductors are enclosed in a raceway, which shall extend from the transformer to the enclosure of an enclosed a switchboard, switchgear, a panelboard, or control devices or to the back of an open switchboard.
- (4) For field installations where the secondary conductors leave the enclosure or vault in which the supply connection is made, the secondary conductors shall have an ampacity that is not less than the value of the primary-to-secondary voltage ratio multiplied by one-tenth of the rating of the overcurrent device protecting the primary of the transformer.

Informational Note: See 408.36 for overcurrent protection requirements for panelboards.

**First Revision No. 9219-NFPA 70-2024 [Section No. 240.24(A)]****(A) Accessibility.**

Circuit breakers and switches containing fuses shall be readily accessible and installed so that the center of the grip of the operating handle of the switch or circuit breaker, when in its highest position, is not more than 2.0 m (6 ft 7 in.) above the grade, floor, or working platform, unless one of the following applies:

- (1) For busways, as provided in 368.17(C).
- (2) For supplementary overcurrent protection, as described in 240.10.
- (3) For overcurrent protective devices, as described in 225.40 and 230.92.
- (4) For overcurrent protective devices adjacent to utilization equipment that they supply, access shall be permitted to be by portable means.

Exception: The use of a tool shall be permitted to access overcurrent protective devices located within listed industrial control panels, within enclosures designed for hazardous (classified) locations or enclosures to protect against environmental conditions. An enclosure within the scope of this exception, and all overcurrent protective device(s) within such enclosures as judged with the enclosure open, shall comply with the accessibility provisions of 240.24(A).

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 09:46:21 EST 2024

Committee Statement

Committee Statement: The text is revised to include "grade" providing clarity and to correlate with 110.26(A)(6).

Response Message: FR-9219-NFPA 70-2024

Public Input No. 2692-NFPA 70-2023 [Section No. 240.24(A)]

**First Revision No. 9226-NFPA 70-2024 [Section No. 240.24(E)]****(E) Not Located in Bathrooms.**

Overcurrent protective devices, other than supplementary overcurrent protection, shall not be located in bathrooms, showering facilities, or locker rooms with showering facilities.

Exception: Overcurrent protective devices shall be permitted to be installed in existing panelboards that were installed in compliance with previous editions of this Code that permitted overcurrent protective devices to be installed in bathrooms.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 10:33:50 EST 2024

Committee Statement

Committee Statement: Exception would provide provisions for the installation of new overcurrent protective devices in existing panelboards located in bathrooms. This aligns with 230.71(B).

Response Message: FR-9226-NFPA 70-2024

Public Input No. 1401-NFPA 70-2023 [Section No. 240.24(E)]

**First Revision No. 9228-NFPA 70-2024 [Section No. 240.60(E)]**

~~(E) Fuse Reducers:~~

~~Fuse reducers shall be listed:~~

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 10:37:37 EST 2024

Committee Statement

Committee Statement: Fuse reducers are moved from 240.60(E) to 240.2(4) for compliance with the NEC Style Manual section 2.2.1.

Response Message: FR-9228-NFPA 70-2024

[Public Input No. 3691-NFPA 70-2023 \[Section No. 240.60\(E\)\]](#)

**First Revision No. 8922-NFPA 70-2024 [Section No. 240.61]****240.61** Classification.

Cartridge fuses and fuseholders shall be classified according to voltage and amperage ranges. Fuses ~~rated 1000 volts, nominal, or less~~ shall be permitted to be used for voltages at or below their ratings.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 12:59:38 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-8922-NFPA 70-2024



First Revision No. 8915-NFPA 70-2024 [Section No. 240.67(B)]

(B) Method to Reduce Clearing Time.

A fuse shall have a clearing time of 0.07 seconds or less at the available arcing current, or one of the following means shall be provided and shall be set to operate at less than the available arcing current:

- (1) Differential relaying
- (2) Energy-reducing maintenance switching with local status indicator
- (3) Energy-reducing active arc-flash mitigation system
- (4) Current-limiting, electronically actuated fuses
- (5) An approved equivalent means

Informational Note No. 1: See NFPA 70E-2024, *Standard for Electrical Safety in the Workplace*, that defines the arc-flash boundary. An energy-reducing maintenance switch allows a worker to set a disconnect switch to reduce the clearing time while the worker is working within ~~an~~ the arc-flash boundary ~~as defined in NFPA 70E -2021, *Standard for Electrical Safety in the Workplace*, and then to set the disconnect switch back to a normal setting after the potentially hazardous work is complete.~~

Informational Note No. 2: See NFPA 70E-2024, *Standard for Electrical Safety in the Workplace*, that defines the arc-flash boundary. An energy-reducing active arc-flash mitigation system helps in reducing arcing duration in the electrical distribution system. No change in the disconnect switch or the settings of other devices is required during maintenance when a worker is working within ~~an~~ the arc-flash boundary ~~as defined in NFPA 70E -2021, *Standard for Electrical Safety in the Workplace*.~~

Informational Note No. 3: IEEE 1584-2018, *IEEE Guide for Performing Arc Flash Hazard Calculations*, that provides guidance in determining arcing current.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 11:51:38 EST 2024

Committee Statement

Committee Statement: Informational notes #1 and #2 under 240.67(B)(5) and 240.87(B)(7) have been updated for compliance with section 2.1.10 of the NEC Style Manual.

Response Message: FR-8915-NFPA 70-2024

**First Revision No. 9230-NFPA 70-2024 [Section No. 240.80]****240.80 Method of Operation.**

Circuit breakers shall be trip free and capable of being closed and opened by manual operation. Their normal method of operation by other than manual means, such as electrical or pneumatic, shall be permitted if means for manual operation are also provided.

Informational Note: A trip-free circuit breaker is one where the contacts cannot be held in the closed position by the manual operating means during trip conditions.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 10:54:49 EST 2024

Committee Statement

Committee Statement: For safety reasons, it is important that circuit breakers be trip-free. An informational note is added to 240.80 to clarify functionality of a trip-free circuit breaker.

Response Message: FR-9230-NFPA 70-2024

Public Input No. 4437-NFPA 70-2023 [Section No. 240.80]

**First Revision No. 8924-NFPA 70-2024 [Section No. 240.83(B)]****(B) Location.**

Circuit breakers rated at 100 amperes or less ~~and 1000 volts or less~~ shall have the ampere rating molded, stamped, etched, or similarly marked into their handles or escutcheon areas.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:01:01 EST 2024

Committee Statement

Committee Statement: Duplicate language regarding circuits 1000V ac and 1500V dc found in Articles were removed since the scope of each Article explains the voltages that are applicable.

Response Message: FR-8924-NFPA 70-2024



First Revision No. 9232-NFPA 70-2024 [Section No. 240.85]

240.85 Applications.

(A) Straight Voltage Rating Circuit Breaker.

A circuit breaker with a straight voltage rating, such as 240V or 480V, shall be permitted to be applied in a circuit in which the nominal voltage between any two conductors does not exceed the circuit breaker's voltage rating. A two-pole circuit breaker shall not be used for protecting a 3-phase, corner-grounded delta circuit unless the circuit breaker is marked 1 ϕ -3 ϕ to indicate such suitability.

(B) Slash Voltage Rating Circuit Breaker.

A circuit breaker with a slash rating, such as 120/240V or 480Y/277V, shall be permitted to be applied in a solidly grounded circuit where the nominal voltage of any conductor to ground does not exceed the lower of the two values of the circuit breaker's voltage rating and the nominal voltage between any two conductors does not exceed the higher value of the circuit breaker's voltage rating.

Informational Note: Proper application of molded case circuit breakers on 3-phase systems, other than solidly grounded wye, particularly on corner grounded delta systems, considers the circuit breakers' individual pole-interrupting capability.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9232_240.85.docx		

Submitter Information Verification

Committee: NEC-P10
Submittal Date: Fri Jan 26 10:57:40 EST 2024

Committee Statement

Committee Statement: Proposed changes were made for compliance with the requirements of sections 2.1.6 and 3.5.1.2 of the NEC Style Manual.
Response Message: FR-9232-NFPA 70-2024

Public Input No. 3764-NFPA 70-2023 [Section No. 240.85]

240.85 Applications. [Move text to (A) and (B)]

~~A circuit breaker with a straight voltage rating, such as 240V or 480V, shall be permitted to be applied in a circuit in which the nominal voltage between any two conductors does not exceed the circuit breaker's voltage rating. A two-pole circuit breaker shall not be used for protecting a 3-phase, corner-grounded delta circuit unless the circuit breaker is marked 1 ϕ -3 ϕ to indicate such suitability.~~

~~A circuit breaker with a slash rating, such as 120/240V or 480Y/277V, shall be permitted to be applied in a solidly grounded circuit where the nominal voltage of any conductor to ground does not exceed the lower of the two values of the circuit breaker's voltage rating and the nominal voltage between any two conductors does not exceed the higher value of the circuit breaker's voltage rating.~~

~~Informational Note: Proper application of molded case circuit breakers on 3-phase systems, other than solidly grounded wye, particularly on corner grounded delta systems, considers the circuit breakers' individual pole-interrupting capability.~~

(A) Straight Voltage Rating Circuit Breaker.

A circuit breaker with a straight voltage rating, such as 240V or 480V, shall be permitted to be applied in a circuit in which the nominal voltage between any two conductors does not exceed the circuit breaker's voltage rating. A two-pole circuit breaker shall not be used for protecting a 3-phase, corner-grounded delta circuit unless the circuit breaker is marked 1 ϕ -3 ϕ to indicate such suitability.

(B) Slash Voltage Rating Circuit Breaker.

A circuit breaker with a slash rating, such as 120/240V or 480Y/277V, shall be permitted to be applied in a solidly grounded circuit where the nominal voltage of any conductor to ground does not exceed the lower of the two values of the circuit breaker's voltage rating and the nominal voltage between any two conductors does not exceed the higher value of the circuit breaker's voltage rating.

Informational Note: Proper application of molded case circuit breakers on 3-phase systems, other than solidly grounded wye, particularly on corner grounded delta systems, considers the circuit breakers' individual pole-interrupting capability.

**First Revision No. 9003-NFPA 70-2024 [Section No. 242.1]****242.1 Scope.**

This article provides the general requirements, installation requirements, and connection requirements for overvoltage protection and overvoltage protective devices. Part II covers surge-protective devices (SPDs) permanently installed on premises wiring systems of not ~~more~~ than over 1000 volts ac, 1500 volts dc, nominal, while Part III covers surge arresters permanently installed on premises wiring systems over 1000 volts, nominal.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:18:08 EST 2024

Committee Statement

Committee Statement: References to voltages were updated for accuracy.

Response Message: FR-9003-NFPA 70-2024

**First Revision No. 9236-NFPA 70-2024 [Section No. 242.2]**

242.2- 3 _ Reconditioned Equipment.

Reconditioned SPDs and surge arresters shall not be ~~reconditioned~~ installed .

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 11:11:35 EST 2024

Committee Statement

Committee Statement: The text and numbering has been revised to comply with the Style Manual, Section 2.2.1.

Response Message: FR-9236-NFPA 70-2024

Public Input No. 1319-NFPA 70-2023 [Section No. 242.2]

Public Input No. 2600-NFPA 70-2023 [Section No. 242.2]



First Revision No. 9237-NFPA 70-2024 [Section No. 242.3]

~~242.3~~ Other Articles:

~~Equipment shall be protected against overvoltage in accordance with the article in this Code that covers the type of equipment or location specified in Table 242.3.~~

Table 242.3 Other Articles

~~Equipment Article Class I locations 501 Class II locations 502 Community antenna television and radio distribution systems 820 Critical operations power systems 708 Elevators, dumbwaiters, escalators, moving walks, platform lifts, and stairway chairlifts 620 Emergency systems 700 Equipment over 1000 volts, nominal 495 Fire pumps 695 Industrial machinery 670 Information technology equipment 645 Modular data centers 646 Outdoor overhead conductors over 1000 volts 395 Radio and television equipment 810 Receptacles, cord connectors, and attachment plugs (cups) 406 Wind electric systems 694~~

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 11:13:57 EST 2024

Committee Statement

Committee Statement: The existing Section 242.3 is removed as the NEC is intended for use by qualified people. The information in 242.3 can be found by using the table of contents or the index. The section is also removed for compliance with the NEC Style Manual section 2.2.1.

CC Note – References to other Articles as noted in the existing 242.3 should be reviewed by the Correlating Committee for consistency across the Code.

Response Message: FR-9237-NFPA 70-2024

[Public Input No. 984-NFPA 70-2023 \[Section No. 242.3\]](#)

**First Revision No. 9006-NFPA 70-2024 [Section No. 242.12]****242.12** Uses Not Permitted.

An SPD device shall not be installed in the following:

- (1) Circuits over 1000 volts ac, 1500 volts dc, nominal
- (2) On ungrounded systems, impedance grounded systems, or corner grounded delta systems unless listed specifically for use on these systems
- (3) Where the rating of the SPD is less than the maximum continuous phase-to-ground voltage at the power frequency available at the point of application

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 16:21:16 EST 2024

Committee Statement

Committee Statement: References to voltages were updated for accuracy.

Response Message: FR-9006-NFPA 70-2024



First Revision No. 9238-NFPA 70-2024 [Section No. 242.13(A)]

(A) Installation.

Type 1 SPDs shall be permitted to be connected in accordance with one of the following:

- (1) ~~To the supply side of the service disconnect as permitted in 230.82 (4)~~
- (2) ~~As specified in 242.14~~

installed in any location not prohibited by the SPD installation instructions.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-9238_242.13_A_.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 11:20:27 EST 2024

Committee Statement

Committee Statement: In order to eliminate confusion of where Type 1 SPDs can be installed, it has been clarified they are permitted to be installed in any location not prohibited by the manufacturer's installation instructions.

Response Message: FR-9238-NFPA 70-2024

Public Input No. 508-NFPA 70-2023 [Section No. 242.13]

[242.13(A)]

(A) Installation.

Type 1 SPDs shall be permitted to be ~~connected in accordance with one of the following:~~ installed in any location not prohibited by the SPD installation instructions.

- ~~(1) To the supply side of the service disconnect as permitted in 230.82(4)~~
- ~~(2) As specified in 242.14~~

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First Revision No. 9242-NFPA 70-2024 [Section No. 242.14 [Excluding any Sub-Sections]]

If a Type 2 SPD is installed, it shall be installed in accordance with 242.14(A) through (C), 242.14(B), or 242.14(C).

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Fri Jan 26 11:25:42 EST 2024

Committee Statement

Committee Statement: Section 242.14 has been updated to clarify that when a Type 2 SPD is installed, any of the options A, B, or C are permitted. Previous Code language indicated that all three items (A, B, and C) are required for Type 2 SPDs. The existing language is clear that the Type 2 SPD may be installed anywhere on the load side of the first overcurrent device in (B) or (C).

Response Message: FR-9242-NFPA 70-2024

Public Input No. 835-NFPA 70-2023 [Section No. 242.14]

**First Revision No. 8937-NFPA 70-2024 [Section No. 408.1]****408.1 Scope.**

This article covers switchboards, switchgear, and panelboards. It does not apply to equipment operating at over 1000 volts ac , 1500 volts dc, nominal, except as specifically referenced elsewhere in the *Code*.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:19:28 EST 2024

Committee Statement

Committee Statement: References to voltages were updated for accuracy.

Response Message: FR-8937-NFPA 70-2024



First Revision No. 8938-NFPA 70-2024 [Section No. 408.2]

408.2- 3 _ Reconditioned Equipment.

The use of reconditioned equipment within the scope of this article shall be limited as described in 408.2(A) and (B). If equipment has been damaged by fire, products of combustion, corrosive influences, or water, it shall be specifically evaluated by its manufacturer or a qualified testing laboratory prior to being returned to service.

(A) - ~~Panelboards:~~

~~Reconditioned panelboards shall not be permitted.~~

(B) - ~~Switchboards and Switchgear:~~

Permitted to be Installed.

Reconditioned switchboards and switchgear, or sections of switchboards or switchgear, shall be permitted to be installed .

(B) _ Not Permitted to be Installed.

Reconditioned panelboards shall not be installed.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-8938_408.2.docx	For Staff Use	
NEC_CMP10_FR-8938_408.2.docx	For prod use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:21:37 EST 2024

Committee Statement

Committee Statement: Reconditioned equipment has been relocated to 408.3, as required per section 2.2.1 of the NEC Style Manual. (A) and (B) were also revised to comply with the NEC Style Manual.

Response Message: FR-8938-NFPA 70-2024

Public Input No. 2608-NFPA 70-2023 [Section No. 408.2]

Public Input No. 3717-NFPA 70-2023 [Section No. 408.2]

[Move 408.2 to 408.3]

408.32 Reconditioned Equipment.

The use of reconditioned equipment within the scope of this article shall be limited as described in 408.2(A) and (B). If equipment has been damaged by fire, products of combustion, corrosive influences, or water, it shall be specifically evaluated by its manufacturer or a qualified testing laboratory prior to being returned to service.

(A) ~~Panelboards~~ Permitted to be installed

~~Reconditioned switchboards and switchgear, or sections of switchboards or switchgear, shall be permitted.~~

~~Reconditioned panelboards shall not be permitted.~~

(B) ~~Switchboards and Switchgear~~ Not Permitted to be Installed.

~~Reconditioned switchboards and switchgear, or sections of switchboards or switchgear, shall be permitted.~~

~~Reconditioned panelboards shall not be installed.~~

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**First Revision No. 8946-NFPA 70-2024 [Section No. 408.3]****408.3– 10 _ Support and Arrangement of Busbars and Conductors.****(A) Conductors and Busbars on a Switchboard, Switchgear, or Panelboard.**

Conductors and busbars on a switchboard, switchgear, or panelboard shall comply with 408.3(A)(1) and (A)(2) as applicable.

(1) Location.

Conductors and busbars shall be located so as to be free from physical damage and shall be held firmly in place.

(2) Same Vertical Section.

Other than the required interconnections and control wiring, only those conductors that are intended for termination in a vertical section of a switchboard or switchgear shall be located in that section.

Exception: Conductors shall be permitted to travel horizontally through vertical sections of switchboards and switchgear where such conductors are isolated from busbars by a barrier.

(B) Overheating and Inductive Effects.

The arrangement of busbars and conductors shall be such as to avoid overheating due to inductive effects.

(C) Used as Service Equipment.

Each switchboard, switchgear, or panelboard, if used as service equipment, shall be provided with a main bonding jumper sized in accordance with 250.28(D) or the equivalent placed within the panelboard or one of the sections of the switchboard or switchgear for connecting the grounded service conductor on its supply side to the switchboard, switchgear, or panelboard frame. All sections of a switchboard or switchgear shall be bonded together using an equipment-bonding jumper or a supply-side bonding jumper sized in accordance with 250.122 or 250.102(C)(1) as applicable.

Exception: Switchboards, switchgear, and panelboards used as service equipment on high-impedance grounded neutral systems in accordance with 250.36 shall not be required to be provided with a main bonding jumper.

(D) Terminals.

In switchboards and switchgear, load terminals for field wiring shall comply with 408.18(C).

(E) Bus Arrangement.**(1) AC Phase Arrangement.**

Alternating-current phase arrangement on 3-phase buses shall be A, B, C from front to back, top to bottom, or left to right, as viewed from the front of the switchboard, switchgear, or panelboard. The B phase shall be that phase having the higher voltage to ground on 3-phase, 4-wire, delta-connected systems. Other busbar arrangements shall be permitted for additions to existing installations and shall be marked.

Exception: Equipment within the same single section or multisection switchboard, switchgear, or panelboard as the meter on 3-phase, 4-wire, delta-connected systems shall be permitted to have the same phase configuration as the metering equipment.

Informational Note: See 110.15 for requirements on marking the busbar or phase conductor having the higher voltage to ground where supplied from a 4-wire, delta-connected system.

(2) DC Bus Arrangement.

Direct-current ungrounded buses shall be permitted to be in any order. Arrangement of dc buses shall be field marked as to polarity, grounding system, and nominal voltage.

(F) Switchboard, Switchgear, or Panelboard Identification.

A caution sign(s) or a label(s) provided in accordance with 408.3(F)(1) through (F)(5) shall comply with 110.21(B).

(1) High-Leg Identification.

A switchboard, switchgear, or panelboard containing a 4-wire, delta-connected system where the midpoint of one phase winding is grounded shall be legibly and permanently field marked as follows:

CAUTION _____ PHASE HAS _____ VOLTS TO GROUND

(2) Ungrounded AC Systems.

A switchboard, switchgear, or panelboard containing an ungrounded ac electrical system as permitted in 250.21 shall be legibly and permanently field marked as follows:

CAUTION UNGROUNDED SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS

(3) High-Impedance Grounded Neutral AC System.

A switchboard, switchgear, or panelboard containing a high-impedance grounded neutral ac system in accordance with 250.36 shall be legibly and permanently field marked as follows:

CAUTION: HIGH-IMPEDANCE GROUNDED NEUTRAL AC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS AND MAY OPERATE — _____ VOLTS TO GROUND FOR INDEFINITE PERIODS UNDER FAULT CONDITIONS

(4) Ungrounded DC Systems.

A switchboard, switchgear, or panelboard containing an ungrounded dc electrical system in accordance with 250.169 shall be legibly and permanently field marked as follows:

CAUTION: UNGROUNDED DC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS

(5) Resistively Grounded DC Systems.

A switchboard, switchgear, or panelboard containing a resistive connection between current-carrying conductors and the grounding system to stabilize voltage to ground shall be legibly and permanently field marked as follows:

CAUTION: DC SYSTEM OPERATING — _____ VOLTS BETWEEN CONDUCTORS AND MAY OPERATE — _____ VOLTS TO GROUND FOR INDEFINITE PERIODS UNDER FAULT CONDITIONS

(G) Minimum Wire-Bending Space.

The minimum wire-bending space at terminals and minimum gutter space provided in switchboards, switchgear, and panelboards shall be as required in 312.6.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:31:16 EST 2024

Committee Statement

Committee Statement: The requirements of 408.3 are relocated to 408.10 to comply with the NEC Style Manual 2.2.1.

Response Message: FR-8946-NFPA 70-2024

[Public Input No. 3714-NFPA 70-2023 \[Section No. 408.3\]](#)

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First Revision No. 8961-NFPA 70-2024 [Section No. 408.6]

408.6 Short-Circuit Current Rating.

Switchboards, switchgear, and panelboards shall have a short-circuit current rating not less than the available fault current. In other than one- and two-family dwelling units, the dwellings, switchboards, switchgear and panelboards shall comply with the following, as applicable:

(1) The available fault current at the line terminals and the date the calculation was performed shall be field marked in a readily accessible location on the enclosure at the point of supply.

(2) The short-circuit current rating of switchboards and panelboards, at nominal circuit voltage, based on the overcurrent protection devices installed, shall be field marked in a readily accessible location on the enclosure.

(3) The marking required by 408.6(1) and (2) shall comply with 110.21(B).

(3)- 4) The available fault current calculation shall be documented and made available to those authorized to inspect, install, or maintain the installation.

(5) When modifications to the electrical installation occur that affect the available fault current at the line terminals of the equipment, the available fault current shall be verified or recalculated as necessary to ensure the equipment ratings are sufficient for the available fault current at the line terminals of the equipment. The required field markings in 408.6(1) shall be adjusted to reflect the new level of available fault current.

(6) When overcurrent protection devices are added or replaced, the interrupting rating of the replacement devices shall be equal to or greater than the available fault current marked on the equipment in accordance with 408.6(1).

Informational Note: See 110.22 for series combination systems.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-8961_408.6.docx	For Staff Use	

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 13:59:44 EST 2024

Committee Statement

Committee Statement: The section was restructured to move the requirements into an itemized list for readability.

The new item (2) was added to require that marking shall be required in a readily accessible location on the equipment which indicates the short circuit rating of the equipment. This change will aid individuals trying to determine the short circuit rating of equipment. A new item (4) was added to require the fault current calculation to be documented and made available to align this section with 110.24(A), 409.22(B), 430.99, and 440.10. Having this calculation documented and made available for switchboards, switchgear, and panelboards is as important as it is for service equipment, industrial control panels, motor control centers, and air conditioning and refrigerating equipment. The new item (5) was added to align with section 110.24(B) when modifications to the

installation are made. New item (6) was added for clarification regarding the required short circuit rating of equipment when adding overcurrent devices. Lastly, an informational note was added for direction regarding series combination systems.

Response FR-8961-NFPA 70-2024

Message:

[Public Input No. 3905-NFPA 70-2023 \[Section No. 408.6\]](#)

[Public Input No. 4542-NFPA 70-2023 \[Section No. 408.6\]](#)

[Public Input No. 496-NFPA 70-2023 \[Section No. 408.6\]](#)

[Public Input No. 3423-NFPA 70-2023 \[Section No. 408.6\]](#)

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408.6 Short-Circuit Current Rating.

Switchboards, switchgear, and panelboards shall have a short-circuit current rating not less than the available fault current. In other than one- and two-family dwellings, ~~units, the available fault current and the date the calculation was performed shall be field marked on the enclosure at the point of supply. The marking shall comply with 110.21(B)(3).~~ switchboards, switchgear and panelboards shall comply with the following, as applicable:

- ~~(1) The available fault current at the line terminals and the date the calculation was performed shall be field marked in a readily accessible location on the enclosure at the point of supply.~~
- ~~(2) The short-circuit current rating of switchboards and panelboards, at nominal circuit voltage, based on the overcurrent protection devices installed, shall be field marked in a readily accessible location on the enclosure.~~
- ~~(3) The marking required by 408.6(1) and (2) shall comply with 110.21(B).~~
- ~~(4) The available fault current calculation shall be documented and made available to those authorized to inspect, install, or maintain the installation.~~
- ~~(5) When modifications to the electrical installation occur that affect the available fault current at the line terminals of the equipment, the available fault current shall be verified or recalculated as necessary to ensure the equipment ratings are sufficient for the available fault current at the line terminals of the equipment. The required field markings in 408.6(1) shall be adjusted to reflect the new level of available fault current.~~
- ~~(6) When overcurrent protection devices are added or replaced, the interrupting rating of the replacement devices shall be equal to or greater than the available fault current marked on the equipment in accordance with 408.6(1).~~

Informational Note: See 110.22 for series combination systems.

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First Revision No. 8970-NFPA 70-2024 [Section No. 408.30]

~~408.30~~ General: ~~All~~ 14 Equipment Ratings. [Relocate to 408.14]

All switchgear, switchboards, and panelboards shall have a current rating not less than the minimum feeder capacity required for the load calculated in accordance with Article 220, Part III, IV, or V of Article 220, as applicable.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP10_FR-8970_408.30.docx		

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 14:24:15 EST 2024

Committee Statement

Committee Statement: Section 408.30 was moved to 408.14 and language has been added to ensure switchboards and switchgear are rated not less than the calculated loads. Changes were made to comply with 4.1.4 of the NEC Style Manual. Added "current" in front of "rating" to clarify the meaning.

Due to requirements of Section 408.30 being relocated to Section 408.14, the reference in 408.36 has been updated.

Response Message: FR-8970-NFPA 70-2024

[Public Input No. 2680-NFPA 70-2023 \[Section No. 408.30\]](#)

[Public Input No. 2581-NFPA 70-2023 \[New Part after II.\]](#)

[Public Input No. 3587-NFPA 70-2023 \[Section No. 408.30\]](#)

[Public Input No. 3589-NFPA 70-2023 \[Section No. 408.36 \[Excluding any Sub-Sections\]\]](#)

[Public Input No. 3588-NFPA 70-2023 \[New Section after 408.9\]](#)

[Public Input No. 1953-NFPA 70-2023 \[New Section after 408.9\]](#)

408.30-408.14 General Equipment Ratings. [Relocate to 408.14]

All switchgear, switchboards, and panelboards shall have a current rating not less than the minimum feeder capacity required for the load calculated in accordance with Article 220, Part III, IV, or V of Article 220, as applicable.

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**First Revision No. 8985-NFPA 70-2024 [Section No. 408.40]****408.40** Grounding of Panelboards.

Panelboard cabinets and panelboard frames, if of metal, shall be in physical contact with each other and shall be connected to an equipment grounding conductor. Where the panelboard is used with nonmetallic raceway or cable or where separate equipment grounding conductors are provided, a terminal bar for the equipment grounding conductors shall be secured inside the cabinet. The terminal bar shall be bonded to the cabinet and panelboard frame, if of metal; otherwise it shall be connected to the equipment grounding conductor that is run with the conductors feeding the panelboard.

Exception: Where an isolated equipment grounding conductor for a branch circuit or a feeder is provided as permitted by 250.146(D), the insulated equipment grounding conductor that is run with the circuit conductors shall be permitted to pass through the panelboard without being connected to the panelboard's equipment grounding terminal bar.

Equipment grounding conductors shall not be connected to a terminal bar provided for grounded conductors or neutral conductors unless the bar is identified for the purpose and is located where interconnection between equipment grounding conductors and grounded circuit conductors is permitted or required by Article 250, Part II and Part VII of Article 250.

Submitter Information Verification

Committee: NEC-P10

Submittal Date: Wed Jan 24 15:13:24 EST 2024

Committee Statement

Committee Statement: Changes made to comply with section 4.1.4 of the NEC Style Manual.

Response Message: FR-8985-NFPA 70-2024

Public Input No. 2681-NFPA 70-2023 [Section No. 408.40]



First Revision No. 8990-NFPA 70-2024 [Section No. 408.56]

408.56 Minimum Spacings.

The distance between uninsulated metal parts, busbars, and other uninsulated live parts shall not be less than specified in Table 408.56.

Where close proximity does not cause excessive heating, parts of the same polarity at switches, enclosed fuses, and so forth shall be permitted to be placed as close together as convenience in handling will allow.

Exception: The distance shall be permitted to be less than that specified in Table 408.56 at circuit breakers and switches and in listed components installed in switchboards, switchgear, and panelboards.

Table 408.56 Minimum Spacings Between Bare Metal Parts

<u>AC or DC Voltage</u>	<u>Opposite Polarity Where Mounted on the Same Surface</u>		<u>Opposite Polarity Where Held Free in Air</u>		<u>Live Parts to Ground*</u>	
	<u>mm</u>	<u>in.</u>	<u>mm</u>	<u>in.</u>	<u>mm</u>	<u>in.</u>
Not over 125 volts, nominal	19.1	$\frac{3}{4}$	12.7	$\frac{1}{2}$	12.7	$\frac{1}{2}$
Not over 250 volts, nominal	31.8	$1\frac{1}{4}$	19.1	$\frac{3}{4}$	12.7	$\frac{1}{2}$
Not over 1000 volts <u>ac</u> , 1500 volts <u>dc</u> , nominal	50.8	2	25.4	1	25.4	1

*For spacing between live parts and doors of cabinets, the dimensions in 312.101(A) shall apply.

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Committee Statement

Committee Statement: References to voltages were updated for accuracy.

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**First Revision No. 9004-NFPA 70-2024 [Part II.]**

[Article 242]. Part II. Surge-Protective Devices (SPDs), ~~1000 Volts or Less~~ not over 1000 Volts ac, 1500 Volts dc, Nominal

Submitter Information Verification

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