
USACE / NAVFAC / AFCEA / NASA UFGS-33 77 36.00 40 (May 2010)

Preparing Activity: NASA Superseding
UFGS-33 77 36.00 40 (November 2008)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UML dated April 2010

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SECTION 33 77 36.00 40

MEDIUM-VOLTAGE UTILITY FUSES

05/10

NOTE: This specification covers the requirements for distribution fuse cutouts. Show on drawings current rating, load-break fuses if required, combination lightning arresters and fuse cutouts if required, and mounting details.

Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

PART 1 GENERAL

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the

Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

- IEEE 242 (2001; Errata 2003) Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems - Buff Book
- IEEE 399 (1997) Brown Book IEEE Recommended Practice for Power Systems Analysis
- IEEE C37.40 (2003; R 2009) Service Conditions & Definitions for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, & Accessories
- IEEE C37.41 (2008) Standard Design Tests for High-Voltage (>1000 V) Fuses, Fuse and Disconnecting Cutouts, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories Used with These Devices
- IEEE C37.42 (1996) Standard Specification for High Voltage Expulsion Type Distribution Class Fuses, Cutouts, Fuse Disconnecting Switches and Fuse Links
- IEEE C37.46 (2000) Standard for High Voltage Expulsion and Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches
- IEEE C37.47 (2000) Standard for High Voltage Current-Limiting Type Distribution Class Fuses and Fuse Disconnecting Switches

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

- NEMA ICS 3 (2005) Standard for Industrial Control and Systems: Medium Voltage Controllers Rated 2001 to 7200 Volts AC
- NEMA ICS 6 (1993; R 2001; R 2006) Standard for Enclosures
- NEMA SG 2 (1993) Standard for High-Voltage Fuses

1.2 SUBMITTALS

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Keep submittals to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication Drawings[; G][; G, [_____]]

Installation Drawings[; G][; G, [_____]]

SD-03 Product Data

Equipment and Performance Data[; G][; G, [_____]]

Distribution Fuse Cutouts[; G][; G, [_____]]

SD-07 Certificates

Testing[; G][; G, [_____]]

SD-08 Manufacturer's Instructions

Fuse Cutouts[; G][; G, [_____]]

Manufacturer's Installation Instructions[; G][; G, [_____]]

1.3 SYSTEM REQUIREMENTS

NOTE: If Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS is not included in the project specification, insert applicable requirements therefrom and delete the following paragraph.

[Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS applies to work specified in this section.
]

NOTE: Show the following information the drawings:

1. Conductor sizes, types, and materials.

2. Primary fused cutout; give voltage rating and state fusing (ampere rating) and "K" quick or "T" tardy required for coordination with existing upstream sectionalizing equipment.

Submit [fabrication drawings](#) for fuse cutouts consisting of fabrication and assembly details to be performed in the factory.

Submit [equipment and performance data](#) for [distribution fuse cutouts](#) including life, [testing](#) certificates verifying conformance to referenced standards, system functional flows, safety features, and mechanical automated details.

PART 2 PRODUCTS

2.1 EQUIPMENT STANDARDS

Ensure distribution fuse cutouts conform to the following requirements:

IEEE C37.40

IEEE C37.41

IEEE C37.42

IEEE C37.46

IEEE C37.47

IEEE 242

IEEE 399

NEMA ICS 3

NEMA ICS 6

NEMA SG 2

NFPA 70

2.2 FUSE CUTOUTS

Submit manufacturer's instructions for fuse cutouts including special provisions required to install equipment components and system packages. Include special notices detailing impedances, hazards and safety precautions.

Ensure distribution fuse cutouts are self-contained, enclosed, dropout type, or open type when required for higher voltage or interrupting rating. Install loadbreak cutouts only if specifically indicated.

Ensure the interrupting capacity is sufficient to break the maximum system fault current to which the cutout will be subjected. The minimum interrupting capacity is 16,000 amperes root mean square asymmetric.

Provide heavy-duty or extra-heavy-duty classification cutouts. Ensure cutouts installed on three-phase, 13.2-kilovolt (kV) or 13.8-kV systems are rated at 15 kV. The installation of cutouts rated at 7.8 kV on these systems is not allowed.

Provide fuse links with a continuous rating equal to approximately 150 percent of the full-load line current when used for transformer protection, and approximately [100][110][_____] percent of the conductor rated capacity when used for circuit protection. Ensure the 15-kV cutout has a wet withstand, 10-second voltage rating of 37 kV, with a 95-kV basic impulse level (BIL). Provide with a continuous current rating of 100 amperes unless otherwise indicated. Provide fuse disconnects rated not less than 100 amperes, having attachments to permit manual operation of the disconnect under load without external arcing.

Where indicated, combine lightning arresters and fuse cutouts.

PART 3 EXECUTION

3.1 INSTALLATION

Install distribution fuse cutouts in accordance [installation drawings](#) with the [manufacturer's installation instructions](#).

-- End of Section --