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IEEE Guide for Selection and Application of Terminations for Shielded AC Power Cable Rated 5 kV to 46 kV

IEEE Power and Energy Society

Developed by the
Insulated Conductors Committee

IEEE Std 1637™-2020
(Revision of
IEEE Std 1637-2010)

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Abstract: A step-by-step process for selecting an appropriate termination that is commensurate with a particular shielded power cable design is provided in this guide. Over the years, shielded power cables have been developed that employ many different insulating materials and many different shielding systems, such that, there are numerous issues to consider when selecting a termination for a particular cable design. Over the same period of time, many different termination methods and designs have been developed that serve the same purpose, but employ different application methodologies. No attempt is made in this guide to cover every cable and termination design, and it is generally restricted to single conductor underground residential distribution (URD) and shielded power cable that have a voltage rating from 5 kV to 46 kV, which includes some industrial cables. By nature, the terminations referred to in this guide are considered to be “live front,” in that the terminations comprise a transition from a shielded power cable system to an energized component or bus that is either bare or simply covered.

Keywords: IEEE 1637™, power cable, shielded, termination

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Introduction

This introduction is not part of IEEE Std 1637-2020, IEEE Guide for Selection and Application of Terminations for Shielded AC Power Cable Rated 5 kV to 46 kV.

This guide was developed within the IEEE Insulated Conductors Committee of the Power and Energy Society as an introduction to the process of selecting and applying the appropriate termination for application on a particular cable design and within a particular environment. This guide is intended as an introduction to the selection process.

In its current form, this guide is general in nature and provides only a broad overview. Many factors can influence the selection and application of a particular termination for any given application, including user personal preferences. This guide is not intended to be exhaustive in covering the considerations necessary in making a termination selection. Consequently, the user should consult the expertise of knowledgeable individuals before making final choices.

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1. Overview

1.1 Scope

This guide discusses the reasons why a termination is necessary on a shielded power cable. Included is a short tutorial on termination theory, a general discussion of design and materials, a selection flow chart, and an application spacing guide.

1.2 Purpose

The purpose of this project is to guide the reader in selecting and applying terminations for shielded-power cables rated 5 kV to 46 kV.

1.3 General

This guide provides the reader with guidance in selecting and applying terminations for shielded-power cables rated 5 kV to 46 kV.

1.4 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*).[1, 2]

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (*should* equals *is recommended that*).

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (*can* equals *is able to*).

[1]The use of the word *must* is deprecated and shall not be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.
[2]The use of *will* is deprecated and shall not be used when stating mandatory requirements; *will* is only used in statements of fact.

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