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IEEE Standard for Test Methods and Performance of Low-Voltage (1000 V rms or Less) Surge Protective Devices Used on Secondary Distribution Systems (Between the Transformer Low-Voltage Terminals and the Line Side of the Service Equipment)

IEEE Power and Energy Society

Sponsored by the
Surge Protective Devices Committee

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IEEE Std C62.34™-2017
(Revision of
IEEE Std C62.34-1996)

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Abstract: This standard applies to surge protective devices designed for application on the low-voltage supply mains (1000 V rms and less, frequency between 48 Hz and 62 Hz) and intended to be connected at locations between, and including, the secondary terminals of the distribution transformer and the line side of the service equipment. Such surge protective devices are also known as secondary arresters. This is coordinated with IEEE Std C62.44 (the application guide), NEC Article 285, and ANSI/UL 1449.

Keywords: IEEE C62.34™, low voltage, secondary arresters, surge protective devices, SPDs, Type 1 SPDs

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Introduction

This introduction is not part of IEEE Std C62.34™-2017, IEEE Standard for Test Methods and Performance of Low-Voltage (1000 V rms or Less) Surge Protective Devices Used on Secondary Distribution Systems (Between the Transformer Low-Voltage Terminals and the Line Side of the Service Equipment).

Secondary arresters have been used since 1940 to protect the secondary winding of distribution transformers, kilowatt-hour meters, service entrance equipment, and power equipment loads downstream from breakdown of insulation during lightning strikes and switching surges. Performance criteria for secondary arresters were included in standards for performance of high-voltage arresters in IEEE Std C62.1™-1989 and IEEE Std C62.11™-1993. However, IEEE Std C62.1-1989 is no longer in publication and IEEE Std C62.11-1993 has been updated and secondary arresters dropped from its scope.

With the proliferation of electronic equipment installed inside buildings, the emphasis has shifted away from protection of insulation of transformer windings and wiring to protection of vulnerable downstream electronic equipment. Due to increased sensitivity of downstream equipment to surges, the requirements for secondary arresters have necessarily become more stringent.

The standards developers have attempted, as far as reasonable and possible, to harmonize with relevant domestic and international standards.

Contents

IEEE Standard for Test Methods and Performance of Low-Voltage (1000 V rms or Less) Surge Protective Devices Used on Secondary Distribution Systems (Between the Transformer Low-Voltage Terminals and the Line Side of the Service Equipment)

1. Scope

This standard applies to surge protective devices designed for application on the low-voltage supply mains (1000 V root-mean-squared [rms] and less, frequency between 48 Hz and 62 Hz) and intended to be connected at locations between, and including, the secondary terminals of the distribution transformer and the line side of the service equipment. Such surge protective devices are also known in the electric utility industry as secondary arresters. Underwriters Laboratories also lists them as Type 1 SPDs (surge protective devices). This standard is coordinated with IEEE Std C62.44 (the application guide), NEC Article 285, and ANSI/UL 1449.

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

IEEE Std C62.41.1™, IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits (recognized as an American National Standard).[1,2]

IEEE Std C62.41.2™, IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits (recognized as an American National Standard).

IEEE Std C62.45™, IEEE Guide on Surge Testing for Equipment Connected to Low-Voltage AC Power Circuits (recognized as an American National Standard).

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