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IEEE Standard for Overhead-Type Distribution Transformers 500 kVA and Smaller; High Voltage, 34 500 V and Below; Low Voltage, 7970/13 800Y V and Below

IEEE Power and Energy Society

Sponsored by the
Transformers Committee

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IEEE Std C57.12.20™-2017
(Revision of IEEE Std C57.12.20-2011)

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Abstract: Certain electrical, dimensional, and mechanical characteristics and safety features of single- and three-phase, 60 Hz, liquid-immersed, self-cooled, overhead-type distribution transformers 500 kVA and smaller, high voltages 34 500 V and below, and low voltages 7970/13 800Y V and below are covered in this standard.

Keywords: distribution transformer, IEEE C57.12.20™, liquid, overhead, transformer

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Introduction

This introduction is not part of IEEE Std C57.12.20–2017, IEEE Standard for Overhead-Type Distribution Transformers 500 kVA and Smaller; High Voltage, 34 500 V and Below; Low Voltage, 7970/13 800Y V and Below.

In 1938 the Edison Electric Institute-National Electrical Manufacturers Association (EEI-NEMA) Joint Committee on Standards for Distribution Transformers was organized to develop standards for the various types of distribution transformers. For 23 years the continuous work of this Joint Committee was evidenced by a series of reports published jointly by the Edison Electric Institute (EEI) and the National Electrical Manufacturers Association (NEMA). The last report of overhead-type distribution transformers was the Seventh Report published in April 1961. The Joint Committee's last two reports on overhead-type distribution transformers were approved as American National Standards; the Seventh Report was reissued as ANSI C57.12.20–1962.

To avoid further duplication of effort and to simplify future revisions, the EEI-NEMA Joint Committee on Standards for Distribution Transformers was dissolved and replaced by new subcommittees of Accredited Standards Committee on Transformers, Regulators, and Reactors, C57. The work on standards for overhead-type distribution transformers was taken over by the Subcommittee on Distribution Transformers, Overhead and Pad-mounted, IEEE C57.12.2.

This standard was prepared by IEEE Subcommittee C57.12.2 on behalf of IEEE C57 and is a revision of IEEE Std C57.12.20–2011. The 1981 edition included detailed requirements on relief of excessive pressure. The 1988 revision recognized the step-down and series-multiple designs in distribution transformers, and omitted the platform-type or station-type transformer. In recognition of the dramatic reduction in catastrophic failures of overhead transformers since the formulation of NEMA Standards Proposal Number TR-P7–1975, the 1988 revision included in Section 8, this updated NEMA proposal that was previously designated 2.02 of NEMA Standards Publication for Transformers, Regulators and Reactors, NEMA TR 1-1980 [B4].[1] Industry consensus is that transformers that are built in conformance with this standard and that have adequate overcurrent protection, and recognizing the limitations included therein, will provide for enclosures with reasonable withstand capability. The 2011 revision includes significant revisions to Clause 9. The 2017 revision includes the addition of low-voltage ratings of 346 V and 600 V. This revision also includes the addition of minimum impedance.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Transformers, Regulators, and Reactors, C57. Committee approval of the standard does not necessarily imply that all committee members voted for its approval.

[1]The numbers in brackets correspond to the numbers of the bibliography in Annex C.

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IEEE Standard for Overhead-Type Distribution Transformers 500 kVA and Smaller; High Voltage, 34 500 V and Below; Low Voltage, 7970/13 800Y V and Below

1. Overview

1.1 Scope

This standard covers certain electrical, dimensional, and mechanical characteristics and safety features of single- and three-phase, 60 Hz, liquid-immersed, self-cooled, overhead-type distribution transformers 500 kVA and smaller, high voltages 34 500 V and below, and low voltages 7970/13 800Y V and below.

1.2 Purpose

This standard is intended for use as a basis for determining the performance, interchangeability, and safety of overhead-type distribution transformers and to assist in the proper selection of this equipment.

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used; therefore, 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 C37.40™, IEEE Standard Service Conditions and Definitions for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories.[2,3]

IEEE Std C37.41™, IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses and Accessories.

IEEE Std C57.12.00™, IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers.

IEEE Std C57.12.31™, IEEE Standard for Pole-Mounted Equipment—Enclosure Integrity.

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