

## **American National Standard for Transformers –**

# **Ventilated Dry-Type Network Transformers 2500 kVA and Below, Three-Phase, with High-Voltage 34 500 Volts and Below, Low-Voltage 216Y/125 and 480Y/277 Volts - Requirements**

Secretariat

**National Electrical Manufacturers Association**

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**American National Standards Institute, Inc**

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## American National Standard

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Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

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## Foreword

(This Foreword is not part of American National Standard C57.12.57-1987.)

A survey of the Edison Electric Institute (EEI) and National Electrical Manufacturers Association (NEMA) indicated a need for standards on ventilated dry-type network transformers.

This new standard was developed by a task-force working group consisting of EEI and NEMA delegates under the C57.12.4 Subcommittee on Underground and Secondary Networks.

This standard incorporates the technical requirements of ANSI C57.12.40-1982, Requirements for Secondary Network Transformers, Subway and Vault Types (Liquid Immersed), and ANSI/IEEE C57.12.01-1979, General Requirements for Dry-Type Distribution and Power Transformers, into a composite standard that serves the needs for dry-type network transformers. Since dry-type network units can operate with liquid network units, this standard incorporates the basic lightning impulse insulation level (BIL), impedance, voltage, and other technical requirements of ANSI C57.12.40-1982. It allows as alternates those technical characteristics and values associated with ANSI/IEEE C57.12.01-1979 and ANSI C57.12.51-1981, Requirements for Ventilating Dry-Type Power Transformers 501 kVA and Larger, Three-Phase with High-Voltage 601 to 34 500 Volts, Low-Voltage 208Y/120 to 4160 Volts, when specified or deemed more appropriate.

The applicable rules and procedures of ANSI for preparation and approval of voluntary consensus standards were followed. These rules specify procedures for voting, review, and attempted reconciliation of dissenting viewpoints, a 60-day public review period, and approval by ANSI's Board of Standards Review.

This American National Standard is a voluntary consensus standard. Its use becomes mandatory only when required by a duly constituted legal authority or when specified in a contractual relationship. To meet specialized needs and to allow innovation, specific changes are permissible when mutually determined by the user and the producer, provided such changes do not violate existing laws and are considered technically adequate for the function intended.

Suggestions for improvement of this standard will be welcome. They should be sent to the National Electrical Manufacturers Association, 2101 L Street, NW, Washington, DC 20037.

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. At the time it approved this standard, the C57 Committee had the following members:

**John Nay, Chair**  
**Charles H. White, Secretary**  
**Ronald Chittim, Cosecretary**

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| Electric Light and Power Group .....                    | Roger Ensign                  |
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| National Electrical Manufacturers Association .....     | Roy E. Uptegraff, Jr          |
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Subcommittee C57.12.4 on Underground and Secondary Networks, which developed and approved this standard, had the following members:

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**R. Hansen**, *Secretary*  
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## Ventilated Dry-Type Network Transformers 2500 kVA and Below, Three-Phase, with High-Voltage 34 500 Volts and Below, Low-Voltage 216Y/125 and 480Y/277 Volts - Requirements

### 1. Scope

#### 1.1

This standard is intended to set forth characteristics relating to performance, limited electrical and mechanical interchangeability, and safety of the equipment described herein, and to assist in the proper selection of such equipment.

#### 1.2

This standard describes certain electrical and mechanical characteristics and takes into consideration certain safety features of three-phase, 60-Hz, two-winding, ventilated dry-type network transformers generally used for step-down purposes, high-voltage 34 500 volts and below; low-voltage 216Y/125 and 480Y/277 volts with self-cooled ratings 2500 kVA and smaller. Forced-air ratings are listed in Part II.

#### 1.3

This standard does not apply to other types of transformers, such as specialty, sealed dry-type, pad-mounted dry-type, liquid-immersed, instrument, regulating, furnace, mine, and rectifier transformers. Transformers with high voltage 600 volts or less are excluded.

#### 1.4

As used in this standard, the word “shall” indicates mandatory requirements, and the words “should” and “may” refer to matters that are recommended and permissive, respectively, but not mandatory.

NOTE — The Foreword of this standard describes the circumstances under which the document may be used on a mandatory basis.

#### 1.5

Part I of this standard describes electrical and mechanical requirements. Part II describes other requirements or alternatives that may be specified.

## 2. Referenced American National Standards

### 2.1 General

All requirements, definitions, and tests, except as specifically covered in this standard, shall be in accordance with the American National Standards listed below. Standards are identified by designation and year (for example, ANSI/IEEE C57.12.01-1979). When a referenced American National Standard is superseded by a revision approved by the American National Standards Institute, Inc, the revision shall apply.

ANSI B1.1-1982, Unified Inch Screw Threads (UN and UNR Thread Form)

ANSI C57.12.40-1982, Requirements for Secondary Network Transformers, Subway and Vault Types (Liquid Immersed)

ANSI C57.12.50-1981, Requirements for Ventilated Dry-Type Distribution Transformers 1 to 500 kVA, Single-Phase, and 15 to 500 kVA, Three-Phase, with High-Voltage 601 to 34 500 Volts, Low-Voltage 120 to 600 Volts

ANSI C57.12.51-1981, Requirements for Ventilated Dry-Type Power Transformers 501 kVA and Larger, Three-Phase, with High-Voltage 601 to 34 500 Volts, Low-Voltage 208Y/120 to 4160 Volts

ANSI C57.12.70-1978, Terminal Markings and Connections for Distribution and Power Transformers

ANSI C62.2-1981, Guide for the Application of Valve-Type Surge Arresters for Alternating-Current Systems

ANSI C84.1-1982, Voltage Ratings (60 Hz) for Electric Power Systems and Equipment

ANSI/IEEE C57.12.01-1979, General Requirements for Dry-Type Distribution and Power Transformers

ANSI/IEEE C57.12.80-1978, Terminology for Power and Distribution Transformers

ANSI/IEEE C57.12.91-1979, Test Code for Dry-Type Distribution and Power Transformers

ANSI/IEEE C57.13-1978, Requirements for Instrument Transformers

ANSI/IEEE C57.94-1982, Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type General Purpose Distribution and Power Transformers

ANSI/IEEE C57.105-1978, Guide for Application of Transformer Connections in Three-Phase Distribution Systems

ANSI/IEEE 100-1984, Dictionary of Electrical and Electronics Terms

### 2.2 Terminology

Transformers terminology as set forth in ANSI/IEEE C57.12.80-1978 shall apply. Other electrical terms are defined in ANSI/IEEE 100-1984.

## Part I: Basic Electrical and Mechanical Requirements

(See Part II for other requirements or alternatives that may be specified.)