



ANSI C37.50-2018

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American National  
Standard for  
Switchgear —  
Low Voltage AC  
Power Circuit  
Breakers Used in  
Enclosures —  
Test Procedures





ANSI C37.50-2016

*American National Standard for Switchgear—  
Low Voltage AC Power Circuit Breakers Used  
in Enclosures—Test Procedures*

Secretariat:

**National Electrical Manufacturers Association**

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**American National Standards Institute, Inc.**

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**Foreword** (This foreword is not part of American National Standard C37.50-2018)

This Standard was first published in 1973 as a replacement for Section 9 (Test Requirements) of American National Standard for Low-Voltage AC Power Circuit Breakers (600-Volt Insulation Class), ANSI C37.13-1969. In 1975 a supplement, American National Standard Test Procedures for Low-Voltage AC Integrally Fused Power Circuit Breakers, ANSI C37.50a-1975, was published as a replacement for Section 8 (Test Requirements) of ANSI C37.28-1969, "Standard for Low-Voltage AC Integrally Fused Power Circuit Breakers" and Section 8 of ANSI C37.13a-1975. The contents of ANSI C37.50-1973 and C37.50a-1975 were combined in ANSIC37.50-1981 in accordance with the IEEE Low-Voltage Switchgear Devices Subcommittee revision and the combination of ANSI C37.13-1969 and ANSI C37.13a-1975 into IEEE C37.13-1981. The 1989 revision of the 1981 Standard was developed to clarify miscellaneous areas of interpretation within the document. The present revision includes changes to coordinate with updated requirements in IEEE C37.13, as well as accepting the trip system design and production test requirements from IEEE C37.17.

This Standard was originally written as a description of design test requirements, and the performance criteria outlined established the basis for certification of low-voltage ac-power circuit breakers used in enclosures for use in nonutility installations subject to regulation by public utilities and similar agencies concerned with laws, ordinances, regulations, administrative orders, and similar instruments. It was established as a separate document to facilitate its use by test laboratories and its timely revision based on experience. This revision supports that original proposition.

Experience has also indicated that there have been misinterpretation regarding the testing requirements for field design-change modifications. This has resulted in circuit breaker modifications without sufficient testing to properly recertify the modified products. Any change to a basic design should be coordinated with the original manufacturer. Otherwise, the original certification responsibility cannot be continued. Conversions of circuit breakers are discussed in detail in IEEE Std C37.59, Requirements for Conversion of Power Switchgear Equipment.

This Standard was prepared by a Working Group sponsored by the Power Switchgear Assemblies Technical Committee of the Switchgear Section of the National Electrical Manufacturers Association (NEMA 8SG-V). During the course of its preparation, coordination has been maintained with the Switchgear Committee of the Power and Energy Society of the Institute of Electrical and Electronics Engineers.

Through this joint effort over many years, the switchgear assemblies Standards have been of extreme value to the industry and further suggestions for improvement gained in the use of this Standard will be welcomed.

Suggestions for improvement of this Standard will be welcome. They should be sent to the National Electrical Manufacturers Association, 1300 North 17th Street, Suite 900, Rosslyn, VA 22209.

This Standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Power Switchgear C37. Committee approval of the Standard does not necessarily imply that all committee members voted for its approval. At the time of its approval, the ASC C37 Committee had the following members:

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## 1 Scope

This Standard covers the test procedures for enclosed low-voltage AC power circuit breakers as follows:

- a. Stationary or drawout circuit breakers of two-or-three- or four-pole construction, with one or more rated maximum voltages of 1058 V, 730 V, 635 V (600 for units incorporating fuses), 508 V, and 254 V for application on systems having nominal voltages of 1000 V, 690 V, 600 V, 480 V, and 240 V.
- b. Unfused or fused type circuit breakers
- c. Manually operated or power operated circuit breakers with or without electromechanical or solid-state trip devices.
- d. Fused drawouts consisting of current-limiting fuses in a drawout assembly intended to be connected in series with a low-voltage AC power circuit breaker to form a non-integrally fused circuit breaker.

Note: In this Standard the term circuit breaker shall mean enclosed low-voltage AC power circuit breaker, either fused or unfused. The term unfused circuit breaker shall mean a circuit breaker without either integrally or non-integrally mounted fuses, and the term fused circuit breaker shall mean a circuit breaker incorporating either integrally or non-integrally mounted current limiting fuses.

This document applies to both integrally and nonintegrally fused circuit breakers.

## 2 References

The following referenced documents are indispensable for the application of this document. 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 4 Standard Techniques for High-Voltage Testing

IEEE Std C37.09 Standard Test Procedure for AC High-Voltage Circuit Breakers Rated Maximum Voltage above 1000 V

IEEE Std C37.13 Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures

IEEE Std C37.17 Standard for Standard for Direct-Acting Trip Systems for Low-Voltage (1000 V and below) AC and General Purpose Low-Voltage (1500 V and below) DC Power Circuit Breakers

IEEE Std C37.26 Guide for Methods of Power-Factor Measurement for Low-Voltage (1000 Solid-State Trip Devices for use with Unfused Circuit Breakers AC or Lower) Inductive Test Circuits

IEEE Std C37.50.1 Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus

IEEE Std C37.90.2 Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

UL 248-8 Low-Voltage Fuses—Part 8: Class J Fuses

UL 248-10 Low-Voltage Fuses—Part 10: Class L Fuses