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

National Electrical Manufacturers Association

National Electrical Manufacturers Association
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ANSI C37.50-1989 (R1995, R2000, R2006)

American National Standard for Switchgear—

Low-Voltage AC Power Circuit Breakers Used in Enclosures—

Test Procedures

ANSI C37.50-1989 (R1995, R2000, R2010)
Revision of
ANSI C37.50-1981

American National Standard
for Switchgear—

Low Voltage AC Power Circuit Breakers Used in Enclosures—Test Procedures

Secretariat

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American National Standard

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Foreword

(This Foreword is not part of American National Standard C37.50-1989.)

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 and Section 8 of ANSI C37.13a-1975. The contents of ANSI C37.50-1973 and C37.50a-1975 were combined in ANSI C37.50-1981 in accordance with the IEEE Low-Voltage Switchgear Devices Subcommittee revision and combination of ANSI C37.13-1969 and ANSI C37.13a-1975 into ANSI/IEEE C37.13-1981. This (1989) revision of the 1981 standard was developed to clarify miscellaneous areas of interpretation within the document.

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 authorities 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 misinterpretations regarding the testing requirements for field design-change modifications. This has resulted in circuit breaker modifications by manufacturers other than the original manufacturer 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.

This revision was prepared by the NEMA Power Switchgear Assemblies, Low- and Medium-Voltage Power Circuit Breaker, Medium-Voltage Load-Interrupter Switches Technical Committee, NEMA/SG/V, which has assumed responsibility for its maintenance.

Suggestions for improvement of this standard will be welcome. They should be sent to: National Electrical Manufacturers Association, 1300 N. 17th St., Suite 1752, Arlington, VA 22209

The 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 it approved this standard, the C37 Committee had the following members:

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The Power Switchgear Assemblies, Low- and Medium-Voltage Circuit Breaker, Medium-Voltage Load-Interrupter Switches Technical Committee (NEMA/SG/V) of the NEMA Switchgear Section, which developed this standard, had the following members:

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American National Standard for Switchgear –

Low-Voltage AC Power Circuit Breakers Used in Enclosures – Test Procedures

This standard constitutes Section 9 of American National Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures, ANSI/IEEE C37.13-1981.

1. General

1.1 Scope. This standard covers the test procedures for enclosed low-voltage ac power circuit breakers as follows:

(1) Stationary or drawout circuit breakers of two- or three-pole construction, with one or more rated maximum voltages of 635 (600 for units incorporating fuses), 508, and 254 V for application on systems having nominal voltages of 600, 480, and 250 V.

(2) (a) Unfused circuit breakers
(b) Fused circuit breakers

(3) Manually operated or power-operated circuit breakers with or without electromechanical or solid-state trip devices.

NOTE: In this standard the words "circuit breaker" shall mean "enclosed low-voltage ac power circuit breaker," either fused or unfused. The words "unfused circuit breaker" shall mean a "circuit breaker without integral fuses" and the words "fused circuit breaker" shall mean a "circuit breaker incorporating current-limiting fuses as an integral part of the unit."

1.2 Referenced American National Standards. This standard is intended for use with the following American National Standards. When these standards are superseded by a revision approved by the American National Standards Institute, Inc, the revision shall apply.

ANSI C37.16-1988, Switchgear – Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors – Preferred Ratings, Related Requirements, and Application Recommendations

ANSI C37.17-1979 (R1988), Trip Devices for AC and General-Purpose DC Low-Voltage Power Circuit Breakers

ANSI/IEEE 4-1982, Techniques for High-Voltage Testing

ANSI/IEEE C37.09-1979 (R1989), Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis

ANSI/IEEE C37.13-1981, Low-Voltage AC Power Circuit Breakers Used in Enclosures

ANSI/IEEE C37.26-1972 (R1978), Guide for Methods of Power-Factor Measurement for Low-Voltage Inductive Test Circuits (see Appendix)

ANSI/UL 198C-1986, High Interrupting-Capacity Fueses, Current-Limiting Types

2. General Test Conditions and Requirements

The conditions prevailing at the test site during tests on circuit breakers shall be as stated in Section 2 of ANSI/IEEE C37.13-1981, except that continuous-current tests and trip-device calibration check tests shall be conducted at an ambient air temperature between 10°C (50°F) and 40°C (104°F).

3. Design Test Requirements

3.1 General. Design tests are performed on representative circuit breakers to demonstrate the capability of a particular frame size of a circuit breaker to meet its assigned ratings and to operate under service conditions given in Section 2 of ANSI/IEEE C37.13-1981.

Although the tests described in this standard cover the performance of complete low-voltage power circuit breakers, it should be recognized that they may not cover some of the component parts of circuit breakers such as wire, insulation materials, and the like. Addi-