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IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures

IEEE Power and Energy Society

Sponsored by the
Switchgear Committee

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USA

IEEE Std C37.13™-2015
(Revision of
IEEE Std C37.13-2008)

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Abstract: The following enclosed low-voltage ac power circuit breakers are covered in this standard: a) stationary or drawout type of two-, three-, or four-pole construction, with one or more rated maximum voltages of 1058 V, 730 V, 635 V (600 V for units incorporating fuses), 508 V, or 254 V for application on systems having nominal voltages of 1000 V, 690 V, 600 V, 480 V, or 240 V; b) unfused or fused circuit breakers; c) manually or power operated; and d) with or without electromechanical or electronic trip devices. Service conditions, ratings, functional components, temperature limitations and classifications of insulating materials, insulation (dielectric) withstand voltage requirements, test procedures, application, and the preferred ratings are discussed in this standard.

Keywords: circuit breaker, fused circuit breaker, IEEE C37.13™, low-voltage ac power circuit breaker, open-fuse trip device, unfused circuit breaker

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Introduction

This introduction is not part of IEEE Std C37.13-2015, IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures.

This revision of IEEE Std C37.13 incorporates a number of changes since the 2008 edition, but most significantly, it now includes preferred ratings previously in IEEE Std C37.16.

ANSI C37.16 had historically been the responsibility of a NEMA working group. In 2003, this responsibility was transferred to the IEEE Standards Association. The Low Voltage Switchgear Devices subcommittee of the Switchgear Committee of the IEEE Power and Energy Society is now responsible for the ratings originally in IEEE Std C37.16.

The 2009 edition of IEEE Std C37.16 contained preferred ratings for low voltage ac (635 V and below) and DC (3200 V and below) power circuit breakers. The present revision of IEEE Std C37.13 incorporates the preferred ratings for low voltage ac power circuit breakers from IEEE Std C37.16, so that the requirements for the circuit breakers and their preferred ratings are now in this edition of IEEE Std C37.13.

This parallels changes occurring regarding low voltage dc power circuit breakers. The preferred ratings formerly in IEEE Std C37.16 are being incorporated in a revised edition of IEEE Std C37.14, presently in revision by the LVSD subcommittee of the Switchgear Committee.

With approval of IEEE Std C37.13 and IEEE Std C37.14, IEEE Std C37.16 is to be superseded.

Changes incorporated in this revision of IEEE Std C37.13 include the following:

a) Incorporation of amendment 1 of IEEE Std C37.13a:
   1) Revision to include rated maximum voltages of 1058 V (1000 V nominal voltage) and 730 V (690 V nominal voltage).
   2) Establishment of dielectric test voltages for the new maximum voltages, as shown in the following equation:

      $$V_{DEt} = 2V_{Nom} + 1000$$

      where

      V_{DEt} = dielectric test voltage
      V_{Nom} = nominal voltage group

      Nominal voltages groups are as follows:

      — 600 V (nominal voltage) and below

      — 1000 V (nominal voltage) and below and abxove 600 V (nominal voltage)

b) Ratings updated to address preferred ratings associated with rated maximum voltages of 730 Vac and 1058 Vac.

c) Ratings for field circuit breakers were removed due to the withdrawal of IEEE Std C37.18 [B5].

d) All dc circuit breaker information has been removed, as this information will now be contained in IEEE Std C37.14.

e) Added or revised definitions for the following terms:
   1) anti-pump
   2) clearing time

3) frame size
4) low-voltage ac power circuit protectors
5) silver-surfaced or equivalent
6) trip-free

f) Test requirements are replaced with references to ANSI C37.50 except for those requirements not yet included in ANSI C37.50-2012.

g) Requirements for manual release devices are added.

Contents

IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures

1. Overview

1.1 Scope

This standard covers the following types and preferred ratings for enclosed low-voltage ac power circuit breakers:

a) Stationary or drawout type of two-, three-, or four-pole construction with one or more rated maximum voltages of 1058 V, 730 V, 635 V (600 V for units incorporating fuses), 508 V, or 254 V for application on systems having nominal voltages of 1000 V, 690 V, 600 V, 480 V, or 240 V respectively

b) Unfused or fused type

c) Manually operated or power operated, with or without a trip system

d) Fused drawout assemblies 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 nonintegrally fused circuit breaker

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 nonintegrally mounted fuses, and the term fused circuit breaker shall mean a circuit breaker incorporating current-limiting fuses, whether integrally mounted or nonintegrally mounted.