IEEE Standard for Preferred Ratings, Related Requirements, and Application Recommendations for Low-Voltage AC (635 V and below) and DC (3200 V and below) Power Circuit Breakers

Power & Energy Society

Sponsored by the
IEEE Switchgear Committee

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Abstract: This standard defines the preferred ratings for low-voltage ac (635 V and below) power circuit breakers, general purpose dc (325 V and below) power circuit breakers, heavy duty low-voltage dc (3200 V and below) power circuit breakers, and fused (integrally or non-integrally) low-voltage ac (600 V and below) power circuit breakers.
Keywords: dc power circuit breaker; integrally fused low-voltage ac power circuit breaker; low-voltage; non-integrally fused low-voltage ac power circuit breaker; power circuit breaker

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Introduction

This introduction is not part of IEEE Std C37.16-2009, IEEE Standard for Preferred Ratings, Related Requirements, and Application Recommendations for Low-Voltage AC (635 V and below) and DC (3200 V and below) Power Circuit Breakers.

IEEE Std C37.16 was formerly the responsibility of a NEMA working group; this responsibility was transferred to IEEE Standards Association in January 2003. The Low Voltage Switchgear Devices subcommittee of the Switchgear Committee of the IEEE Power and Energy Society is now responsible for maintenance and revision of IEEE Std C37.16.

The IEEE Preferred Ratings, Related Requirements, and Application Information for Low-Voltage Power Circuit Breakers working group made the following changes to keep it up to date with the evolution of low voltage circuit breakers. Changes made in this version include:

Tables 1 and Table 2 were replaced by individual paragraphs with each rating. A new Table 1 and Table 2 link frame size to interrupting rating.

References to IEEE Std C37.29™, which has been withdrawn, were deleted.

The tables on motor application were deleted. The user is encouraged to consult relevant standards, including NEMA MG-1 and NFPA 70.

The tables on anode circuit breakers and low-voltage ac circuit protectors were deleted due to lack of product for many years.

Rows were deleted from the dc transit breaker tables related to the 53 msec time constant due to lack of product.

Tables have been rearranged by application and renumbered sequentially. Annex A lists the table number from the previous edition and the location of that information in this edition

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Participants

At the time this standard was completed, the Preferred Ratings, Related Requirements, and Application Information for Low-Voltage Power Circuit Breakers Working Group had the following membership:

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Contents

IEEE Standard for Preferred Ratings, Related Requirements, and Application Recommendations for Low-Voltage AC (635 V and below) and DC (3200 V and below) Power Circuit Breakers

1. Overview

1.1 Scope

This standard provides the preferred ratings for low-voltage ac (635 V and below) power circuit breakers, fused low-voltage ac (600 V and below) power circuit breakers, general purpose dc (325 V and below) power circuit breakers, and low-voltage dc (3200 V and below) power circuit breakers.

1.2 Purpose

This standard provides preferred ratings to establish a uniform basis of product design and testing for low-voltage ac and dc power circuit breakers. The ratings in this standard are preferred but are not restrictive. Manufacturers may choose to offer, and users may elect to require, ratings which differ from those in this standard.

This revision updates the preferred ratings to reflect changes in the state of the art. Ratings for some obsolete products have been eliminated and new ratings added. This revision is coordinated with the changes in companion standards IEEE Std C37.13™, IEEE Std C37.14™, IEEE Std C37.17™, and IEEE Std C37.27™.[1, 2]

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so 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 C37.13, Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures.[3]

IEEE Std C37.14, Standard for Low-Voltage DC Power Circuit Breakers Used in Enclosures.

IEEE Std C37.14-2002, Standard for Low-Voltage DC Power Circuit Breakers Used in Enclosures.

IEEE Std C37.17, Standard for Direct-Acting Trip Systems for Low-Voltage (up to 635 V) AC and General Purpose Low-Voltage (up to 325 V) DC Power Circuit Breakers.

IEEE Std C37.18™, Standard Enclosed Field Discharge Circuit Breakers for Rotating Electric Machinery.

IEEE Std C37.27™, Application Guide for Low-Voltage AC Fused Power Circuit Breakers Applied with Separately Mounted Current-Limiting Fuses.

ANSI C37.50, American National Standard for Switchgear—Low-Voltage AC Power Circuit Breakers Used in Enclosures— Test Procedures.[4]

3. Preferred ratings for ac low-voltage power circuit breaker frames

3.1 General

Preferred ratings, related requirements, and application limitations for ac low-voltage power circuit breaker frames (see IEEE Std C37.13) are as shown in 3.2 through 3.8.

3.2 Rated maximum voltage

The rated maximum voltage for unfused ac low-voltage power circuit breakers should be one of the following values: 254 V, 508 V, or 635 V.

The rated maximum voltage for fused ac low-voltage power circuit breakers should be one of the following values: 254 V, 508 V, or 600 V. The upper limit of 600 V is established by the maximum voltage for fuses.

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