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IEEE Standard for Metal-Enclosed Bus

IEEE Power and Energy Society

Sponsored by the
Switchgear Committee

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3 Park Avenue
New York, NY 10016-5997
USA

IEEE Std C37.23™-2015
(Revision of
IEEE Std C37.23-2003)

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Abstract: Metal-enclosed (ME) bus assemblies for indoor and outdoor use are discussed in this standard. The types of assemblies covered are nonsegregated-phase bus, cable bus, segregated-phase bus, and isolated-phase bus. Rated maximum voltages of ac ME bus assemblies range from 1058 V through 38 kV with continuous-current ratings of 600 A through 26 000 A for self-cooled ratings and up to 50 000 A for forced-cooled ratings. Rated maximum voltage levels of dc ME bus assemblies range from 300 V through 3200 V with continuous-current ratings of 600 A through 15 000 A. Service conditions, ratings, temperature limitations and classification of insulating materials, insulation (dielectric) withstand voltage requirements, test procedures, and application are discussed. A guide for calculating losses in isolated-phase bus is included.

Keywords: cable bus, IEEE C37.23™, isolated-phase bus, metal-enclosed bus, nonsegregated-phase bus, segregated-phase bus

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

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Introduction

This introduction is not part of IEEE Std C37.23™-2015, IEEE Standard for Metal-Enclosed Bus.

This standard has been revised to reflect needed technical changes that have been suggested since the last revision of IEEE Std C37.23 in 2003. The major revision is the addition of cable bus (bus with flexible conductors), which had been removed in the 2003 edition. Other significant changes are as follows:

— Revision of text throughout for greater harmony with related standards, including IEEE Std C37.20.1™ [B14], IEEE Std C37.20.2™, and IEEE Std C37.20.3™ [B15].[1, 2]

— Refinement of information in the application section.

— Revision of the ratings tables for inclusion of extended ratings.

— Short-circuit ratings for ME bus assemblies rated 1058 V have been introduced in this revision and the short-time test has also been revised to align and harmonize with ratings and test requirements of IEEE Std C37.20.1. However, this revision is not intended to imply or require that any additional tests of existing ME bus assemblies qualified to the previous edition of this standard are necessary.

It is also noted that the historic altitude correction factors listed in Table C.2 of this standard have been retained.

This standard includes only the requirements for ME bus. These requirements were previously a part of IEEE Std C37.20™-1969, IEEE Standard for Switchgear Assemblies Including Metal-Enclosed Bus (1974, consolidated edition). Other types of equipment previously included in IEEE Std C37.20-1969 are incorporated in separate publications.

IEEE Std C37.20-1969 had for many years covered all switchgear assemblies, including ME bus. Standards committees of the IEEE Switchgear Assemblies Subcommittee and the NEMA Power Switchgear Assemblies Technical Committee recommended that the standard be further developed and, where appropriate, that the various sections be identified with their own standards. This approach also coordinates with the conformance test procedure standards.

The IEEE Switchgear Assemblies Subcommittee was responsible for this revision.

This publication is one of a series covering switchgear assemblies, as follows:

IEEE Std C37.20.1	IEEE Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear [B14]
IEEE Std C37.20.2	IEEE Standard for Metal-Clad Switchgear
IEEE Std C37.20.3	IEEE Standard for Metal-Enclosed Interrupter Switchgear (1 kV–38 kV) [B15]

[1] The numbers in brackets correspond to those of the bibliography in Annex E.
[2] Information on references can be found in Clause 2.

IEEE Std C37.20.4™	IEEE Standard for Indoor AC Switches (1 kV–38 kV) for Use in Metal-Enclosed Switchgear [B16]
IEEE Std C37.21™	IEEE Standard for Control Switchboards [B17]
IEEE Std C37.23™	IEEE Standard for Metal-Enclosed Bus
IEEE Std C37.24™	IEEE Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear
IEEE Std C37.100.1™	IEEE Standard of Common Requirements for High Voltage Power Switchgear Rated Above 1000 V

Contents

IEEE Standard for Metal-Enclosed Bus

1. Overview

1.1 Scope

This standard covers assemblies of metal-enclosed (ME) conductors along with associated interconnections, enclosures, and supporting structures. The types of assemblies covered are nonsegregated-phase bus, segregated-phase bus, isolated-phase bus, and cable bus. When switches and disconnecting links are included, they shall conform to this standard. This standard encompasses the performance characteristics of indoor and outdoor conductor assemblies with rated maximum operating voltages through 38 kV. This standard does not pertain to UL 857 [B22] type busways and associated fittings.[3]

Service conditions, ratings, temperature limitations, and classification of insulating materials, insulation (dielectric) withstand voltage requirements, test procedures, and applications are established. A guide for calculating losses in isolated-phase bus is included.

1.2 Purpose

The purpose of this standard is to:

a) Establish minimum construction requirements

b) Establish preferred ratings

c) Establish testing and performance requirements

d) Provide application guidance for the ME bus types covered by this standard.

[3] The numbers in brackets correspond to those of the bibliography in Annex E.