



IEEE Standard for Control Switchboards

IEEE Power Engineering Society

Sponsored by the
Switchgear Committee

C37.21TM

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Sponsor
Switchgear Committee
of the
IEEE Power Engineering Society

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Abstract: This standard covers ratings, construction, and testing of dead-front control switchboards containing, but not limited to, devices such as switches, control devices, instrumentation, metering, monitoring, alarms, annunciators, protective and auxiliary relays, and regulating devices and accessories. It includes, but is not specifically limited to, switchboards for the control and protection of apparatus used for or associated with power generation, conversion, transmission, and distribution. Types of switchboards may include control, vertical, dead-front, enclosed, dual, or duplex switchboards. Other construction types include control desks, consoles, benchboards, dual or duplex benchboards, fixed rack, cabinet, and swing rack cabinets. It does not apply to industrial controls, communication equipment, switchboards for use on board ships, or Class 1E switchboards for use in nuclear generating stations.

Keywords: benchboard, console, control desk, control switchboard, dead-front switchboard, dual benchboard, dual or duplex benchboard, duplex benchboard, enclosed switchboard, fixed rack cabinet, swing rack cabinet, vertical switchboard

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Introduction

This introduction is not part of IEEE Std C37.21-2005, IEEE Standard for Control Switchboards.

This standard has been revised to reflect changes that have been suggested since the 1985 revision of IEEE Std C37.21. The revisions in this revision include the following:

- Modification of the use of units to conform to the latest IEEE-SA policy on metrification
- Removal of current ratings for control switchboards
- Clarification of requirements for production tests
- Clarification of voltage and current limits for instruments and control circuits
- Clarification of voltage circuit protection
- Clarification of altitude correction factors
- Expansion of nameplate requirements to include control switchboard ratings

This standard includes only the requirements for control switchboards (also called *control boards*). These requirements were originally a part of IEEE Std C37.20-1969. Other types of equipment originally included in IEEE Std C37.20-1969 are now incorporated in separate standards.

IEEE Std C37.20-1969 for many years covered all switchgear assemblies including metal-enclosed bus and control switchboards. Standards committees of IEEE Switchgear Assemblies Subcommittee and NEMA Power Switchgear Assemblies Technical Committee recommended that the document be further developed and, where appropriate, the various subclauses be identified with their own standards.

The Switchgear Assemblies Subcommittee of the Switchgear Committee of the IEEE Power Engineering Society was responsible for this revision.

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

- IEEE Std C37.20.1™, Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
- IEEE Std C37.20.2™, IEEE Standard for Metal-Clad Switchgear
- IEEE Std C37.20.3™, IEEE Standard for Metal-Enclosed Interrupter Switchgear
- IEEE Std C37.20.7™, IEEE Guide for Testing Medium-Voltage Metal-Enclosed Switchgear for Internal Arcing Faults
- IEEE Std C37.21™, IEEE Standard for Control Switchboards
- IEEE Std C37.23™, IEEE Standard for Metal-Enclosed Bus
- IEEE Std C37.20.4™, IEEE Standard for Indoor AC Switches (1 kV – 38 kV) for Use in Metal-Enclosed Switchgear
- IEEE Std C37.20.6™, IEEE Standard for 4.76 kV to 38 kV Rated Grounding and Testing Devices Used in Enclosures
- IEEE Std C37.24™, IEEE Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear

The following diagram depicts types of switchgear assemblies:

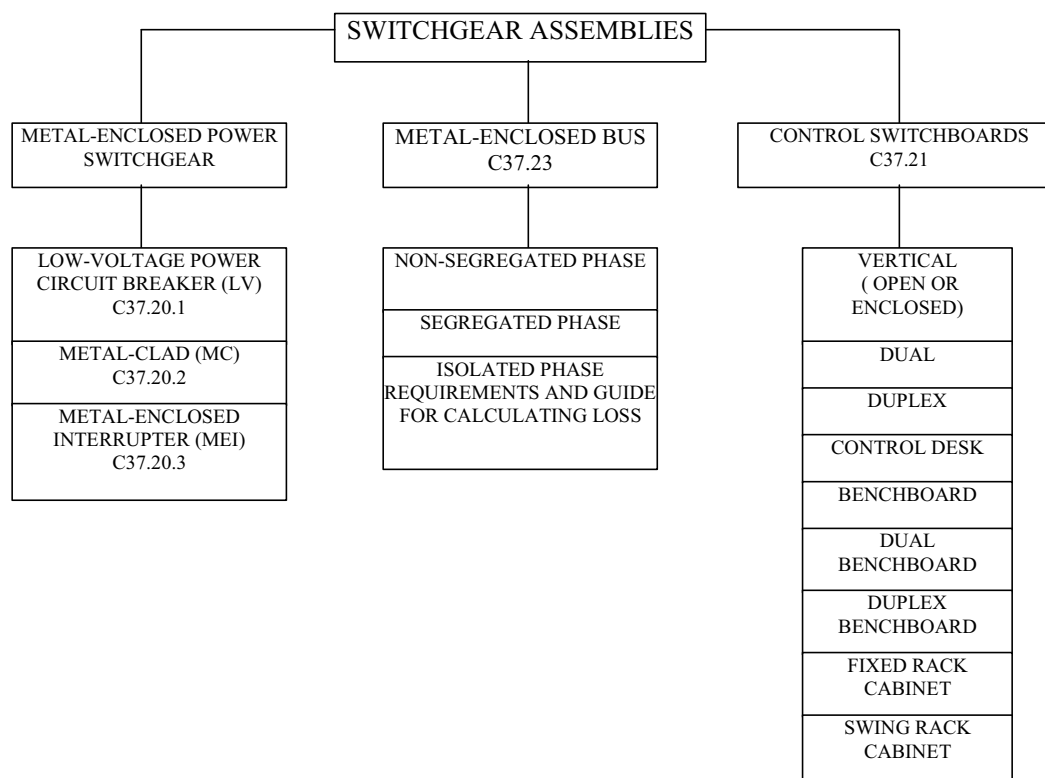


Figure A—Types of switchgear assemblies

Notice to users

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: <http://standards.ieee.org/reading/ieee/updates/errata/index.html>. Users are encouraged to check this URL for errata periodically.

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Participants

This revision is dedicated to our friend and colleague Shaun Slattery who passed away during its preparation.

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It does not apply to industrial controls, communication equipment, switchboards for use onboard ships, or Class 1E switchboards for use in nuclear generating stations, nor does it address human factor considerations.

2. Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

Accredited Standards Committee C2, National Electrical Safety Code® (NESC®).¹

ASTM B 117, Standard Practice for Operating Salt Spray (Fog) Apparatus.²

ASTM D 229, Standard Test Method for Rigid Sheet and Plate Materials Used for Electrical Insulation.

ASTM D 714, Standard Test Method for Evaluating Degree of Blistering of Paints.

ASTM D 1535, Standard Practice for Specifying Color by the Munsell System.

ASTM D 1654, Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.

¹ The NESC is available from the Institute of Electrical and Electronic Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (<http://standards.ieee.org/>).

² ASTM publications are available from American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA (<http://www.astm.org/>).