AS 3439
Low-voltage switchgear and control-gear assemblies

AS 3439.1—1993
Type-tested and partially type-tested assemblies
(IEC 439-1:1992)
(In Professional Package 24) 135pp L
Specifies requirements for type-tested and partially type-tested low voltage switchgear and controlgear assemblies for rated voltages up to 1000 V a.c. at frequencies not exceeding 1000 Hz, or 1500 V d.c. Applies to assemblies intended for use with generation, transmission, distribution and conversion of electrical energy and the control of electrical energy consuming equipment. This Standard is technically equivalent to and has been reproduced from IEC 439-1:1992.
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1136.1—1988

LOW VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES

Part 1—GENERAL REQUIREMENTS

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The following interests are represented on Committee EL/6:

Australian-British Chamber of Commerce

Australian Electrical and Electronic Manufacturers Association

Bureau of Steel Manufacturers of Australia

Department of Defence

Electrical Contractors Associations of Australia

Electricity Supply Association of Australia

Independant Electrical Switchboard Manufacturers Association Ltd

Institution of Engineers, Australia

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AUSTRALIAN STANDARD

LOW VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES

Part 1
GENERAL REQUIREMENTS

AS 1136.1—1988

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PREFACE

This Standard was prepared by the Association's Committee on Industrial Switchgear and Controlgear to supersede AS 1136—1980, *Switchgear and controlgear assemblies for voltages up to 1000 V a.c.*

It is based on the 1985 edition of IEC 439-1, *Low-voltage switchgear and controlgear assemblies, Part 1: Requirements for type-tested and partially type-tested assemblies,* and acknowledgement is made of the assistance received from this source. Further Standards in this series are under consideration to cover particular requirements for assemblies to which unskilled persons may have access for their use and assemblies for construction sites.

In this Standard a type-tested low-voltage switchgear and controlgear assembly is referred to by the abbreviation TTA. Similarly a partially type-tested assembly is referred to by the abbreviation PTTA. When both a TTA and a PTTA are being referred to, the word 'assembly' (or 'assemblies') is used. The Standard defines what is meant by an assembly, a TTA and a PTTA.

This Standard differs significantly from IEC 439-1 and this is indicated both in Appendix L and by a rule in the margin against the clause or part thereof affected. Some important differences are as follows:

(a) The manufacturer of an assembly is responsible for the correct selection and installation of components having regard to their conditions of use within the assembly including any necessary derating. Appendix J has been added concerning the selections of components.

(b) Minimum inpulse withstand voltages and minimum creepage distances are specified.

(c) The typical forms of segregation have been extended to cover a number of variations frequently encountered.

(d) Appendix B lists items subject to agreement between the purchaser and the manufacturer.

(e) Appendix D is included to give guidance for the design of assemblies intended to provide increased security against the occurrence of or the effects of internal arcing faults.

(f) Appendix E is included for the verification of the performance of assemblies designed in accordance with the guidelines set out in Appendix D. It specifies standard test conditions with the arc initiated by the connection of fuse wire at selected terminals or connections on the load side of the protective device within each compartment tested and insulation may be removed for this purpose. It also provides for special internal arcing fault tests, which may be required.

(g) Tests carried out on assemblies to Appendix E of previous editions of AS 1136 are recognized as meeting either the standard test or a special test to Appendix E of this Standard.

(h) Appendix F is included to show the types of system earthing for which assemblies may need to be designed.

(i) Alternative test method for Test Duties 1 and 2 is given in Appendix K.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
LOW VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES

Part 1—GENERAL REQUIREMENTS

SECTION 1. SCOPE AND OBJECT

1.1 SCOPE. This Standard specifies requirements for type-tested and partially type-tested low-voltage switchgear and controlgear assemblies, for which—

(a) the rated phase current $\geqslant$100 A or the rated prospective short-circuit current $\geqslant$5 kA;

(b) the rated voltage $\leqslant$1000 V a.c. or 1500 V d.c.; and

(c) the rated frequency $\leqslant$1000 Hz.

NOTE: For higher frequencies, special considerations may be necessary.

This Standard also applies to assemblies incorporating control and/or power equipment, the frequencies of which are higher. For such equipment appropriate additional requirements apply.

This Standard applies to stationary or movable assemblies with or without enclosures intended for use in connection with generation, transmission, distribution and conversion of electric energy and for the control of electric energy consuming equipment.

It also applies to such assemblies designed for use under special service conditions, e.g. in ships, in rail vehicles, for machine tools, for hoisting equipment, or in explosive atmospheres, provided that the relevant specific requirements are complied with.

The Standard is not intended to apply to small domestic type switchboards or to cover the performance of individual devices and self-contained components such as motor starters, circuit-breakers, contactors, fuse switches, electronic components, etc., which comply with their respective Standards. However, the compliance of such devices and components with their respective Standards does not necessarily ensure compliance of an assembly containing those components with this Standard.

NOTES:

1. Guidance is given in Appendix D for assemblies intended to provide increased security against the occurrence of, or the effects of, internal arcing faults.
2. Parts 2 and 3 of this Standard which are under consideration will modify, supplement or replace the specific requirements of this Standard (Part 1) for—
   (a) assemblies intended to be installed in places where unskilled persons have access for their use; and
   (b) assemblies for construction sites.
3. Maintenance and installation recommendations are not included in this Standard. deleted Amdt 1.

1.2 OBJECT. The object of this Standard is to define the terms used and to state the service conditions, construction requirements, technical characteristics and tests.

1.3 REFERENCED DOCUMENTS. The following Standards are referred to in this Standard:

AS

1202 A.C. motor starters (up to and including 1000 V)

AS

1431 Control switching devices for voltages up to 650 V a.c. and 250 V d.c.
Part 2: Particular requirements (AS 1431.2)

1775 Low voltage switchgear and controlgear—Air-break switches, isolators and fuse-combination units (up to and including 1000 V a.c. and 1200 V d.c.)

1852(441) International electrotechnical vocabulary—Switchgear, controlgear and fuses

1931 High voltage testing techniques
Part 1: General definitions, test requirements, test procedures and measuring devices (AS 1931.1)

1939 Classification of degrees of protection provided by enclosures for electrical equipment

2279 Disturbance in mains supply networks
Part 2: Limitation of harmonics caused by industrial equipment (AS 2279.2)
Part 4: Limitation of voltage fluctuations caused by industrial equipment (AS 2279.4)

~~2420 Fire test methods for solid insulating materials and non-metallic enclosures used in electrical equipment~~

2467 Maintenance of electrical switchgear

2752 Preferred numbers and their use (Amdt)

3000 SAA Wiring Rules

~~3121 Approval and test specification—Insulating mouldings~~

IEC

112 Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions

439 Low-voltage switchgear and controlgear assemblies
Part 1: Requirements for type-tested and partially type-tested assemblies

1.4 COMPLIANCE. Assemblies shall be considered to comply with this Standard only when they meet all its relevant requirements.

NOTE: The requirements of this Standard for TTA are intended to apply to standardized designs of assembly intended for volume production.

The requirements of this Standard for PTTA are applicable to one-off custom built assemblies or variations of standardized designs where the variations are such that they are not fully supported by type tests. In such cases the purchaser and manufacturer must agree as to both the nature and extent of type tests to be performed, if any.