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AS IEC 61800.5.1—2013

Australian Standard®

Adjustable speed electrical power drive systems

Part 5.1: Safety requirements—Electrical, thermal and energy

This Australian Standard® was prepared by Committee EL-027, Power Electronics. It was approved on behalf of the Council of Standards Australia on 4 February 2013.
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- Australian Communications and Media Authority
- Australian Industry Group
- Bureau of Steel Manufacturers of Australia
- Engineers Australia
- RMIT University

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Part 5.1: Safety requirements—Electrical, thermal and energy

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-027, Power Electronics.

The objective of this Standard is to specify requirements for adjustable speed power drive systems, or their elements, with respect to electrical, thermal and energy safety considerations. Unless specifically stated, the requirements of this Standard apply to all parts of the Power Drive Systems (PDS), including the complete drive module (CDM)/ basic drive module (BDM).

This Standard is identical with, and has been reproduced from IEC 61800-5-1, Ed.2.0 (2007), *Adjustable speed electrical power drive systems—Safety requirements—Electrical, thermal and energy*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text 'this part of IEC 61800' should read 'this part of AS 61800'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian or Australian/New Zealand Standard*	
IEC		AS	
60034 (all parts)	Rotating electrical machines	60034 (all parts)	Rotating electrical machines
60034-1	Part 1: Rating and performance	60034.1	Part 1: Rating and performance
60034-5	Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code)—Classification	60034.5	Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code)—Classification
60068	Environmental testing	60068	Environmental testing
60068-2-6	Part 2-6: Tests—Test Fc: Vibration (sinusoidal)	60068.2.6	Part 2.6: Tests—Test Fc: Vibration (sinusoidal)
60068-2-78	Part 2-78: Tests—Test Cab: Damp heat, steady state	60068.2.78	Part 2.78: Tests—Test Cab: Damp heat, steady state
60204	Safety of machinery—Electrical equipment of machines	60204	Safety of machinery—Electrical equipment of machines
60204-11	Part 11: Requirements for HV equipment for voltages above 1000 V a.c or 1500 V d.c and not exceeding 36 kV	60204.11	Part 11: Requirements for HV equipment for voltages above 1000 V a.c or 1500 V d.c and not exceeding 36 kV (IEC 60204-11, Ed. 1.0 (2000) MOD)
60417	Graphical symbols for use on equipment	60417	Graphical symbols for use on equipment
		AS/NZS	
60695	Fire hazard testing	60695	Fire hazard testing
60695-2-10	Part 2-10: Glowing/hot-wire based test methods—Glowwire apparatus and common test procedure	60695.2.10	Part 2.10: Glowing/hot-wire based test methods—Glowwire apparatus and common test procedure

IEC		AS/NZS	
60695-2-13	Part 2-13: Glowing/hot-wire based test methods—Glowwire ignitability test method for materials	60695.2.13	Part 2.13: Glowing/hot-wire based test methods—Glowwire ignitability test method for materials
60695-11-10	Part 11-10: Test flames—50 W horizontal and vertical flame test methods	60695.11.10	Part 11.10: Test flames—50 W horizontal and vertical flame test methods
60695-11-20	Part 11-20: Test flames—500 W flame test methods	60695.11.20	Part 11.20: Test flames—500 W flame test methods
		AS	
60947	Low-voltage switchgear and controlgear	60947	Low-voltage switchgear and controlgear
60947-7-1: 2002	Part 7-1: Ancillary equipment—Terminal blocks for copper conductors	60947.7.1: 2004	Part 7.1: Ancillary equipment—Terminal blocks for copper conductors
60947-7-2: 2002	Part 7-2: Ancillary equipment—Protective conductor terminal blocks for copper conductors	60947.7.2: 2002	Part 7.2: Ancillary equipment—Protective conductor terminal blocks for copper conductors
		AS/NZS	
60990:1999	Methods of measurement of touch current and protective conductor current	60990:2002	Methods of measurement of touch current and protective conductor current
		AS	
61800	Adjustable speed electrical power drive systems	61800	Adjustable speed electrical power drive systems
61800-1	Part 1: General requirements—Rating specifications for low voltage adjustable speed d.c. power drive systems	61800.1	Part 1: General requirements—Rating specifications for low voltage adjustable speed d.c. power drive systems
61800-2	Part 2: General requirements—Rating specifications for low voltage adjustable frequency a.c. power drive systems	61800.2	Part 2: General requirements—Rating specifications for low voltage adjustable frequency a.c. power drive systems
61800-4	Part 4: General requirements—Rating specifications for a.c. power drive systems above 1000 V a.c. and not exceeding 35 kV	61800.4	Part 4: General requirements—Rating specifications for a.c. power drive systems above 1000 V a.c. and not exceeding 35 kV
62271	High-voltage switchgear and controlgear	62271	High-voltage switchgear and controlgear
62271-102	Part 102: Alternating current disconnectors and earthing switches	62271.102	Part 102: Alternating current disconnectors and earthing switches

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

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AUSTRALIAN STANDARD

Adjustable speed electrical power drive systems

Part 5.1:
Safety requirements—Electrical, thermal and energy

1 Scope

This part of IEC 61800 specifies requirements for adjustable speed *power drive systems*, or their elements, with respect to electrical, thermal and energy safety considerations. It does not cover the driven equipment except for interface requirements. It applies to adjustable speed electric drive systems which include the power conversion, drive control, and motor or motors. Excluded are traction and electric vehicle drives. It applies to d.c. drive systems connected to line voltages up to 1 kV a.c., 50 Hz or 60 Hz and a.c. drive systems with converter input voltages up to 35 kV, 50 Hz or 60 Hz and output voltages up to 35 kV.

Other parts of IEC 61800 cover rating specifications, EMC, functional safety, etc.

The scope of this part of IEC 61800 does not include devices used as component parts of a *PDS* if they comply with the safety requirements of a relevant product standard for the same environment. For example, motors used in *PDS* shall comply with the relevant parts of IEC 60034.

Unless specifically stated, the requirements of this International Standard apply to all parts of the *PDS*, including the *CDM/BDM* (see Figure 1).

NOTE In some cases, safety requirements of the *PDS* (for example, protection against direct contact) can necessitate the use of special components and/or additional measures.

2 Normative references

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

NOTE This does not mean that compliance is required with all clauses of the referenced documents, but rather that this international standard makes a reference that cannot be understood in the absence of the referenced document.

IEC 60034 (all parts), *Rotating electrical machines*

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-5, *Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification*

IEC 60050-111, *International Electrotechnical Vocabulary (IEV) – Chapter 111: Physics and chemistry*

