



National Standards Authority of Ireland  
Údarás um Chaighdeáin Náisiúnta na hÉireann

IRISH STANDARD

**I.S. EN 61800-5-1:2007**

ICS 29.130

**"ADJUSTABLE SPEED ELECTRICAL  
POWER DRIVE SYSTEMS -- PART 5-1:  
SAFETY REQUIREMENTS - ELECTRICAL,  
THERMAL AND ENERGY" (IEC 61800-5  
-1:2007 (EQV))**

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English version

**Adjustable speed electrical power drive systems -  
Part 5-1: Safety requirements -  
Electrical, thermal and energy  
(IEC 61800-5-1:2007)**

Entraînements électriques de puissance  
à vitesse variable -  
Partie 5-1: Exigences de sécurité -  
Electrique, thermique et énergétique  
(CEI 61800-5-1:2007)

Elektrische Leistungsantriebssysteme  
mit einstellbarer Drehzahl -  
Teil 5-1: Anforderungen  
an die Sicherheit -  
Elektrische, thermische  
und energetische Anforderungen  
(IEC 61800-5-1:2007)

This European Standard was approved by CENELEC on 2007-08-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## I.S. EN 61800-5-1:2007

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### Foreword

The text of document 22G/178/FDIS, future edition 2 of IEC 61800-5-1, prepared by SC 22G, Adjustable speed electric drive systems incorporating semiconductor power converters, of IEC TC 22, Power electronic systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61800-5-1 on 2007-08-01.

This European Standard supersedes EN 61800-5-1:2003.

The major areas of change in EN 61800-5-1:2007 are the following:

- addition of alphabetical Table 1 in Clause 3;
- addition of Table 2 in 4.1 for relevance to PDS/CDM/BDM;
- addition of Table 4 summary of decisive voltage class requirements;
- expansion of subclause on protective bonding (4.3.5.3);
- clarification of distinction between touch current and protective conductor current;
- revision of section on insulation (now 4.3.6) to include solid insulation;
- addition of overvoltage categories I and II to HV insulation voltage;
- revision of section on Solid insulation (now 4.3.6.8);
- addition of high-frequency insulation requirements (4.3.6.9, Annex E);
- addition of requirements for liquid-cooled PDS (4.4.5);
- addition of climatic and vibration tests (5.2.6);
- clarification of voltage test procedure to avoid over-stress of basic insulation (5.2.3.2.3);
- revision of short-circuit test requirement for large, high-voltage and one-off PDS (now 5.2.3.6);
- addition of informative Annex B for overvoltage category reduction.

The following dates were fixed:

- |  |       |            |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2008-05-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn   | (dow) | 2010-08-01 |

Annex ZA has been added by CENELEC.

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**Endorsement notice**

The text of the International Standard IEC 61800-5-1:2007 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

|                |  |
|----------------|--|
| IEC 60034-9    | NOTE Harmonized as EN 60034-9:2005 (modified).   |
| IEC 60071      | NOTE Harmonized in EN 60071 series (not modified).   |
| IEC 60071-1    | NOTE Harmonized as EN 60071-1:2006 (not modified).   |
| IEC 60071-2    | NOTE Harmonized as EN 60071-2:1997 (not modified).   |
| IEC 60146-1-1  | NOTE Harmonized as EN 60146-1-1:1993 (not modified).   |
| IEC 60309-1    | NOTE Harmonized as EN 60309-1:1999 (not modified).   |
| IEC 60364-4-44 | NOTE Amendment 1:2003 to IEC 60364-4-44:2001 is harmonized as HD 60364-4-443:2006 (modified) |
| IEC 60664      | NOTE Harmonized in EN 60664 series (not modified).   |
| IEC 60695-2-11 | NOTE Harmonized as EN 60695-2-11:2001 (not modified).  |
| IEC 60695-2-12 | NOTE Harmonized as EN 60695-2-12:2001 (not modified).  |
| IEC 60721      | NOTE Harmonized in EN 60721 series (not modified).   |
| IEC 61082      | NOTE Harmonized in EN 61082 series (not modified).   |
| IEC 61140      | NOTE Harmonized as EN 61140:2002 (not modified).   |
| IEC 61180-1    | NOTE Harmonized as EN 61180-1:1994 (not modified).   |
| IEC 61189-2    | NOTE Harmonized as EN 61189-2:2006 (not modified).   |
| IEC 61643-12   | NOTE Harmonized as CLC/TS 61643-12:2006 (modified).  |
| IEC 61800-3    | NOTE Harmonized as EN 61800-3:2004 (not modified).   |
| IEC 62079      | NOTE Harmonized as EN 62079:2001 (not modified).   |

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**Annex ZA**  
(normative)**Normative references to international publications  
with their corresponding European publications**

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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| <u>Publication</u> | <u>Year</u>     | <u>Title</u>   | <u>EN/HD</u> | <u>Year</u>        |
|--------------------|-----------------|--|--------------|--------------------|
| IEC 60034          | Series          | Rotating electrical machines   | EN 60034     | Series             |
| IEC 60034-1        | - <sup>1)</sup> | Rotating electrical machines -<br>Part 1: Rating and performance   | EN 60034-1   | 2004 <sup>2)</sup> |
| IEC 60034-5        | - <sup>1)</sup> | Rotating electrical machines -<br>Part 5: Degrees of protection provided by the<br>integral design of rotating electrical machines<br>(IP code) - Classification | EN 60034-5   | 2001 <sup>2)</sup> |
| IEC 60050-111      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Chapter 111: Physics and chemistry   | -            | -                  |
| IEC 60050-151      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Part 151: Electrical and magnetic devices  | -            | -                  |
| IEC 60050-161      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Chapter 161: Electromagnetic compatibility   | -            | -                  |
| IEC 60050-191      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Chapter 191: Dependability and quality of<br>service   | -            | -                  |
| IEC 60050-441      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Chapter 441: Switchgear, controlgear and<br>fuses  | -            | -                  |
| IEC 60050-442      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Part 442: Electrical accessories   | -            | -                  |
| IEC 60050-551      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Part 551: Power electronics  | -            | -                  |
| IEC 60050-601      | - <sup>1)</sup> | International Electrotechnical Vocabulary<br>(IEV) -<br>Chapter 601: Generation, transmission and<br>distribution of electricity - General                       | -            | -                  |

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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