



Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

**ILNAS-EN 61800-5-1:2007/A1:2017**

**Adjustable speed electrical power  
drive systems - Part 5-1: Safety  
requirements - Electrical, thermal and  
energy**

Elektrische Leistungsantriebssysteme mit  
einstellbarer Drehzahl - Teil 5-1:  
Anforderungen an die Sicherheit -  
Elektrische, thermische und energetische

Entraînements électriques de puissance  
à vitesse variable - Partie 5-1: Exigences  
de sécurité - Electrique, thermique et  
énergétique

**04/2017**



## National Foreword

This European Standard EN 61800-5-1:2007/A1:2017 was adopted as Luxembourgish Standard ILNAS-EN 61800-5-1:2007/A1:2017.

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ILNAS-EN 61800-5-1:2007/A1:2017

**EUROPEAN STANDARD** **EN 61800-5-1:2007/A1**

**NORME EUROPÉENNE**

**EUROPÄISCHE NORM**

April 2017

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ICS 29.130

English Version

**Adjustable speed electrical power drive systems -  
Part 5-1: Safety requirements - Electrical, thermal and energy  
(IEC 61800-5-1:2007/A1:2016)**

Entraînements électriques de puissance à vitesse variable -  
Partie 5-1: Exigences de sécurité - Electrique, thermique et  
énergétique  
(IEC 61800-5-1:2007/A1:2016)

Elektrische Leistungsantriebssysteme mit einstellbarer  
Drehzahl - Teil 5-1: Anforderungen an die Sicherheit -  
Elektrische, thermische und energetische Anforderungen  
(IEC 61800-5-1:2007/A1:2016)

This amendment A1 modifies the European Standard EN 61800-5-1:2007; it was approved by CENELEC on 2016-10-05. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## European foreword

The text of document 22G/338/FDIS, future IEC 61800-5-1:2007/A1, 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 approved by CENELEC as EN 61800-5-1:2007/A1:2017.

The following dates are fixed:

- latest date by which the document has to be (dop) 2017-10-28  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2020-04-28  
standards conflicting with the  
document have to be withdrawn

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## Endorsement notice

The text of the International Standard IEC 61800-5-1:2007/A1:2016 was approved by CENELEC as a European Standard without any modification.

In the bibliography of EN 61800-5-1:2007, the following notes have to be **added** for the standards indicated:

IEC 60664-1:2007	NOTE	Harmonized as EN 60664-1:2007 (not modified).
IEC 62477-1:2012	NOTE	Harmonized as EN 62477-1:2012 (not modified).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<b>Add to Annex ZA of EN 61800-5-1:2007 the following new references:</b>				
IEC 60947-4-1	2009	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters	EN 60947-4-1	2010
+A1	2012		+A1	2012
IEC 60364-4-41 (mod)	2005	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41 Protection + corr. July 2007	2007 2007
+A1	2016		+A1	201X <sup>1)</sup>

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<sup>1)</sup> At draft stage.



# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

### AMENDMENT 1 AMENDEMENT 1

#### **Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy**

#### **Entraînements électriques de puissance à vitesse variable – Partie 5-1: Exigences de sécurité – Electrique, thermique et énergétique**

## FOREWORD

This amendment has been prepared by subcommittee SC 22G: Adjustable speed electric drive systems incorporating semiconductor power converters, of IEC technical committee 22: Power electronic systems and equipment.

The text of this amendment is based on the following documents:

FDIS	Report on voting
22G/338/FDIS	22G/342/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## 2 Normative references

*Add the following normative references:*

IEC 60947-4-1:2009, *Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters*  
IEC 60947-4-1:2009/AMD1:2012

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*  
IEC 60364-4-41:2005/AMD1:—<sup>1</sup>

## 3 Terms and definitions

*Add the following new terms and definitions:*

### 3.45

#### **electronic motor overload protection**

*PDS/CDM/BDM* circuitry which protects a motor during overload conditions by reducing current to the motor

<sup>1</sup> Under preparation. Stage at the time of publication: IEC DEC 60364-4-41:2016.

Note 1 to entry: The protection circuitry is usually a combination of hardware and software.

Note 2 to entry: This protection is typically achieved through an algorithm based on the  $I^2t$  of the current to the motor.

### 3.46

#### **electronic power output short-circuit protection circuitry**

circuitry integral to *PDS/CDM/BDM* that acts to significantly reduce current flow to the power output upon sensing a short-circuit condition

Note 1 to entry: The protection circuitry is usually a combination of hardware and software.

### 3.47

#### **thermal memory**

ability of an overload protective system to approximate the heating and cooling of a protected motor during operation

### 3.48

#### **thermal memory retention**

ability to retain a representation of the thermal state of a motor prior to shutdown or loss of power

Note 1 to entry: Typically, this information will be used by the overload protective system to approximate the thermal state of the motor upon restart.

Note 2 to entry: This may include an ongoing reduction of the thermal representation to reflect cooling of the motor during shutdown or loss of power.

### 3.49

#### **trip**

controlled rapid reduction or elimination of the transfer of energy to any device or process initiated by a detected fault or abnormal operating condition

#### **4.3.6.1.4 Supply earthing systems**

*Add, at the end of the first bullet point, the following new sentence:*

A corner-earthed system is a TN system with one phase earthed.

*Add, at the end of the second bullet point, the following new sentence:*

A corner-earthed system is a TT system with one phase earthed.

*Add, after the third bullet point, the following new paragraph:*

In a PDS designed for operation on a corner-earthed system, the

- insulation between phases of the mains supply, including the earthed phase, may be designed for *functional insulation* according to clause 4.3.6.3, and
- circuits within the *PDS/CDM/BDM* directly connected to any phase of a corner-earthed system shall be separated from earthed parts by at least *basic insulation*.

#### **Table 7 — Insulation voltage for low voltage circuits**

*Replace, at the bottom of Table 7, Note 1 by the following new paragraph;*

Interpolation of *system voltage* is not permitted when determining the impulse voltage for mains supply. Interpolation of *system voltage* is permitted when determining the *temporary overvoltage* for mains supply.

*Replace, at the bottom of Table 7, the indication "NOTE 2" by "NOTE".*