

**SLOVENSKI STANDARD**  
**SIST EN 61800-7-304:2016****01-april-2016****Nadomešča:****SIST EN 61800-7-304:2008**

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**Električni pogonski sistemi z nastavljivo hitrostjo - 7-304. del: Generični vmesnik in uporaba profilov za električne pogonske sisteme - Preslikava profila tipa 4 na omrežne tehnologije**

Adjustable speed electrical power drive systems - Part 7-304: Generic interface and use of profiles for power drive systems - Mapping of profile type 4 to network technologies

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Entraînements électriques de puissance à vitesse variable - Partie 7-304: Interface générique et utilisation de profils pour les entraînements électriques de puissance - Mise en correspondance du profil de type 4 avec les technologies de réseaux

**Ta slovenski standard je istoveten z: EN 61800-7-304:2016**

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| 35.100.05 | Večslojne uporabniške rešitve                              | Multilayer applications                         |

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EUROPEAN STANDARD

**EN 61800-7-304**

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2016

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English Version

Adjustable speed electrical power drive systems -  
Part 7-304: Generic interface and use of profiles for power drive  
systems - Mapping of profile type 4 to network technologies  
(IEC 61800-7-304:2015)

Entraînements électriques de puissance à vitesse variable -  
Partie 7-304: Interface générique et utilisation de profils  
pour les entraînements électriques de puissance - Mise en  
correspondance du profil de type 4 avec les technologies  
de réseaux  
(IEC 61800-7-304:2015)

Elektrische Leistungsantriebssysteme mit einstellbarer  
Drehzahl - Teil 7-304: Generisches Interface und Nutzung  
von Profilen für Leistungsantriebssysteme (PDS) -  
Abbildung von Profil-Typ 4 auf Netzwerktechnologien  
(IEC 61800-7-304:2015)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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

EN 61800-7-304:2016

## European foreword

The text of document 22G/314/FDIS, future edition 2 of IEC 61800-7-304, 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 61800-7-304:2016.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-09-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-12-25

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

| <a href="https://standards.iteh.ai/catalog/standards/sist/2965666f-441a-4a49-a3ab-2ac6ef52ff52/iec-61800-7-304:2016">SIST EN 61800-7-304:2016</a> |      |   |
|---|------|---|
| IEC 61158:2014 Series   | NOTE | Harmonized as EN 61158:2014 Series.                         |
| IEC 61499-1:2005  | NOTE | Harmonized as EN 61499-1:2005 <sup>1)</sup> (not modified). |
| IEC 61800 Series  | NOTE | Harmonized as EN 61800 Series.                              |
| IEC 61800-7 Series  | NOTE | Harmonized as EN 61800-7 Series.                            |
| IEC 61800-7-1   | NOTE | Harmonized as EN 61800-7-1.                                 |
| IEC 61800-7-201   | NOTE | Harmonized as EN 61800-7-201.                               |
| IEC 61800-7-202   | NOTE | Harmonized as EN 61800-7-202.                               |
| IEC 61800-7-203   | NOTE | Harmonized as EN 61800-7-203.                               |
| IEC 61800-7-301   | NOTE | Harmonized as EN 61800-7-301.                               |
| IEC 61800-7-302   | NOTE | Harmonized as EN 61800-7-302.                               |
| IEC 61800-7-303   | NOTE | Harmonized as EN 61800-7-303.                               |

<sup>1)</sup> Superseded by EN 61499-1:2013 (IEC 61499-1:2012).

## 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> |
|---------------------|--------------------|--|----------------|-------------|
| IEC 61158-2         | -                  | Industrial communication networks -<br>Fieldbus specifications -<br>Part 2: Physical layer specification<br>and service definition                                     | EN 61158-2     | -           |
| IEC 61158-4-16      | -                  | Industrial communication networks -<br>Fieldbus specifications -<br>Part 4-16: Data-link layer protocol<br>specification - Type 16 elements                            | EN 61158-4-16  | -           |
| IEC 61158-5-16      | -                  | Industrial communication networks -<br>Fieldbus specifications -<br>Part 5-16: Application layer service<br>definition - Type 16 elements                              | EN 61158-5-16  | -           |
| IEC 61491           | 2002 <sup>2)</sup> | Electrical equipment of industrial<br>machines - Serial data link for real-time<br>communication between controls and<br>drives  | -              | -           |
| IEC 61784-1         | -                  | Industrial communication networks -<br>Profiles -<br>Part 1: Fieldbus profiles   | EN 61784-1     | -           |
| IEC 61784-2         | -                  | Industrial communication networks -<br>Profiles -<br>Part 2: Additional fieldbus profiles for<br>real-time networks based on ISO/IEC<br>8802-3                         | EN 61784-2     | -           |
| IEC 61800-7-204     | 2015               | Adjustable speed electrical<br>power drive systems -<br>Part 7-204: Generic interface and use<br>of profiles for power drive systems -<br>Profile type 4 specification | EN 61800-7-204 | 2016        |
| ISO/IEC/IEEE 8802-3 | 2014               | Standard for Ethernet  | -              | -           |

<sup>2)</sup> Withdrawn publication.

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Edition 2.0 2015-11

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Adjustable speed electrical power drive systems –  
Part 7-304: Generic interface and use of profiles for power drive systems –  
Mapping of profile type 4 to network technologies**

**Entraînements électriques de puissance à vitesse variable –  
Partie 7-304: Interface générique et utilisation de profils pour les entraînements  
électriques de puissance – Mise en correspondance du profil de type 4 avec les  
technologies de réseaux**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ADJUSTABLE SPEED ELECTRICAL POWER DRIVE SYSTEMS –****Part 7-304: Generic interface and use of profiles for power drive systems – Mapping of profile type 4 to network technologies**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61800-7-304 has been prepared by subcommittee SC 22G: Adjustable speed electric drive systems incorporating semiconductor power converters, of IEC technical committee TC 22: Power electronic systems and equipment.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

This edition includes the following significant technical change with respect to the previous edition: Update of mapping specification.

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

|              |                  |
|--------------|------------------|
| FDIS         | Report on voting |
| 22G/314/FDIS | 22G/329/RVD      |

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61800 series, under the general title *Adjustable speed electrical power drive systems*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

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## INTRODUCTION

The IEC 61800 series is intended to provide a common set of specifications for adjustable speed electrical power drive systems.

IEC 61800-7 specifies profiles for power drive systems (PDS) and their mapping to existing communication systems by use of a generic interface model.

IEC 61800-7 describes a generic interface between control systems and power drive systems. This interface can be embedded in the control system. The control system itself can also be located in the drive (sometimes known as "smart drive" or "intelligent drive").

A variety of physical interfaces is available (analogue and digital inputs and outputs, serial and parallel interfaces, fieldbuses and networks). Profiles based on specific physical interfaces are already defined for some application areas (e.g. motion control) and some device classes (e.g. standard drives, positioner). The implementations of the associated drivers and application programmers interfaces are proprietary and vary widely.

IEC 61800-7 defines a set of common drive control functions, parameters, and state machines or description of sequences of operation to be mapped to the drive profiles.

IEC 61800-7 provides a way to access functions and data of a drive that is independent of the used drive profile and communication interface. The objective is a common drive model with generic functions and objects suitable to be mapped on different communication interfaces. This makes it possible to provide common implementations of motion control (or velocity control or drive control applications) in controllers without any specific knowledge of the drive implementation.

There are several reasons to define a generic interface:

### **For a drive device manufacturer**

- less effort to support system integrators;
- less effort to describe drive functions because of common terminology;
- the selection of drives does not depend on availability of specific support;

### **For a control device manufacturer**

- no influence of bus technology;
- easy device integration;
- independent of a drive supplier;

### **For a system integrator**

- less integration effort for devices;
- only one understandable way of modeling;
- independent of bus technology.

Much effort is needed to design a motion control application with several different drives and a specific control system. The tasks to implement the system software and to understand the functional description of the individual components may exhaust the project resources. In some cases, the drives do not share the same physical interface. Some control devices just support a single interface which will not be supported by a specific drive. On the other hand, the functions and data structures are often specified with incompatibilities. This requires the system integrator to write special interfaces for the application software and this should not be his responsibility.

Some applications need device exchangeability or integration of new devices in an existing configuration. They are faced with different incompatible solutions. The efforts to adapt a solution to a drive profile and to manufacturer specific extensions may be unacceptable. This will reduce the degree of freedom to select a device best suited for this application to the selection of the unit which will be available for a specific physical interface and supported by the controller.

IEC 61800-7-1 is divided into a generic part and several annexes as shown in Figure 1. The drive profile types for CiA® 402<sup>1</sup>, CIP Motion™<sup>2</sup>, PROFIdrive<sup>3</sup> and SERCOS®<sup>4</sup> are mapped to the generic interface in the corresponding annex. The annexes have been submitted by open international network or fieldbus organizations which are responsible for the content of the related annex and use of the related trade marks.

The different profile types 1, 2, 3 and 4 are specified in IEC 61800-7-201, IEC 61800-7-202, IEC 61800-7-203 and IEC 61800-7-204.

This part of IEC 61800-7 specifies how the profile type 4 (SERCOS®) is mapped to the network technologies SERCOS® and EtherCAT®<sup>5</sup>.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 61800-7-304:2016](https://standards.iteh.ai/catalog/standards/sist/296560b1-441a-4a49-a3ab-ab2ac6efa52f/sist-en-61800-7-304-2016)

<https://standards.iteh.ai/catalog/standards/sist/296560b1-441a-4a49-a3ab-ab2ac6efa52f/sist-en-61800-7-304-2016>

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- <sup>1</sup> CiA® 402 is a registered trade mark of CAN in Automation e.V. (CiA). This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trade mark holder or any of its products. Compliance to this profile does not require use of the registered trade mark CiA® 402. Use of the registered trade mark CiA® 402 requires permission of CAN in Automation e.V. (CiA).
  - <sup>2</sup> CIP Motion™ is a trade mark of ODVA, Inc. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trade mark holder or any of its products. Compliance to this profile does not require use of the trade mark CIP Motion™. Use of the trade mark CIP Motion™ requires permission of ODVA, Inc.
  - <sup>3</sup> PROFIdrive is a trade name of PROFIBUS & PROFINET International. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trade name holder or any of its products. Compliance to this profile does not require use of the trade name PROFIdrive. Use of the trade name PROFIdrive requires permission of PROFIBUS & PROFINET International.
  - <sup>4</sup> SERCOS® is a registered trade mark of SERCOS International e.V. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trade mark holder or any of its products. Compliance to this profile does not require use of the registered trade mark SERCOS®. Use of the registered trade mark SERCOS® requires permission of the trade mark holder.
  - <sup>5</sup> EtherCAT® is a registered trade mark of Beckhoff, Verl. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trade mark holder or any of its products. Compliance to this profile does not require use of the registered trade mark EtherCAT®. Use of the registered trade mark EtherCAT® requires permission of the trade mark holder.