NEMA Standards Publication

NEMA ICS 61800-6 TR-2015

# Adjustable Speed Electrical Power Drive Systems, Part 6: Guide for Determination of Types of Load Duty and Corresponding Current Ratings

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National Electrical Manufacturers Association

**NEMA Standards Publication ICS 61800-6 TR-2015**

*Adjustable Speed Electrical Power Drive Systems*
*Part 6: Guide for Determination of Types of Load Duty and Corresponding Current Ratings*

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## Foreword

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example “state of the art”.

IEC 61800-6, which is a technical report, has been prepared by subcommittee 22G: Semiconductor power converters for adjustable speed electric drive systems, of IEC technical committee 22: Power electronics systems and equipment.

This first edition cancels and replaces IEC 61136-1, issued in 1992, and constitutes a technical revision.

The text of this technical report is based on the following documents:

| Enquiry draft | Report on voting |
|---|---|
| 22G/85/DTR | 22G/100/RVC |

Full information on the voting for the approval of this technical report 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.

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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- withdrawn;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

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**Figures**



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# 1 Scope and Object

This technical report provides alternative methods for specifying ratings for adjustable speed electrical power drive systems (PDS) and, in particular, their basic drive modules (BDM).

It is not intended to cover adjustable speed drives for traction purposes.

General rules for rating specification for low voltage adjustable speed d.c. power drive systems are contained in IEC 61800-1, and for low voltage adjustable frequency a.c. power drive systems in IEC 61800-2.

### 1.1 DV (US DEVIATION)

Other than the definition of load profiles, this document is primarily suitable for use with drives covered under the scope of NEMA ICS 61800-1.

### 1.2 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.

IEC 60146-1-1, *Semiconductor convertors – General requirements and line commutated convertors – Part 1-1: Specifications of basic requirements*

IEC 61800-1*, Adjustable speed electrical power drive systems – Part 1: General requirements – Rating specifications for low voltage adjustable speed d.c. power drive systems*

IEC 61800-2*, Adjustable speed electrical power drive systems – Part 2: General requirements – Rating specifications for low voltage adjustable frequency a.c. power drive systems*

### 1.3 DV

NEMA/ICS 61800-1*, Adjustable Speed Electrical Power Drive Systems – Part 1: General Requirements – Rating Specifications for Low Voltage Adjustable Speed d.c. Power Drive Systems*

NEMA/ICS 61800-2*, Adjustable Speed Electrical Power Drive Systems – Part 2: General Requirements – Rating Specifications for Low Voltage Adjustable Frequency a.c. Power Drive Systems*

# 2 Terms, Definitions, and Symbols

### 2.1 TERMS AND DEFINITIONS

For the purposes of this technical report, the definitions given in IEC 61800-1, IEC 61800-2, and IEC 60146-1-1 as well as the following, apply.

#### 2.1.1

**equilibrium temperature:** steady-state temperature reached by a component of a converter under specified conditions of load and cooling.

NOTE—Steady-state temperatures are, in general, different for different components. The times necessary to establish the steady state are also different and proportional to thermal time constants.

#### 2.1.2

**current-time load chart:** record of load current with respect to time.

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