



Approved as an American National Standard  
ANSI Approval Date: April 23, 2002

**NEMA Standards Publication ICS 61800-1-2002 (R 2007)**

*Adjustable Speed Electrical Power Drive Systems*

*Part 1: General Requirements — Rating Specifications for Low Voltage Adjustable  
Speed d.c. Power Drive Systems*

*Published by*

**National Electrical Manufacturers Association**

1300 North 17th Street, Suite 1752  
Rosslyn, Virginia 22209

[www.nema.org](http://www.nema.org)

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## Foreword

1) This document is an adaptation of the IEC Standard 61800-1 with the addition of requirements pertinent to use of these devices in the US.

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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International Standard IEC 61800-1 was prepared by IEC technical sub-committee 22G: Semiconductor power converters for adjustable speed electric drive systems, of IEC technical committee 22: Power electronics.

Annexes A, B, C, D, E, F, and G are for information only.

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# ADJUSTABLE SPEED ELECTRICAL POWER DRIVE SYSTEMS

## Part 1: General Requirements – Rating Specifications for Low Voltage Adjustable Speed D.C. Power Drive Systems

### 1 GENERAL

#### 1.1 SCOPE AND OBJECT

This part of IEC 61800 applies to general purpose adjustable speed d.c. drive systems which include the power conversion, control equipment, and also a motor or motors. Excluded are traction and electrical vehicle drives.

It applies to systems connected to line voltages up to 1 kV a.c., 50 Hz or 60 Hz.

NOTE – In the United States, the line voltage is not more than 600 V a.c.

EMC aspects are covered in IEC 61800-3.

U.S. NOTE - EMC Immunity and Emission requirements of IEC 61800-3 are not applicable within the US.

This part of IEC 61800 gives the characteristics of the converters and their relationship with the complete d.c. drive system. It also states their performance requirements with respect to ratings, normal operating conditions, overload conditions, surge withstand capabilities, stability, protection, a.c. line earthing, and testing. Furthermore, it deals with application guidelines, such as control strategies, diagnostics, and topologies.

#### 1.2 NORMATIVE REFERENCES

NEMA ICS 1-1993	<i>Industrial Control and Systems General Requirements</i>
NEMA ICS 1.3-1986 (R1991)	<i>Preventive Maintenance of Industrial Control and Systems Equipment</i>
NEMA ICS 7.1-1995	<i>Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable-Speed Drive Systems</i>
NEMA ICS 6-1993	<i>Industrial Control and Systems Enclosures</i>
NEMA MG 1-1999	<i>Motors and Generators</i>
NEMA 250-1997	<i>Enclosures for Electrical Equipment (1000 Volts Maximum)</i>
ANSI/IEEE 519-1992	<i>IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems</i>
ANSI/IEEE 597-1983	<i>Practice and Requirements for General Purpose Thyristor DC Drives</i>
ANSI/NFPA 70-1999	<i>National Electrical Code</i>
UL 508C	<i>Standard for Power Conversion Equipment</i>

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61800. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61800 are encouraged to investigate the possibility of applying the most recent editions of the normative