



SLOVENSKI STANDARD

SIST EN 61204-7:2007

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Nizkonapetostni napajalniki, enosmerni (d.c.) izhod - 7. del: Varnostne zahteve (IEC 61204-7:2006)

Low voltage power supplies, d.c. output -- Part 7: Safety requirements

Stromversorgungsgeräte für Niederspannung mit Gleichstromausgang - Teil 7: Sicherheitsanforderungen

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Alimentations basse tension, sortie continue - Partie 7: Exigences de sécurité

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Ta slovenski standard je istoveten z: **EN 61204-7:2006**

ICS:

29.200

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Rectifiers. Convertors.
Stabilized power supply

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EUROPEAN STANDARD

EN 61204-7

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2006

ICS 29.200

English version

Low voltage power supplies, d.c. output
Part 7: Safety requirements
(IEC 61204-7:2006)

Alimentations basse tension,
sortie continue
Partie 7: Exigences de sécurité
(CEI 61204-7:2006)

Stromversorgungsgeräte
für Niederspannung
mit Gleichstromausgang
Teil 7: Sicherheitsanforderungen
(IEC 61204-7:2006)

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This European Standard was approved by CENELEC on 2006-10-01. 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, 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

Foreword

The text of document 22E/101/FDIS, future edition 1 of IEC 61204-7, prepared by SC 22E, Stabilized power supplies, of IEC TC 22, Power electronic systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61204-7 on 2006-10-01.

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) 2007-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-10-01

This standard does not follow the rules for structuring European Standards as given in Part 3 of the CEN/CENELEC Internal Regulations because of the varied requirements which can apply to power supplies. It assumes that all power supplies are required to meet either EN 60950:2000 (IEC 60950:1999, mod.) and/or EN 60950-1:2001 (IEC 60950-1:2001, mod.). In addition power supplies may also have to meet the requirements of other standards dependent on the application. To satisfy this need it was decided that all power supplies shall meet EN 60950:2000 and/or EN 60950-1:2001 as described in the main body of this standard. The differences between these requirements and those of other standards can then be optionally applied by applying any or all of the appropriate annexes. This was done to avoid confusion.

The annexes of this standard are clearly described in 1.1.1.

EN 61204 (IEC 61024) consists of the following parts, under the general title *Low voltage power supplies, DC output*:

Part 1: Reserved for future use.

Part 2: Performance characteristics¹⁾
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Part 3: Electromagnetic compatibility (EMC)

Part 4: Tests other than EMC¹⁾

Part 5: Reserved for future use.

Part 6: Requirements for low-voltage power supplies of assessed performance

Part 7: Safety requirements

This standard should be read in conjunction with EN 60950:2000 and/or EN 60950-1:2001.

It makes reference to the standard EN 60950:2000 and/or EN 60950-1:2001 in the form of "clause number/RD". In this context, "RD" means "Reference Document" i.e. EN 60950:2000 and/or EN 60950-1:2001. Unless otherwise specified, RD means that both documents apply. However, it is only necessary to apply one or other of these standards. Wherever the word equipment occurs in this reference document, this means POWER SUPPLY. The annexes of EN 60950:2000 and/or EN 60950-1:2001 are also referred to by means of "RD" where these are specific references, otherwise these annexes apply as detailed in the clauses of these standards referred to in this standard.

¹⁾ Under consideration

In this standard, the following print types are used:

- Requirements proper and normative annexes: in roman type.
- *Compliance statements and test specifications: in italic type.*
- Notes and other informative matter: in smaller roman type.
- Normative conditions within tables: in smaller roman type.
- Terms that are defined in 1.2: SMALL CAPITALS.

Annexes ZA and ZB have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61204-7:2006 was approved by CENELEC as a European Standard without any modification.

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

IEC 60601-1 NOTE Harmonized as EN 60601-1:1990 (not modified).

IEC 60601-1 NOTE Harmonized as EN 60601-1:2006 (not modified).

IEC 60950 NOTE Harmonized as EN 60950:2000 (modified).

IEC 60950-1 NOTE Harmonized as EN 60950-1:2001 (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 60065 (mod)	2001	Audio, video and similar electronic apparatus - Safety requirements	EN 60065 + corr. March	2002 2006
IEC 60146-1-1	1991	Semiconductor convertors - General requirements and line commutated convertors - Part 1-1: Specifications of basic requirements	EN 60146-1-1	1993
IEC 60364-4-41	2001 ²⁾	Electrical installations of buildings - Part 4-41: Protection for safety - Protection against electric shock	—	—
IEC 60417	data- base	Graphical symbols for use on equipment	—	—
IEC 61347-2-2	2000	Lamp controlgear - Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps	EN 61347-2-2 + corr. July	2001 2003
IEC 61558-1	2005	Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests	EN 61558-1 + corr. August	2005 2006
IEC 62040-1-1 + corr. December + corr. February	2002 2002 2004	Uninterruptible power systems (UPS) - Part 1-1: General and safety requirements for UPS used in operator access areas	EN 62040-1-1 + corr. August	2003 2004

²⁾ IEC 60364-4-41:2001 is superseded by IEC 60364-4-41:2005, which has been harmonized with common modifications as HD 60364-4-41:2006

Annex ZB (normative)

Special national conditions

Special national condition: National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions.

NOTE If it affects harmonization, it forms part of the European Standard / Harmonization Document.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

<u>Clause</u>	<u>Special national condition</u>
---------------	-----------------------------------

2.9.5 Denmark

When using this method of protection it is allowed that 230 V socket-outlet is used either with or without earth according to The Danish Heavy Current Regulation part 107-2-D1.

- On transportable inverters, portable socket-outlets according to e.g. standard sheets DK 1-3a, DKA 1-3a or DKA 1-4a shall be used.
- On inverters for fixed installation it is allowed to use socket-outlets for fixed installation, according to e.g. standard sheets DK 1-1a (built together with a switch) or DK 1-1b.

If there is no reinforced insulation between the SELV circuit and the 230 V side, it shall be described which precautions have been taken as an alternative to reach the same level of safety. It can for example be the following:

- The inverter's metal enclosure has been connected to minus on the SELV side by the manufacturer. The inverter is, in this case only allowed with a 230 V socket-outlet for class II appliances (The Danish Heavy Current Regulation part 107-2-D1, standard sheet DKA 1-4a).

This method of protection gives equipotential bonding between exposed conductive parts. When using socket-outlet for class II equipment it is also prevented that a class I appliance can be connected, without connection between protective earth and the enclosure of the appliance (e.g. an appliance with Schuko plug).

It must appear from the accompanying instructions that it is prohibited and can be connected with risk of electric shock to connect an appliance that is not double insulated by for instance using an illegal extension cord or an illegal supply cord on a class I appliance.

It shall be ensured that the inverter can withstand the influences and external conditions it may be exposed to. Since no safety standard exists, which specifically covers these products and their special use, a risk assessment must be made regarding electrical, thermal and mechanical safety of the product.

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC

61204-7

Première édition
First edition
2006-07

**Alimentations basse tension,
sortie continue –**

**Partie 7:
Exigences de sécurité**

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**Low-voltage power supplies,
d.c. output –**

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**Part 7:
Safety requirements**

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE POWER SUPPLIES, DC OUTPUT –

Part 7: Safety requirements

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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- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61204-7 has been prepared by subcommittee 22E: Stabilized power supplies, of IEC technical committee 22: Power electronic systems and equipment.

IEC 61204-7 has the status of a product standard.

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

FDIS	Report on voting
22E/101/FDIS	22E/102/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.

The French version of this standard has not been voted upon.

This standard does not follow the rules for structuring International Standards as given in Part 2 of the ISO/IEC Directives because of the varied requirements which can apply to power supplies. It assumes that all power supplies are required to meet either IEC 60950:1999 and/or IEC 60950-1:2001. In addition power supplies may also have to meet the requirements of other standards dependent on the application. To satisfy this need it was decided that all power supplies shall meet IEC 60950:1999 and/or IEC 60950-1:2001 as described in the main body of this standard. The differences between these requirements and those of other standards can then be optionally applied by applying any or all of the appropriate annexes. This was done to avoid confusion.

The annexes of this international standard are clearly described in 1.1.1.

IEC 61204 consists of the following parts, under the general title *Low voltage power supplies, DC output*:

- Part 1: Reserved for future use.
- Part 2: Performance characteristics¹
- Part 3: Electromagnetic compatibility (EMC)
- Part 4: Tests other than EMC¹
- Part 5: Reserved for future use.
- Part 6: Requirements for low-voltage power supplies of assessed performance
- Part 7: Safety Requirements

This standard makes reference to the standard IEC 60950:1999 and/or IEC 60950-1:2001 in the form of "clause number/RD". In this context, "RD" means "Reference Document" i.e. IEC 60950:1999 and/or IEC 60950-1:2001. Unless otherwise specified, RD means that both documents apply. However, it is only necessary to apply one or other of these standards. Wherever the word equipment occurs in this reference document, this means POWER SUPPLY. The annexes of IEC 60950:1999 and/or IEC 60950-1:2001 are also referred to by means of "RD" where these are specific references, otherwise these annexes apply as detailed in the clauses of these standards referred to in this standard.

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- *Compliance statements and test specifications: in italic type.*
- Notes and other informative matter: in smaller roman type.
- Normative conditions within tables: in smaller roman type.
- Terms that are defined in 1.2: SMALL CAPITALS.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

¹ Under consideration.

LOW-VOLTAGE POWER SUPPLIES, DC OUTPUT –

Part 7: Safety requirements

0 Principles of Safety

The principles of 0/RD apply.

1 General

1.1 Scope

1.1.1 Equipment covered by this standard

This part of IEC 61204 specifies the safety requirements for POWER SUPPLY units providing DC output(s) with or without auxiliary a.c. output(s) operating from a.c. or d.c. source voltages up to 600 V a.c. or 1 000 V d.c. (See exceptions in 1.1.3).

NOTE Ringing generators used in telecoms applications are covered by this standard.

This product standard covers both STAND-ALONE and COMPONENT POWER SUPPLY units as defined in this document. POWER SUPPLY units, which comply with the main body of this standard, satisfy the requirements of POWER SUPPLY units for use in or with IT equipment normally covered by IEC 60950:1999 and/or IEC 60950-1:2001. POWER SUPPLY units will also comply with the appropriate standard or application requirements given below if they also meet the additional requirements of the appropriate annex.

PS-A Measurement, control and laboratory equipment normally covered by IEC 61010-1:2001.

PS-B Medical equipment (under consideration) – *normally covered by IEC 60601-1:2005.*

NOTE This annex will be based on IEC 60601-1:2005 (Third Edition)

PS-C Reserved for future use.

PS-D Audio, Video and similar electronic apparatus – normally covered by IEC 60065:2001.

PS-E DC Power and distribution equipment.

This standard also covers DC-DC converters.

Where no standards exist, use of this standard for other applications is not precluded.

1.1.2 Additional requirements

Requirements additional to those specified in this standard may be necessary for:

- POWER SUPPLIES intended for operation in special environments (for example, extremes of temperature; excessive dust, moisture or vibration; flammable gases; and corrosive or explosive atmospheres);