



SLOVENSKI STANDARD

SIST EN 60204-11:2001

01-september-2001

Safety of machinery - Electrical equipment of machines - Part 11: Requirements for HV equipment for voltages above 1000 V a.c. or 1500 V d.c. and not exceeding 36 kV (IEC 60204-11:2000)

Safety of machinery - Electrical equipment of machines -- Part 11: Requirements for HV equipment for voltages above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV

Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen -- Teil 11: Anforderungen an Hochspannungsausrüstung für Spannungen über 1000 V Wechselspannung oder 1500 V Gleichspannung aber nicht über 36 kV

Sécurité des machines - Equipement électrique des machines -- Partie 11: Prescriptions pour les équipements HT fonctionnant à des tensions supérieures à 1 000 V c.a. ou 1 500 V c.c. et ne dépassant pas 36 kV

Ta slovenski standard je istoveten z: EN 60204-11:2000

ICS:

13.110 Varnost strojev Safety of machinery

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EUROPEAN STANDARD

EN 60204-11

NORME EUROPÉENNE

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November 2000

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English version

**Safety of machinery - Electrical equipment of machines
Part 11: Requirements for HV equipment for voltages
above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV
(IEC 60204-11:2000)**

Sécurité des machines -
Équipement électrique des machines
Partie 11: Prescription pour les
équipements HT fonctionnant à des
tensions supérieures à 1 000 V c.a. ou
1 500 V c.c. et ne dépassant pas 36 kV
(CEI 60204-11:2000)

Sicherheit von Maschinen -
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Hochspannungsausrüstung für
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This European Standard was approved by CENELEC on 2000-09-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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 44/283/FDIS, future edition 1 of IEC 60204-11, prepared by IEC TC 44, Safety of machinery - Electrotechnical aspects, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60204-11 on 2000-09-01.

This European Standard is to be used in conjunction with EN 60204-1.

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) 2001-06-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2003-09-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annex ZA is normative and annexes A, B, C, D and E are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

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The text of the International Standard IEC 60204-11:2000 was approved by CENELEC as a European Standard without any modification.

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The contents of the corrigendum of February 2010 have been included in this copy.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60034-1 (mod)	1996	Rotating electrical machines Part 1: Rating and performance	EN 60034-1 + corr. February	1998 2000
IEC 60050-191	1990	International Electrotechnical Vocabulary (IEV) Chapter 191: Dependability and quality of service	-	-
IEC 60050-195	1998	Chapter 195: Earthing and protection against electric shock	-	-
IEC 60050-441	1984	Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60050-826 + A2	1982 1995	Chapter 826: Electrical installations of buildings	HD 384.2 S2 ¹⁾	2000
IEC 60071-1	1993	Insulation co-ordination Part 1: Definitions, principles and rules	EN 60071-1	1995
IEC 60071-2	1996	Part 2: Application guide	EN 60071-2	1997
IEC 60076-5 (mod)	1976	Power transformers Part 5: Ability to withstand short-circuit	HD 398.5 S1 ²⁾	1983
IEC 60129	1984	Alternating current disconnectors and earthing switches	EN 60129	1994
IEC 60204-1	1997	Safety of machinery - Electrical equipment of machines Part 1: General requirements	EN 60204-1 + corr. September	1997 1998
IEC 60298	1990	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	EN 60298 ³⁾ + A11	1996 1999

¹⁾ HD 384.2 S2 includes A1:1990 + A2:1995 + A3:1999 to IEC 60050:826.

²⁾ HD 398.5 S1 is superseded by EN 60076-5:2000 which is based on IEC 60076-5:2000.

³⁾ EN 60298 includes corrigendum April 1995 and A1:1994 to IEC 60298.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60364-4-41 (mod)	1992	Electrical installations of buildings Part 4: Protection for safety Chapter 41: Protection against electric shock	HD 384.4.41 S2	1996
IEC 60364-4-42 (mod)	1980	Part 4: Protection for safety Chapter 42: Protection against thermal effects	HD 384.4.42 S1 + A1 + A2	1985 1992 1994
IEC 60364-5-54 (mod)	1980	Part 5: Selection and erection of electrical equipment -- Chapter 54: Earthing arrangements and protective conductors	HD 384.5.54 S1	1988
IEC 60417	Series	Graphical symbols for use on equipment	EN 60417	Series
IEC 60420	1990	High-voltage alternating current switch-fuse combinations	EN 60420	1993
IEC 60445	1999	Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system	EN 60445	2000
IEC 60466	1987	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1-kV and up to and including 38 kV	-	-
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60621-3	1979	Electrical installations for outdoor sites under heavy conditions (including open- cast mines and quarries)	-	-
IEC 60694	1996	Common specifications for high-voltage switchgear and controlgear standards	EN 60694 + corr. May	1996 1999
IEC 60865-1	1993	Short-circuit currents - Calculation of effects Part 1: Definitions and calculation methods	EN 60865-1	1993
IEC 61230 (mod)	1993	Live working - Portable equipment for earthing or earthing and short-circuiting	EN 61230 + A11	1995 1999
IEC 61243-1 (mod)	1993	Live working - Voltage detectors Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c. and up to 52 kV	EN 61243-1 + corr. June	1997 1999
IEC 61310-1	1995	Safety of machinery - Indication, marking and actuation Part 1: Requirements for visual, auditory and tactile signals	EN 61310-1	1995
IEC 61310-3	1999	Part 3: Requirements for the location and operation of actuators	EN 61310-3	1999
ISO 3864	1984	Safety colours and safety signs	-	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO/TR 12100-1	1992	Safety of machinery - Basic concepts, general principles for design Part 1: Basic terminology, methodology	-	-
EN 50178	1997	Electronic equipment for use in power installations	-	-
HD 637 S1	1999	Power installations exceeding 1 kV a.c.	-	-

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Annex ZZ
(informative)**Coverage of Essential Requirements of EC Directives**

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers only the following essential requirements out of those given in annex I of the EC Directive 2006/42/EC:

- 1.2.1
- 1.2.2
- 1.2.3
- 1.2.4.1
- 1.2.4.3
- 1.2.4.4
- 1.2.6
- 1.5.1
- 1.6.3 (for isolation of electrical supplies of machinery)
- 1.6.4 (for access to electrical equipment)
- 1.7.1.1
- 1.7.1.2
- 1.7.2 (for residual risks of an electrical nature)
- 1.7.4(c)
- 1.7.4.2(e)

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Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60204-11

Première édition
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2000-07

**Sécurité des machines –
Équipement électrique des machines –**

Partie 11:

**Prescriptions pour les équipements HT fonctionnant
à des tensions supérieures à 1 000 V c.a.
ou 1 500 V c.c. et ne dépassant pas 36 kV**

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**Safety of machinery –
Electrical equipment of machines –**

Part 11:

**Requirements for HV equipment for voltages above
1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV**

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International Electrotechnical Commission
Telefax: +41 22 919 0300

e-mail: inmail@iec.ch

3, rue de Varembe Geneva, Switzerland
IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF MACHINERY –

ELECTRICAL EQUIPMENT OF MACHINES –

**Part 11: Requirements for HV equipment for voltages
above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV**

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.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60204-11 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

This standard shall be used in conjunction with IEC 60204-1.

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

FDIS	Report on voting
44/283/FDIS	44/286/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 3.

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

The following differences exist in some countries:

- 6.2: Protection by obstacles and placing out of reach is not applicable (Finland).

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

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INTRODUCTION

This part of IEC 60204 provides requirements and recommendations relating to the high voltage electrical equipment (HV equipment) of machines together with its associated low voltage electrical equipment (LV equipment) so as to promote

- safety of persons and property;
- consistency of control response;
- ease of maintenance.

High performance is not to be obtained at the expense of the essential factors mentioned above.

An example of a possible application of these requirements is a machine or group of machines used for the processing of a material where a failure in such machinery can have serious economic consequences.

Figure 1 is a block diagram of a machine and associated equipment showing the various elements of the electrical equipment addressed in this standard. Numbers in parentheses refer to clauses and subclauses in this standard. It is understood that all of the elements taken together including the safeguards, software and the documentation constitute the machine or group of machines working together with usually at least one level of supervisory control.

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More guidance on the use of this standard is given in annex F of IEC 60204-1.

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