

## Audio-, video- och liknande elektronisk utrustning – Säkerhet

*Audio, video and similar electronic apparatus –  
Safety requirements*

Som svensk standard gäller europastandarden EN 60065:2002. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60065:2002.

### Nationellt förord

Europastandarden EN 60065:2002

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60065, Seventh edition, 2001 - Audio, video and similar electronic apparatus - Safety requirements**

utarbetad inom International Electrotechnical Commission, IEC.

I Bilaga ZC redovisas svensk avvikelse, vilken av CENELEC accepterats till följd av speciella nationella förhållanden.

SS-EN 60065, utgåva 2, 1998 och SS-EN 60065 C1, utgåva 1, 1999, gäller ej fr o m 2007-03-01.



EUROPEAN STANDARD

**EN 60065**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2002

ICS 97.020

Supersedes EN 60065:1998

English version

**Audio, video and similar electronic apparatus –  
Safety requirements**  
(IEC 60065:2001, modified)

Appareils audio, vidéo et appareils  
électroniques analogues –  
Exigences de sécurité  
(CEI 60065:2001, modifiée)

Audio-, Video- und ähnliche elektronische  
Geräte –  
Sicherheitsanforderungen  
(IEC 60065:2001, modifiziert)

This European Standard was approved by CENELEC on 2002-03-01. 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, Malta, 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

Following BT decision D105/051 the text of future edition 7 of the International Standard IEC 60065 (92/85/FDIS), prepared by IEC TC 92, Safety of audio, video and similar electronic equipment, together with common modifications prepared by the Technical Committee CENELEC TC 92, Safety of audio, video and similar electronic equipment, was submitted to the formal vote and was approved by CENELEC as EN 60065 on 2002-03-01.

This European Standard supersedes EN 60065:1998 + corrigendum June 1999.

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) 2003-03-01
- latest date by which the national standards  
conflicting with the EN have to be withdrawn (dow) 2007-03-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, annexes A to K, ZA and ZB are normative; annexes M, N and ZC are informative.

Annexes ZA, ZB and ZC have been added by CENELEC

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**Endorsement notice**

The text of the International Standard IEC 60065:2001 was approved by CENELEC as a European Standard with agreed common modifications as given below.

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**Annex ZA**  
(normative)

**Other international publications quoted in this standard  
with the references of the relevant 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 standard has been modified by common modification, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
-	-	Audio, video and similar electronic apparatus – Routine electrical safety testing in production	EN 50333	2001
IEC 60027	series	Letter symbols to be used in electrical technology	HD 245	series
IEC 60038 (mod)	1983	IEC standard voltages <sup>1)</sup>	HD 472 S1	1989
IEC 60068-2-3	1969	Environmental testing Part 2: Tests - Test Ca: Damp heat, steady state	HD 323.2.3 S2 <sup>2)</sup>	1987
IEC 60068-2-6 + corr. March	1995 1995	Part 2: Tests -Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-32	1975	Part 2: Tests - Test Ed: Free fall	EN 60068-2-32 <sup>3)</sup>	1993
IEC 60068-2-75	1997	Part 2: Tests - Test Eh: Hammer tests	EN 60068-2-75	1997
IEC 60085	1984	Thermal evaluation and classification of electrical insulation	HD 566 S1	1990
IEC 60107	series	Methods of measurement on receivers for television broadcast transmissions	EN 60107	series
IEC 60112	1979	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
IEC 60127	series	Miniature fuses	EN 60127	series

<sup>1)</sup> The title of HD 472 S1 is: Nominal voltages for low voltage public electricity supply systems.

<sup>2)</sup> HD 323.2.3 S2 includes A1:1984 to IEC 60068-2-3.

<sup>3)</sup> EN 60068-2-32 includes A2:1990 to IEC 60068-2-32.



<u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
IEC 60167	1964	Methods of test for the determination of the insulation resistance of solid insulating materials	HD 568 S1	1990
IEC 60216	series	Guide for the determination of thermal endurance Properties of electrical insulating materials	HD 611 / EN 60216	series
IEC 60227 4)	series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	HD 21	series
IEC 60245 5)	series	Rubber insulated cables - Rated voltages up to and including 450/750 V	HD 22	series
IEC 60249-2	series	Base materials for printed circuits Part 2: Specifications	EN 60249-2	series
IEC 60268-1	1985	Sound system equipment Part 1: General	HD 483.1 S2 6)	1989
IEC 60317	series	Specifications for particular types of winding wires	EN 60317	series
IEC 60320	series	Appliance couplers for household and similar general purposes	EN 60320	series
IEC 60335-1 (mod)	2001	Safety of household and similar electrical appliances Part 1: General requirements	EN 60335-1	-7)
IEC 60384-1	1982	Fixed capacitors for use in electronic equipment Part 1: Generic specification	EN 130000 8)	1993
IEC 60384-14 A1	1993 1995	Fixed capacitors for use in electronic equipment Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	EN 132400 9)	1994
IEC 60417	series	Graphical symbols for use on equipment	EN 60417	series
IEC 60454	series	Specifications for pressure-sensitive adhesive tapes for electrical purposes	EN 60454	series

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4) The HD 21 series is related to but not directly equivalent to the IEC 60227 series.

5) The HD 22 series is related to but not directly equivalent to the IEC 60245 series.

6) HD 483.1 S2 includes A1:1988 to IEC 60268-1.

7) to be published.

8) EN 130000:1993 (which was related to but not directly equivalent to IEC 60384-1:1982) is superseded by EN 60384-1:2001, which is based on IEC 60384-1:1999, mod.

9) EN 132400:1994 is related to but not directly equivalent to IEC 60384-14:1993 + A1:1995.

<u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60664-1 (mod)	1992	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	HD 625.1 S1 + corr. November	1996 1996
IEC 60664-3	1992	Part 3: Use of coatings to achieve insulation coordination of printed board assemblies	HD 625.3 S1	1997
IEC 60691	1993	Thermal links - Requirements and application guide	EN 60691 10)	1995
IEC 60695-2-2	1991	Fire hazard testing Part 2-2: Test methods - Needle-flame test	EN 60695-2-2	1994
IEC 60695-11-10	1999	Part 11-10: Test flames – 50 W horizontal and vertical flame test methods	EN 60695-11-10	1999
IEC 60707	1999	Flammability of solid non-metallic materials when exposed to flame sources – List of test methods	EN 60707	1999
IEC 60730 (mod)	series	Automatic electrical controls for household and similar use	EN 60730	series
IEC 60825-1 corr. December A1	1993 1994 1997	Safety of laser products Part 1: Equipment classification, requirements and user's guide	EN 60825-1 + corr. February + A11 + corr. July	1994 1995 1996 1997
A2	2001		A2	2001
IEC 60851-3	1996	Winding wires - Test methods Part 3: Mechanical properties	EN 60851-3	1996
IEC 60851-5	1996	Part 5: Electrical properties	EN 60851-5	1996
IEC 60851-6	1996	Part 6: Thermal properties	EN 60851-6	1996
IEC 60884	series	Plugs and socket-outlets for household and similar purposes	-	-
IEC 60885-1	1987	Electrical test methods for electric cables Part 1: Electrical tests for cables, cords and wires for voltages up to and including 450/750 V	-	-
IEC 60906	series	IEC system of plugs and socket-outlets for household and similar purposes	-	-
IEC 60950 (mod) + corr. January	1999 2000	Safety of information technology equipment	EN 60950 11) + corr. February	2000 2002

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10) EN 60691 includes A1:1995 to IEC 60691.

11) EN 60950 is superseded by EN 60950-1:2001 (IEC 60950-1:2001, mod.).

<u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
IEC 60990	1999	Methods of measurement of touch-current and protective conductor current	EN 60990	1999
IEC 60998-2-2	1991	Connecting devices for low-voltage circuits for household and similar purposes Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units	EN 60998-2-2	1993
IEC 60999-1	1999	Connecting devices - Safety requirements for screw-type and screwless-type clamping units Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm <sup>2</sup> up to 35 mm <sup>2</sup> (included)	EN 60999-1	2000
IEC 61032	1997	Protection of persons and equipment by enclosures Probes for verification	EN 61032	1998
IEC 61051-2	1991	Varistors for use in electronic equipment Part 2: Sectional specification for surge suppression varistors	-	-
IEC 61058-1	1996	Switches for appliances Part 1: General requirements	- 12)	-
IEC/TR2 61149	1995	Guide for safe handling and operation of mobile radio equipment	-	-
IEC 61260	1995	Electroacoustics - Octave-band and fractional-octave-band filters	EN 61260	1995
IEC 61293	1994	Marking of electrical equipment with ratings related to electrical supply - Safety requirements	EN 61293	1994
IEC 61558-1 (mod)	1997	Safety of power transformers, power supply units and similar	EN 61558-1	1997
A1	1998	Part 1: General requirements and tests	A1	1998
IEC 61558-2-17	1997	Part 2-17: Particular requirements for transformers for switch mode power supplies	EN 61558-2-17	1997
IEC 61965	2000	Mechanical safety of cathode ray tubes	EN 61965	2001
IEC 62151	2000	Safety of equipment electrically connected to a telecommunication network	-	-
IEC Guide 104	1997	The preparation of safety publications and the use of basic safety publications and group safety publications	-	-

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12) IEC 61058-1:2000 + A1:2001, mod., are harmonized as EN 61058-1:2002.

<b><u>Publication</u></b>	<b><u>Date</u></b>	<b><u>Title</u></b>	<b><u>EN/HD</u></b>	<b><u>Date</u></b>
ISO 262	1973	ISO general purpose metric screw threads - Selected sizes for screws, bolts and nuts	-	-
ISO 306	1994	Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST)	-	-
ISO 7000	1989	Graphical symbols for use on equipment - Index and synopsis	-	-
ITU-T Recommendation K.17	1988	Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference	-	-
ITU-T Recommendation K.21	1996	Resistibility of subscriber's terminal to overvoltages and overcurrents	-	-

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# AUDIO, VIDEO AND SIMILAR ELECTRONIC APPARATUS – SAFETY REQUIREMENTS

## 1 General

### 1.1 Scope

**1.1.1** This International Safety Standard applies to electronic apparatus designed to be fed from the MAINS, from a SUPPLY APPARATUS, from batteries or from REMOTE POWER FEEDING and intended for reception, generation, recording or reproduction respectively of audio, video and associated signals. It also applies to apparatus designed to be used exclusively in combination with the above-mentioned apparatus.

This standard primarily concerns apparatus intended for household and similar general use but which may also be used in places of public assembly such as schools, theatres, places of worship and the workplace. PROFESSIONAL APPARATUS intended for use as described above is also covered unless falling specifically within the scope of other standards.

This standard concerns only safety aspects of the above apparatus; it does not concern other matters, such as style or performance.

This standard applies to the above-mentioned apparatus, if designed to be connected to the TELECOMMUNICATION NETWORK or similar network, for example by means of an integrated modem.

Some examples of apparatus within the scope of this standard are:

- receiving apparatus and amplifiers for sound and/or vision;
- independent LOAD TRANSDUCERS and SOURCE TRANSDUCERS;
- SUPPLY APPARATUS intended to supply other apparatus covered by the scope of this standard;
- ELECTRONIC MUSICAL INSTRUMENTS, and electronic accessories such as rhythm generators, tone generators, music tuners and the like for use with electronic or non-electronic musical instruments;
- audio and/or video educational apparatus;
- video projectors;

NOTE 1 Film projectors, slide projectors, overhead projectors are covered by IEC 60335-2-56 [5]<sup>1)</sup>

- video cameras and video monitors;
- video games and flipper games;

NOTE 2 Video and flipper games for commercial use are covered by IEC 60335-2-82 [6]

- juke boxes;
- electronic gaming and scoring machines;

NOTE 3 Electronic gaming and scoring machines for commercial use are covered by IEC 60335-2-82 [6]

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1) Figures in square brackets refer to the bibliography.



- teletext equipment;
- record and optical disc players;
- tape and optical disc recorders;
- antenna signal converters and amplifiers;
- antenna positioners;
- Citizen's Band apparatus;
- apparatus for IMAGERY;
- electronic light effect apparatus;
- apparatus for use in alarm systems;
- intercommunication apparatus, using low voltage MAINS as the transmission medium;
- cable head-end receivers;
- multimedia apparatus;

NOTE 4 The requirements of IEC 60950 may also be used to meet the requirements for safety of multi media apparatus (see also IEC Guide 112 [16])

- professional general use amplifiers, record or disc players, tape players, recorders, and public address systems;
- professional sound/video systems.

**1.1.2** This standard applies to apparatus with a RATED SUPPLY VOLTAGE not exceeding

- 250 V a.c. single phase or d.c. supply;
- 433 V a.c. in the case of apparatus for connection to a supply other than single-phase.

**1.1.3** This standard applies to apparatus for use at altitudes not exceeding 2 000 m above sea level, primarily in dry locations and in regions with moderate or tropical climates.

For apparatus with protection against splashing water, additional requirements are given in annex A.

For apparatus to be connected to TELECOMMUNICATION NETWORKS, additional requirements are given in annex B.

For apparatus intended to be used in vehicles, ships or aircraft, or at altitudes exceeding 2 000 m above sea level, additional requirements may be necessary.

NOTE See table A.2 of IEC 60664-1.

Requirements, additional to those specified in this standard, may be necessary for apparatus intended for special conditions of use.

**1.1.4** For apparatus designed to be fed from the MAINS, this standard applies to apparatus intended to be connected to a MAINS supply with transient overvoltages not exceeding overvoltage category II according to IEC 60664-1.

For apparatus subject to transient overvoltages exceeding those for overvoltage category II, additional protection may be necessary in the MAINS supply of the apparatus.

## 1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60038:1983, *IEC standard voltages*

IEC 60068-2-3:1969, *Environmental testing – Part 2: Tests – Test Ca: Damp heat, steady state*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-32:1975, *Environmental testing – Part 2: Tests – Test Ed: Free fall (Procedure 2)*

IEC 60068-2-75:1997, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60085:1984, *Thermal evaluation and classification of electrical insulation*

IEC 60112:1979, *Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions*

IEC 60127 (all parts), *Miniature fuses*

IEC 60167:1964, *Methods of test for the determination of the insulation resistance of solid insulating materials*

IEC 60216 (all parts), *Guide for the determination of thermal endurance properties of electrical insulating materials*

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60249-2 (all specifications), *Base materials for printed circuits – Part 2: Specifications*

IEC 60268-1:1985, *Sound system equipment – Part 1: General*

IEC 60317 (all parts), *Specifications for particular types of winding wires*

IEC 60320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60335-1:2001, *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60384-1:1982, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

IEC 60384-14:1993, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*  
Amendment 1 (1995)

IEC 60417 (all parts), *Graphical symbols for use on equipment*

IEC 60454 (all parts), *Specifications for pressure-sensitive adhesive tapes for electrical purposes*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:1992, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:1992, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coatings to achieve insulation coordination of printed board assemblies*

IEC 60691:1993, *Thermal links – Requirements and application guide*

IEC 60695-2-2:1991, *Fire hazard testing – Part 2: Test methods – Section 2: Needle-flame test*

IEC 60695-11-10:1999, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 60707:1999, *Flammability of solid non-metallic materials when exposed to flame sources – List of test methods*

IEC 60730 (all parts), *Automatic electrical controls for household and similar use*

IEC 60825-1:1993, *Safety of laser products – Part 1: Equipment classification, requirements and user's guide* <sup>1)</sup>  
Amendment 1 (1997)  
Amendment 2 (2001)

IEC 60851-3:1996, *Methods of test for winding wires – Part 3: Mechanical properties*

IEC 60851-5:1996, *Methods of test for winding wires – Part 5: Electrical properties*

IEC 60851-6:1996, *Methods of test for winding wires – Part 6: Thermal properties*

IEC 60884 (all parts), *Plugs and socket-outlets for household and similar purposes*

IEC 60885-1:1987, *Electrical test methods for electric cables – Part 1: Electrical tests for cables, cords and wires for voltages up to and including 450/750 V*

IEC 60906 (all parts), *IEC system of plugs and socket-outlets for household and similar purposes*

IEC 60950:1999, *Safety of information technology equipment*

IEC 60990:1999, *Methods of measurement of touch current and protective conductor current*

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<sup>1)</sup> There exists a consolidated edition 1.1 (1998) that includes edition 1.0 and its amendment 1.

IEC 60998-2-2:1991, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 60999-1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm<sup>2</sup> up to 35 mm<sup>2</sup> (included)*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

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<sup>1)</sup> There exists a consolidated edition 1.1 (1998) that includes edition 1.0 and its amendment 1.