



SLOVENSKI STANDARD

SIST EN 50333:2002

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Audio, video and similar electronic apparatus - Routine electrical safety testing in production

Audio, video and similar electronic apparatus - Routine electrical safety testing in production

Audio-, Video- und ähnliche elektronische Geräte - Stückprüfung der elektrischen Sicherheit in der Fertigung

Appareils audio, vidéo et appareils électroniques analogues - Essais individuels de série, en production, pour la vérification de la sécurité électrique

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Ta slovenski standard je istoveten z: EN 50333:2001

ICS:

19.080	Električno in elektronsko preskušanje	Electrical and electronic testing
33.160.01	Avdio, video in avdiovizualni sistemi na splošno	Audio, video and audiovisual systems in general

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en

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EUROPEAN STANDARD

EN 50333

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2001

ICS 97.020

English version

**Audio, video and similar electronic apparatus -
Routine electrical safety testing in production**

Appareils audio, vidéo et appareils
électroniques analogues -
Essais individuels de série,
en production, pour la vérification
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elektronische Geräte -
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Sicherheit in der Fertigung

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This European Standard was approved by CENELEC on 2000-04-01. 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

This European Standard was prepared by the Technical Committee CENELEC TC 92, Safety of audio, video and similar electronic equipment.

The text of the draft was submitted to the Unique Acceptance Procedure (UAP) and was approved by CENELEC as EN 50333 on 2000-04-01.

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 endorsement (dop) 2001-10-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-04-01

EN 60065 specifies TYPE TESTS only. TYPE TESTS may not be suitable as ROUTINE TESTS to be carried out on apparatus during the manufacturing process or at the end of the production line. Nevertheless it is recognised that some safety tests are necessary in order to guarantee an acceptable level of production uniformity, which is also a requirement for certified products.

This standard defines tests to measure the resistance of the protective earthing circuit and to check the insulation between the primary circuits and ACCESSIBLE conductive parts. In addition, it defines the documentation to be maintained by the manufacturer.

Terms used throughout this standard which have been defined in EN 60065 are printed in SMALL ROMAN CAPITALS.

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1 Scope

This standard applies to audio, video and similar electronic apparatus. It defines the ROUTINE ELECTRICAL SAFETY TESTS and their procedures to be applied during or at the end of the manufacturing process of apparatus certified or declared as complying with EN 60065.

Alternatively, manufacturers can apply the tests of this standard to sub-assemblies, components, etc. so long as the final apparatus continues to comply with EN 60065.

In all cases the application of the tests detailed in this standard is design dependent and need to be defined by the manufacturer.

2 Normative references

This standard incorporates by dated or undated references, 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 standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication applies.

EN 60065:1998, *Audio, video and similar electronic apparatus - Safety requirements (IEC 60065:1998, modified)*

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3 Conformance

In order to conform to this standard an apparatus shall pass the tests of 5.1 and 5.2 where applicable.

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4 Definitions

The definitions of EN 60065 apply.

In addition, for the purpose of this standard the following definition applies:

4.1

routine electrical safety test

a test to which each individual device is subjected during or at the end of manufacture, to detect manufacturing failures and unacceptable tolerances in manufacturing and materials.

5 Tests

5.1 Resistance of the protective earthing circuit

For CLASS I apparatus, the continuity of the protective earthing connection shall be checked between the protective earth contact of the MAINS plug or appliance inlet, or the PROTECTIVE EARTH TERMINAL in case of a PERMANENTLY CONNECTED APPARATUS, and

- the ACCESSIBLE conductive parts, including TERMINALS regarded as ACCESSIBLE (see EN 60065, clause 8.4), which shall be connected to the PROTECTIVE EARTH TERMINAL, and
- the protective earth contact of the socket-outlets respectively, if provided to deliver power to other apparatus.

The test current applied for 1 s to 4 s shall be at least 10 A, derived from a source having a no-load voltage not exceeding 12 V.

The measured resistance shall not exceed

- 0,1 Ω for apparatus with a detachable power supply cord,
- 0,2 Ω for apparatus with a non-detachable power supply cord.

NOTE Care should be taken that the contact resistance between the tip of the measuring probe and the conductive part under test does not influence the test result.

5.2 Dielectric strength test

The insulation of the apparatus shall be checked by the following tests.

An AC test voltage of substantially sine-wave form, having MAINS frequency, or a DC test voltage or a combination of both with a peak value specified in Table 1, is applied between the supply TERMINALS connected in parallel and:

- TERMINALS regarded as ACCESSIBLE (see EN 60065, clause 8.4), and
- ACCESSIBLE conductive parts respectively,

which may become HAZARDOUS LIVE in the event of an insulation fault as a result of incorrect assembly.

NOTE 1 TERMINALS regarded as ACCESSIBLE and ACCESSIBLE conductive parts may be connected together during the dielectric strength test.

Table 1 - Test voltage

Application of test voltage	Test voltage [V (peak) AC or DC]	
	RATED SUPPLY VOLTAGE ≤ 150 V	RATED SUPPLY VOLTAGE > 150 V
BASIC INSULATION	1 130 (800 V rms)	2 120 (1 500 V rms)
DOUBLE OR REINFORCED INSULATION	2 120 (1 500 V rms)	3 540 (2 500 V rms)
NOTE The test voltages given are the minimum test voltages to be applied. Higher voltages are allowed at the discretion of the manufacturer		

Before the test voltage is applied, intimate contact shall be made between the specimen and the connection devices.

Initially it is allowed to apply not more than half of the prescribed test voltage, then it is raised with a steepness not exceeding 1 560 V/ms to the full value which is held for 1 s to 4 s.

NOTE 2 A steepness of 1 560 V/ms corresponds to the steepness of a sine-wave with a MAINS frequency of 60 Hz.

During the test, MAINS switches and functional switches CONDUCTIVELY CONNECTED TO THE MAINS, if any, shall be in the on-position and it shall be ensured by suitable means that the test voltage is effectively connected to the specimen.

No flash-over or breakdown shall occur during the test. The test voltage source shall be provided with a current sensing (over-current) device which, when activated, gives an indication "unacceptable". When loaded up to and including the tripping current, the voltage source shall still deliver the prescribed voltage.

NOTE 3 The tripping current shall not exceed 100 mA.

NOTE 4 Tripping of the current sensing device is regarded as a flash-over or breakdown.

Annex A (informative)

Documentation

All test results shall be kept available. The choice of support and format for reports is left to the manufacturer; separate forms (one for each apparatus) or lists of apparatus, grouped according to the most suitable parameters (periods of time, model, etc.) are equally acceptable.

The only obligation is the availability of data and their immediate interpretability for all apparatus leaving the production line.

The following data shall be retrievable and/or be derived from factory procedures for each apparatus:

- date of test,
- model of the apparatus,
- serial number of the apparatus or another identifier permitting the identification without ambiguity,
- value of earthing circuit resistance with the corresponding current value,
- value of voltage applied during the dielectric strength test,
- quick-reference information that the whole set of tests has/has not been successful.

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