

# SLOVENSKI STANDARD

## SIST EN 50514:2009

01-januar-2009

Nadomešča:

SIST EN 50116:2007

SIST EN 50333:2002

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### Oprema za avdio, video in informacijsko tehnologijo - Redno preskušanje električne varnosti v proizvodnji

Audio, video and information technology equipment - Routine electrical safety testing in production

**iTeh STANDARD PREVIEW**

Audio- und Video-Geräte und Einrichtungen der Informationstechnik – Stückprüfungen der elektrischen Sicherheit in der Fertigung

[SIST EN 50514:2009](https://standards.iteh.ai/catalog/standards/sist/18-0193f-de-7-425f-9979-09982-led0fd1/sist-en-50514-2009)

Appareils audio, vidéo et matériel de traitement de l'information - Essais individuels de série, en production, pour la vérification de la sécurité électrique

**Ta slovenski standard je istoveten z: EN 50514:2008**

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#### **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
35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general

**SIST EN 50514:2009**

**en,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 50514**

November 2008

ICS 33.160.01

Supersedes EN 50116:2006 and EN 50333:2001

English version

**Audio, video and information technology equipment -  
Routine electrical safety testing in production**

Appareils audio, vidéo et  
matériel de traitement de l'information -  
Essais individuels de série,  
en production, pour la vérification  
de la sécurité électrique

Audio- und Video- Geräte und  
Einrichtungen der Informationstechnik -  
Stückprüfungen der elektrischen  
Sicherheit in der Fertigung

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This European Standard was approved by CENELEC on 2008-07-01. 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, Bulgaria, 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

This European Standard was prepared by the Technical Committee CENELEC TC 108X, Safety of electronic equipment within the fields of audio/video, information technology and communication technology.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50514 on 2008-07-01.

This European Standard supersedes EN 50116:2006 and EN 50333:2001; it is a combination of the current requirements in EN 50116 and EN 50333. No new requirements were added that were not part of these standards.

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) 2009-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-07-01

This European Standard applies to equipment that complies with EN 60065 or EN 60950-1. Most of the tests specified in those standards are TYPE TESTS. For ROUTINE TESTS, to be carried out during or after manufacture, TYPE TESTS may not be suitable. Nevertheless, it is recognized that some tests are necessary in order to guarantee an acceptable level of safety.

This European Standard defines ROUTINE TESTS to measure the resistance of the earthing path and to check the insulation between the PRIMARY CIRCUIT and accessible conductive parts. In addition, this European Standard defines the documentation to be maintained by the manufacturer in respect of these tests.

This standard is complementary to the product safety standards (EN 60065 or EN 60950-1) and is to be considered only as a tool for voluntary application by manufacturers.

This European Standard can be used in association with Permanent Document CIG 021, *Factory inspection procedures - Harmonised requirements*, of the European Electrical Products Certification Association.

Permanent Document CIG 021 can be obtained from signatory bodies (certification bodies).

In this European Standard, the following print types are used:

- normative text: roman type;
- *test specifications: italic type;*
- terms which are defined in EN 60065 or EN 60950-1: SMALL CAPITALS.

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## 1 Scope

This European Standard defines routine test procedures for use during or after manufacturing of complete equipments, sub-assemblies or components, certified or declared as complying with EN 60065 or EN 60950-1 and powered by an a.c. or d.c. mains supply. 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 or EN 60950-1.

The application of the tests detailed in this European Standard is design dependent and needs to be defined by the manufacturer.

## 2 Normative references

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>
EN 60065	2002	<i>Audio, video and similar electronic apparatus - Safety requirements</i> (IEC 60065:2001, mod.)
A1	2006	(IEC 60065:2001/A1:2005, mod.)
A11	2008	
EN 60950-1	2001	<i>Information technology equipment - Safety Part 1: General requirements</i> (IEC 60950-1:2001, mod.)
EN 60950-1	2006	<i>Information technology equipment - Safety Part 1: General requirements</i> (IEC 60950-1:2005, mod.)

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## 3 Definitions

For the purposes of this document, the terms and definitions of EN 60065 or EN 60950-1 apply.

In addition, the following definition applies:

### 3.1

#### **routine electrical safety test**

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

## 4 Conformance

In order to conform to this European Standard, an equipment shall pass the tests of Clause 5 where applicable and the results of these tests shall be recorded according to Clause 6.

## 5 Routine tests

### 5.1 Resistance of protective earthing paths

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 EARTHING TERMINAL in case of a PERMANENTLY CONNECTED APPARATUS, and

- the ACCESSIBLE conductive parts, including TERMINALS regarded as ACCESSIBLE, which shall be connected to the PROTECTIVE EARTHING TERMINAL, and
- the protective earth contact of the socket-outlets respectively, if provided to deliver power to other apparatus.

*The test current is 150 % of the rating of the overcurrent device protecting the PROTECTIVE BONDING CONDUCTOR, but not less than 10 A and not more than 25 A (a.c. or d.c.) and is applied for any duration between 1 s and 4 s. The source shall have a no-load voltage not exceeding 12 V.*

*The measured resistance shall not exceed 0,1  $\Omega$ .*

*It is permitted to include the power cord (if any) in the resistance measurement and, if the result exceeds 0,1  $\Omega$ , to subtract the resistance of the PROTECTIVE EARTHING CONDUCTOR of the power 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 Electric strength test

*ROUTINE TESTS for electric strength shall be carried out between the PRIMARY CIRCUIT and ACCESSIBLE conductive parts. For ACCESSIBLE SECONDARY CIRCUITS, it is permitted to test separately, before final assembly, subassemblies and components such as transformers, if the relevant insulation cannot be tested in the complete equipment, provided that the complete equipment complies with EN 60065 or EN 60950-1 as appropriate.*

*The insulation of the apparatus shall be checked by the following test.*

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

- TERMINALS regarded as ACCESSIBLE, 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 electric strength test.

**Table 1 – Test voltage**

Application of test voltage	Test voltage [V (peak) AC or DC]
BASIC INSULATION	2 120 (1 500 V r.m.s.)
DOUBLE OR REINFORCED INSULATION	4 240 (3 000 V r.m.s.)
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.

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

## 6 Records of tests

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.

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

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

As an alternative to the values marked with an asterisk (\*) above, a record of the result of each test (pass or fail) is permitted.