



**SLOVENSKI STANDARD**  
**SIST EN 60115-1:2002/A11:2008**  
**01-marec-2008**

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**Fiksni upori za elektronsko opremo - 1. del: Rodovna specifikacija**

Fixed resistors for use in electronic equipment - Part 1: Generic specification

Festwiderstände zur Verwendung in Geräten der Elektronik - Teil 1:  
Fachgrundspezifikation

Résistances fixes utilisées dans les équipements électroniques - Partie 1: Spécification  
générique

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**Ta slovenski standard je istoveten z: EN 60115-1:2001/A11:2007**

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English version

**Fixed resistors for use in electronic equipment -  
Part 1: Generic specification**

Résistances fixes utilisées  
dans les équipements électroniques -  
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Festwiderstände zur Verwendung  
in Geräten der Elektronik -  
Teil 1: Fachgrundspezifikation

This amendment A11 modifies the European Standard EN 60115-1:2001; it was approved by CENELEC on 2007-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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 amendment to the European Standard EN 60115-1:2001 was prepared by the Technical Committee CENELEC TC 40XB, Resistors.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A11 to EN 60115-1:2001 on 2007-12-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2008-12-01
- latest date by which the national standards conflicting  
with the amendment have to be withdrawn (dow) 2010-12-01

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## 1.2 Normative references

Delete the existing references to: CECC 00 114-2:1994, CECC 00 114-3:1999, EN 61000-4-2:1995, EN 61760-1:1998 and EN 100114-6:1996.

Add the following references:

EN 60695-11-5, *Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance* (IEC 60695-11-5)

EN 61340-3-1, *Electrostatics – Part 3-1: Methods for simulation of electrostatic effects – Human body model (HBM) – Component testing* (IEC 61340-3-1)

EN 61760-1, *Surface mounting technology - Part 1: Standard method for the specification of surface mounting components (SMDs)* (IEC 61760-1)

IEC QC 001002-3:2005, *IEC Quality Assessment System for Electronic Components (IECQ) – Rules of procedure – Part 3: Approval procedures*

IEC QC 001003, *IEC Quality Assessment System for Electronic Components (IECQ) – Guidance documents*

## 3 Quality assessment procedures

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### 3.1 General

In the 1<sup>st</sup> paragraph replace

EN 100114-1 ~~SIST EN 60115-1:2002/A11:2008~~ by QC 001002-3  
<https://standards.iteh.ai/catalog/standards/sist/f97184ef-0685-4493-b0c9-d2313d86ce86/sist-en-60115-1-2002-a11-2008>

In the 2<sup>nd</sup> paragraph replace

CECC 00 114-2 by QC 001002-3, Clause 3

CECC 00 114-3 by QC 001002-3, Clause 4

#### 3.1.2.1

Replace the whole subclause by:

##### 3.1.2.1 Capability Qualifying Components (CQCs), including process validation test vehicles

A detail specification shall be prepared for each CQC as agreed with the National Supervising Inspectorate (NSI). It shall identify the purpose of CQC and include all relevant test severities and limits.

#### 3.1.2.2

Replace the whole subclause by:

##### 3.1.2.2 Components for listing in the Register of Approvals (Standard catalogue items)

When the manufacturer desires that a resistor covered by the capability approval procedure should be listed in the IECQ approvals database, a Capability Approval detail specification complying with the blank detail specification shall be written. Such specifications shall be registered by the IECQ and the component may be listed in the approvals section of the website [www.iecq.org](http://www.iecq.org). See QC 001002-3, 4.4.3.

### 3.1.2.3 Customer specified resistors

In the 1<sup>st</sup> paragraph replace

4.3 of CECC 00 114-3      *by*      QC 001002-3, 4.4.3

### 3.3 Subcontracting

In the 1<sup>st</sup> paragraph replace

1.2 of CECC 00 114-2      *by*      QC 001002-3, 3.1.2

2.2 of CECC 00 114-3      *by*      QC 001002-3, 4.2.2

In the 2<sup>nd</sup> paragraph replace

1.2.2 of CECC 00 114-2      *by*      QC 001002-3, 3.1.2.2

2.2.2 of CECC 00 114-3      *by*      QC 001002-3, 4.2.2.2

### 3.4 Structurally similar components

#### 3.4.2

Replace the whole subclause by:

**3.4.2** For failure rate level evaluation and determination, fixed resistors are accepted as being structurally similar

- a) when they are manufactured at one or at several manufacturing sites
- using the same specified raw-materials, manufacturing and quality inspection- procedures and
  - under the same responsibility for the product and quality of the leading manufacturing site.

When there are several manufacturing sites, the manufacturer shall nominate the prime site and the associated Designated Management Representative (DMR).

- b) when all manufacturing sites are supervised by the same National Supervising Inspectorate (NSI). Preferably it should be the NSI of that country in which the leading manufacturing site is located,
- c) when they have the same stability class and climatic category,
- d) when they are different in dimensions only, and
- e) when they have similar terminal types.

Resistors which differ only in c) may be considered as structural similar if the different requirements of the stability class and/or the climatic category are judged separately in the final measurements.

#### 3.5.1 Eligibility for qualification approval

*Replace*      1.1 of CECC 00 114-2      *by*      QC 001002-3, 3.1.1

#### 3.5.2 Application for qualification approval

*Replace*      1.3 of CECC 00 114-2      *by*      QC 001002-3, 3.1.3

**3.5.3 Test procedure for qualification approval**

Replace ONS by NSI

**3.5.4 Granting of qualification approval**

Replace 1.5 of CECC 00 114-2 by QC 001002-3, 3.1.5

**3.5.6 Quality conformance inspection**

Replace 2.9 of CECC 00 114-2 by QC 001002-3, 3.2.9

**3.6.2 Eligibility for capability approval**

Replace 2.1 of CECC 00 114-3 by QC 001002-3, 4.2.1

**3.6.3 Application for capability approval**

Replace 2.4 of CECC 00 114-3 by QC 001002-3, 4.2.4

**3.6.4 Description of capability**

Replace 2.5 of CECC 00 114-3 by QC 001002-3, 4.2.5

ONS by NSI

**3.6.5 Demonstration and verification of capability**

Replace 2.6 of CECC 00 114-3 by QC 001002-3, 4.2.6

**3.6.6 Granting of capability approval**

Replace 2.7 of CECC 00 114-3 by QC 001002-3, 4.2.7

**3.6.7 Maintenance of capability approval**

Replace 2.9 and 2.10 of CECC 00 114-3 by QC 001002-3, 4.2.9 and 4.2.10

**3.6.8 Quality conformance inspection**

Replace 3.1 of CECC 00 114-3 by QC 001002-3, 4.3.1

**3.7.1 Rework**

In the 1<sup>st</sup> paragraph replace

1.4 and 7.1 of CECC 00 114-3 by QC 001002-3, 4.1.4 and 4.7.1

In the 4<sup>th</sup> paragraph replace

the CECC System Manager by the Designated Management Representative (DMR)

**3.7.2 Repair**

In the 1<sup>st</sup> paragraph replace

1.5 and 7.2 of CECC 00 114-3 by QC 001002-3, 4.1.5 and 4.7.2

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*In the 2<sup>nd</sup> paragraph replace*

the CECC System *by* the IECQ System

### **3.8 Release for delivery**

*Replace* clause 2 of CECC 00 114-2 *by* QC 001002-3, 3.2

*Replace* clause 3 of CECC 00 114-3 *by* QC 001002-3, 4.3

### **3.10 Delayed delivery**

*In the 2<sup>nd</sup> paragraph replace*

the CECC System *by* the IECQ System

ONS *by* NSI

### **3.11 Alternative test methods**

*Replace* ONS *by* NSI

### **3.12 Manufacture outside the geographical limits of CECC supervising inspectorates**

*Replace the whole subclause by:*

### **3.12 Manufacture outside the geographical limits of IECQ supervising inspectorates**

A manufacturer may have his approval extended to cover part or complete manufacture of resistors in a factory of his company located in a country which does not have an NSI for the technical area concerned, whether this country is an IECQ member country or not, provided that the requirements of QC 001002-3, 2.5.1.3 are met.

#### **3.14.2 Eligibility for technology approval**

*Replace* 2.1 of EN 100114-6 *by* QC 001002-3, 6.2.1

#### **3.14.3 Application of technology approval**

*Replace* 2.2 of EN 100114-6 *by* QC 001002-3, 6.2.2

#### **3.14.4 Description of technology**

*Replace* clause 4 of EN 100114-6 *by* QC 001002-3, 6.4

#### **3.14.5 Demonstration and verification of the technology**

*Replace* clause 5 of EN 100114-6 *by* QC 001002-3, 6.5

*Replace* clause 6 of EN 100114-6 *by* QC 001002-3, 6.6

#### **3.14.6 Granting of technology approval**

*Replace* 7.3 of EN 100114-6 *by* QC 001002-3, 6.7.3



### 3.14.7 Maintenance of technology approval

Replace 7.5 of EN 100114-6 by QC 001002-3, 6.7.5.

## 4 Test and measurement procedures

### 4.17.2

Replace the whole subclause by:

**4.17.2** All resistors except surface mount resistors shall be subjected to test Ta of IEC 60068-2-20 either using the solder bath method (method 1) or the soldering iron method (method 2) as prescribed in the relevant specification. For leaded resistors preferably method 1 shall be used.

### 4.17.5

Replace the whole subclause by:

**4.17.5** Surface mount resistors shall be tested according to EN 60068-2-58, Clause 6.

### 4.35.1 Needle flame test

Replace IEC 60695-2-2 by IEC 60695-11-5

### 4.40

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Replace the whole clause by:

### 4.40 Electrostatic discharge SIST EN 60115-1:2002/A11:2008

**4.40.1** The ability of the resistors to withstand electrostatic discharge (ESD-) pulses shall be tested with the human body model (HBM) according to EN 61340-3-1.

**4.40.2** The resistor shall be tested under standard atmospheric conditions. The method of mounting shall be specified in the detail specification.

**4.40.3** The resistance shall be measured as specified in 4.5.

**4.40.4** The pulse test voltage shall be specified in the detail specification, preferably 300 V, 500 V, 800 V, 1 000 V, 1 500 V, 2 000 V, 3 000 V, 4 000 V.

The pulse voltage shall be applied to the specimen 6 times (3 times positive and 3 times negative polarity) unless otherwise specified in the detail specification. The minimum time between pulses shall be 1 s.

**4.40.5** The resistors shall be visually examined. There shall be no visible damage and the marking shall be legible.

**4.40.6** The resistance shall be measured as specified in 4.5. The change of resistance with respect to the value measured in 4.40.3 shall not exceed the value prescribed in the detail specification.