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Potentiometers for use in electronic equipment -- Part 1: Generic specification (IEC 60393-1:2008 (EQV))

I.S. EN 60393-1:2009

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English version

**Potentiometers for use in electronic equipment -
Part 1: Generic specification
(IEC 60393-1:2008)**

Potentiomètres utilisés
dans les équipements électroniques -
Partie 1: Spécification générique
(CEI 60393-1:2008)

Potentiometer zur Verwendung
in Geräten der Elektronik -
Teil 1: Fachgrundspezifikation
(IEC 60393-1:2008)

This European Standard was approved by CENELEC on 2009-07-01. 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.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

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Foreword

The text of document 40/1897/FDIS, future edition 3 of IEC 60393-1, prepared by IEC TC 40, Capacitors and resistors for electronic equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60393-1 on 2009-07-01.

This European Standard supersedes CECC 41 000:1976.

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) 2010-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-07-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60393-1:2008 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

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 60027-1	- ¹⁾	Letter symbols to be used in electrical technology - Part 1: General	EN 60027-1	2006 ²⁾
IEC 60050	Series	International Electrotechnical Vocabulary (IEV)	-	-
IEC 60062	- ¹⁾	Marking codes for resistors and capacitors	EN 60062 + corr. January	2005 ²⁾ 2007
IEC 60063 A1 A2	1963 1967 1977	Preferred number series for resistors and capacitors	-	-
IEC 60068-1 + corr. October + A1	1988 1988 1992	Environmental testing - Part 1: General and guidance	EN 60068-1	1994
IEC 60068-2-1 A1 A2	1990 1993 1994	Environmental testing - Part 2: Tests - Tests A: Cold	EN 60068-2-1 ³⁾ A1 A2	1993 1993 1994
IEC 60068-2-2 A1 A2	1974 1993 1994	Environmental testing - Part 2: Tests - Tests B: Dry heat	EN 60068-2-2 ⁴⁾ A1 A2	1993 1993 1994
IEC 60068-2-6	- ¹⁾	Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008 ²⁾
IEC 60068-2-13	- ¹⁾	Environmental testing - Part 2: Tests - Test M: Low air pressure	EN 60068-2-13	1999 ²⁾
IEC 60068-2-14 + A1	1984 1986	Environmental testing - Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999
IEC 60068-2-17	- ¹⁾	Environmental testing - Part 2: Tests - Test Q: Sealing	EN 60068-2-17	1994 ²⁾
IEC 60068-2-20 + A2	1979 1987	Environmental testing - Part 2: Tests - Test T: Soldering	HD 323.2.20 S3 ⁵⁾	1988
IEC 60068-2-21	- ¹⁾	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	2006 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

³⁾ EN 60068-2-1 is superseded by EN 60068-2-1:2007, which is based on IEC 60068-2-1:2007.

⁴⁾ EN 60068-2-2 includes supplement A:1976 to IEC 60068-2-2; it is superseded by EN 60068-2-2:2007, which is based on IEC 60068-2-2:2007

⁵⁾ HD 323.2.20 S3 is superseded by EN 60068-2-20:2008, which is based on IEC 60068-2-20:2008.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-27	- ¹⁾	Environmental testing - Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	2009 ²⁾
IEC 60068-2-29	- ¹⁾	Environmental testing - Part 2: Tests - Test Eb and guidance: Bump	EN 60068-2-29 ⁶⁾	1993 ²⁾
IEC 60068-2-30	- ¹⁾	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005 ²⁾
IEC 60068-2-45 A1	1980 1993	Environmental testing - Part 2: Tests - Test XA and guidance: Immersion in cleaning solvents	EN 60068-2-45 A1	1992 1993
IEC 60068-2-58	- ¹⁾	Environmental testing - Part 2-58: Tests - Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)	EN 60068-2-58 + corr. December	2004 ²⁾ 2004
IEC 60068-2-78	- ¹⁾	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2001 ²⁾
IEC 60410	- ¹⁾	Sampling plans and procedures for inspection by attributes	-	-
IEC 60617	Data- base	Graphical symbols for diagrams	-	-
IEC 60915	- ¹⁾	Capacitors and resistors for use in electronic equipment - Preferred dimensions of shaft ends, bushes and for the mounting of single-hole, bush-mounted, shaft-operated electronic components	EN 60915 + corr. April	2007 ²⁾ 2009
IEC 61249-2-7	- ¹⁾	Materials for printed boards and other interconnecting structures - Part 2-7: Reinforced base materials, clad and unclad - Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad	EN 61249-2-7 + corr. September	2002 ²⁾ 2005
IEC QC 001002-3	- ¹⁾	IEC Quality Assessment System for Electronic Components (IECQ) - Rules of Procedure - Part 3: Approval procedures	-	-
IEC QC 001005	- ¹⁾	IEC Quality Assessment System for Electronic Components (IECQ) - Register of films, products and services approved under the IECQ system, including ISO 9000	-	-
ISO 1000	- ¹⁾	SI units and recommendations for the use of their multiples and of certain other units	-	-
ISO 9000	- ¹⁾	Quality management systems - Fundamentals and vocabulary	EN ISO 9000	2005 ²⁾

⁶⁾ EN 60068-2-29 is superseded by EN 60068-2-27:2009, which is based on IEC 60068-2-27:2008.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

POTENTIOMETERS FOR USE IN ELECTRONIC EQUIPMENT –**Part 1: Generic specification**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60393-1 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This third edition cancels and replaces the second edition published in 1989 and constitutes a technical revision, including minor revisions related to tables, figures and references.

This edition contains the following significant technical changes with respect to the previous edition:

- implementation of Annex H which replaces Section 3 of the previous edition.

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

FDIS	Report on voting
40/1897/FDIS	40/1914/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.

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This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts of the IEC 60393 series, under the general title *Potentiometers for use in electronic equipment*, can be found on the IEC web site.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

POTENTIOMETERS FOR USE IN ELECTRONIC EQUIPMENT –

Part 1: Generic specification

1 General

1.1 Scope

This part of IEC 60393 is applicable to all types of resistive potentiometers, including lead-screw actuated types, presets, multi-turn units, etc. to be used in electronic equipment.

It establishes standard terms, inspection procedures and methods of test for use in sectional and detail specifications of electronic components for quality assessment or any other purpose.

It has been mainly written, and the test methods described, to conform to the widely used single-turn rotary potentiometer with an operating shaft.

For other types of potentiometers:

- the angle of rotation may be several turns;
- the reference to an operating shaft shall apply to any other actuating device;
- the angular rotation shall be taken to mean mechanical travel of the actuating device;
- a value for force shall be prescribed instead of a value for torque if the actuating device moves in a linear instead of a rotary manner.

These alternative prescriptions will be found in the sectional or detail specification.

When a component is constructed as a variable resistor, i.e. as a two-terminal device, the detail specification shall prescribe the modifications required in the standard tests.

1.2 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.

IEC 60027-1, *Letter symbols to be used in electrical technology – Part 1: General*

IEC 60050 (all parts), *International Electrotechnical Vocabulary (IEV)*

IEC 60062, *Marking codes for resistors and capacitors*

IEC 60063:1963, *Preferred number series for resistors and capacitors*
Amendment 1 (1967)
Amendment 2 (1977)

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests – Tests A: Cold*
Amendment 1 (1993)
Amendment 2 (1994)

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