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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 60393-1:2009 sisaldab Euroopa standardi EN 60393-1:2009 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 30.09.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 30.07.2009.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 60393-1:2009 consists of the English text of the European standard EN 60393-1:2009.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 30.09.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 30.07.2009.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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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.

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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

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.

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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.

<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.

CONTENTS

FOREWORD.....	6
1 General.....	8
1.1 Scope.....	8
1.2 Normative references.....	8
2 Technical data.....	10
2.1 Units and symbols.....	10
2.2 Terms and definitions.....	10
2.3 Preferred values.....	28
2.4 Marking.....	28
3 Assessment procedures.....	28
4 Test and measurement procedures.....	28
4.1 General.....	28
4.2 Standard atmospheric conditions.....	29
4.3 Drying.....	30
4.4 Visual examination and check of dimensions.....	30
4.5 Continuity (except for continuously rotating potentiometers).....	32
4.6 Element resistance.....	32
4.7 Terminal resistance.....	33
4.8 Maximum attenuation.....	33
4.9 Resistance law (conformity).....	33
4.10 Matching of the resistance law (for ganged potentiometers only).....	34
4.11 Switch contact resistance (when appropriate).....	34
4.12 Voltage proof (insulated styles only).....	38
4.13 Insulation resistance (insulated styles only).....	39
4.14 Variation of resistance with temperature.....	40
4.15 Rotational noise.....	42
4.16 Contact resistance at low-voltage levels.....	44
4.17 Setting ability (adjustability) and setting stability.....	45
4.18 Starting torque.....	49
4.19 Switch torque.....	49
4.20 End stop torque.....	50
4.21 Locking torque.....	50
4.22 Thrust and pull on shaft.....	51
4.23 Shaft run-out.....	52
4.24 Lateral run-out.....	53
4.25 Pilot (or spigot) diameter run-out.....	53
4.26 Shaft end play.....	54
4.27 Backlash.....	55
4.28 Dither.....	57
4.29 Output smoothness.....	58
4.30 Robustness of terminals.....	59
4.31 Sealing.....	60
4.32 Solderability.....	61
4.33 Resistance to soldering heat.....	61
4.34 Change of temperature.....	62

4.35	Vibration.....	63
4.36	Bump	64
4.37	Shock.....	64
4.38	Climatic sequence	65
4.39	Damp heat, steady state.....	67
4.40	Mechanical endurance (potentiometers)	68
4.41	AC endurance testing of mains switches on capacitive loads.....	71
4.42	DC endurance testing of switches	73
4.43	Electrical endurance.....	74
4.44	Component solvent resistance.....	78
4.45	Solvent resistance of the marking.....	78
4.46	Microlinearity.....	79
4.47	Mounting (for surface mount potentiometers).....	81
4.48	Shear (adhesion) test.....	83
4.49	Substrate bending test (formerly bond strength of the end face plating).....	83
4.50	Solderability (for surface mount potentiometers).....	83
4.51	Resistance to soldering heat (for surface mount potentiometers).....	83
Annex A (normative) Rules for the preparation of detail specifications for capacitors and resistors for electronic equipment		84
Annex B (normative) Interpretation of sampling plans and procedures as described in IEC 60410 for use within the IEC Quality Assessment System for Electronic Components		85
Annex C (normative) Measuring methods for rotational noise.....		86
Annex D (normative) Apparatus for measuring mechanical accuracy		89
Annex E (normative) Measuring method for microlinearity.....		90
Annex F (normative) Preferred dimensions of shaft ends, bushes and for the mounting hole, bush-mounted, shaft-operated electronic components.....		92
Annex G (informative) Example of common potentiometer's law		93
Annex H (normative) Quality assessment procedures		95
Figure 1 – Shaft-sealed potentiometer		14
Figure 2 – Shaft- and panel-sealed potentiometer.....		14
Figure 3 – Fully sealed potentiometer		14
Figure 4 – Linear law		16
Figure 5 – Logarithmic law		16
Figure 6 – Inverse logarithmic law.....		16
Figure 7 – Output ratio.....		17
Figure 8 – Loading error		18
Figure 9 – Total mechanical travel (or angle of rotation)		18
Figure 10 – Conformity		20
Figure 11 – Absolute conformity.....		20
Figure 12 – Linearity.....		21
Figure 13 – Independent linearity.....		22
Figure 14 – Zero-based linearity		23
Figure 15 – Absolute linearity		24

Figure 16 – Terminal based linearity	25
Figure 17 – Effective tap width.....	25
Figure 18 – Backlash	27
Figure 19 – Example of insulation resistance and voltage proof test jig for surface mount potentiometers	39
Figure 20 – Test circuit contact resistance	45
Figure 21 – Measuring circuit for setting ability (as divider).....	46
Figure 22 – Measuring circuit for setting ability (as current controller).....	47
Figure 23 – Shaft run-out	52
Figure 24 – Lateral run-out	53
Figure 25 – Pilot (spigot) diameter run-out.....	54
Figure 26 – Shaft end play.....	55
Figure 27 – Test circuit for measurement of backlash	56
Figure 28 – Measurement of backlash.....	57
Figure 29 – Test circuit for measurement of output smoothness.....	58
Figure 30 – The circuit for continuous monitoring of the contact resistance	71
Figure 31 – Test circuit a.c. endurance testing.....	72
Figure 32 – Test circuit d.c. endurance testing.....	73
Figure 33 – Example of microlinearity measurement	79
Figure 34 – Block diagram of a circuit for evaluation of microlinearity	80
Figure 35 – Example of simultaneous evaluation of linearity and microlinearity	80
Figure 36 – Suitable substrate for mechanical and electrical tests (may not be suitable for impedance measurements).....	82
Figure 37 – Suitable substrate for electrical tests.....	82
Figure C.1 – Measuring circuit for method A, rotational noise	87
Figure C.2 – Measuring circuit for CRV	87
Figure C.3 – Measuring circuit for ENR.....	88
Figure E.1 – Block diagram of a digital reference unit (synthetic high-precision master).....	90
Figure G.1 – Definition of rotation (shaft-end view)	93
Figure G.2 – Linear law, without centre tap.....	94
Figure G.3 – Linear law, with centre tap.....	94
Figure G.4 – Logarithmic law, without tap	94
Figure G.5 – Logarithmic law, with tap	94
Figure G.6 – Inverse logarithmic law without tap	94
Figure G.7 – Inverse logarithmic law with tap.....	94
Figure H.1 – General scheme for capability approval	98
Table 1 – Standard atmospheric conditions.....	30
Table 2 – Measuring voltages	32
Table 3 – Calculation of resistance value(R) and change in resistance (ΔR)	41
Table 4 – Calculation of temperature differences (ΔT).....	41
Table 5 – Current values (IB_0)	43
Table 6 – Moving contact current	48
Table 7 – End stop torque.....	50

Table 8 – Locking torque	50
Table 9 – Shaft torque	51
Table 10 – Thrust and pull	51
Table 11 – Thrust and pull	52
Table 12 – Backlash	57
Table 13 – Dither for non-wire wound types	57
Table 14 – Dither for wire wound types (under consideration)	58
Table 15 – Tensile force	59
Table 16 – Number of cycles.....	66
Table 17 – Number of cycles.....	69
Table 18 – Number of operations	73
Table 19 – Panel size	75
Table G.1 – Resistance law and code letter	93

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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)

- IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests – Tests B: Dry heat*
Amendment 1 (1993)
Amendment 2 (1994)
- IEC 60068-2-6, *Environmental testing – Part 2: Tests – Test Fc : Vibration (sinusoidal)*
- IEC 60068-2-13, *Environmental testing – Part 2: Tests – Test M: Low air pressure*
- IEC 60068-2-14:1994, *Environmental testing – Part 2: Tests – Test N: Change of temperature*
Amendment 1 (1986)
- IEC 60068-2-17, *Environmental testing – Part 2: Tests – Test Q: Sealing*
- IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests – Test T: Soldering*
Amendment 2 (1987)
- IEC 60068-2-21, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*
- IEC 60068-2-27, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*
- IEC 60068-2-29, *Environmental testing – Part 2: Tests – Test Eb and guidance: Bump*
- IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test dB : Damp heat, cyclic (12 h + 12 hour cycle)*
- IEC 60068-2-45:1980, *Environmental testing – Part 2: Tests – Test XA and guidance: Immersion in cleaning solvents*
Amendment 1 (1993)
- IEC 60068-2-58, *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)*
- IEC 60068-2-78, *Environmental testing – Part 2-78 – Test Cab: Damp heat, steady state*
- IEC 60410, *Sampling plans and procedures for inspection by attributes*
- IEC 60617, *Graphical symbols for diagrams*
- IEC 60915, *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*
- IEC 61249-2-7, *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*
- IECQ 001002-3, *IEC Quality Assessment System for Electronic Components (IECQ) – Rules of procedure – Part 3: Approval procedures*
- IECQ 001005, see www.iecq.org/certificates for relevant information
- ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units*