SVENSK STANDARD

SS-EN IEC 60477-1, utg 1:2022

Fastställd	Sida	Ansvarig kommitté
2022-06-15	1 (1+29)	SEK TK 85

Elektriska mätinstrument – Laboratoriemotstånd för likström

Laboratory resistors –
Part 1: Laboratory DC resistors

Som svensk standard gäller europastandarden EN IEC 60477-1:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60477-1:2022.

Nationellt förord

Europastandarden EN IEC 60477-1:2022

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60477-1, First edition, 2022 - Laboratory resistors - Part 1: Laboratory DC resistors**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60477, utgåva 1, 1998 med ändring SS-EN 60477/A1:1998, gäller ej fr o m 2025-05-04.

ICS 17.220.20; 31.040.01

Denna standard är fastställd av SEK Svensk Elstandard,
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Postadress: Box 1284, 164 29 KISTA
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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SEK är Sveriges röst i standardiseringsarbetet inom elområdet

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Stora delar av arbetet sker internationellt

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Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60477-1

May 2022

ICS 17.220.20; 31.040.01

Supersedes EN 60477:1997 + A1:1997

English Version

Laboratory resistors - Part 1: Laboratory DC resistors (IEC 60477-1:2022)

Résistances de laboratoire - Partie 1: Résistances de laboratoire à courant continu (IEC 60477-1:2022)

Labor-Widerstände - Teil 1: Labor-Gleichstromwiderstände (IEC 60477-1:2022)

This European Standard was approved by CENELEC on 2022-05-04. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60477-1:2022 E

SEK Svensk Elstandard

SS-EN IEC 60477-1, utg 1:2022

European foreword

The text of document 85/821/FDIS, future edition 1 of IEC 60477-1, prepared by IEC/TC 85 "Measuring equipment for electrical and electromagnetic quantities" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60477-1:2022.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023-02-04
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2025-05-04

This document supersedes EN 60477:1997 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60477-1:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60051 (series)	NOTE Harmonized as EN IEC 60051 (series)
IEC 60258	NOTE Harmonized as HD 368 S1
IEC 60359:2001	NOTE Harmonized as EN 60359:2002 (not modified)

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60027	series	Letter symbols to be used in electrical technology	EN IEC 60027	series
IEC 60417	series	Graphical symbols for use on equipment	-	-
IEC 61010-1	2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	EN 61010-1	2010
+ A1 (mod)	2016		+ A1	2019
IEC 61010-2-030	-	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-030: Particular requirements for equipment having testing or measuring circuits	EN IEC 61010-2-030	-

IEC 60477-1

Edition 1.0 2022-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Laboratory resistors –
Part 1: Laboratory DC resistors

Résistances de laboratoire –
Partie 1: Résistances de laboratoire à courant continu

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LABORATORY RESISTORS –

Part 1: Laboratory DC resistors

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
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IEC 60477-1 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities. It is an International Standard.

This first edition cancels and replaces the first edition of IEC 60477 published in 1974, and its Amendment 1:1997. This edition constitutes a technical revision.

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

a) extended the resistor accuracy classes;
b) deleted the resistor accuracy class expression in parts per million (ppm);
c) excluded the active resistor from the scope of this document;
d) updated the terms and definitions according to new IEC 60050 series;
e) changed the term "resistance decade" to "resistance dial" to cover the multi-dial resistors with other resistance step values;
f) updated the intrinsic error to intrinsic uncertainty according to IEC 60359;

g) added the limits of relative stability for resistors of classes 0,000 05 to 0,01;
h) added the requirements of high voltage resistors;
i) updated the safety symbols and requirements according to the new IEC 61010 series;
j) updated the insulation resistance requirements of resistors;
k) added the requirements of temperature coefficient;
l) updated the temperature requirements for transport and storage of resistors.

The text of this International Standard is based on the following documents:

Draft	Report on voting
85/821/FDIS	85/824/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

A list of all parts in the IEC 60477 series, published under the general title *Laboratory resistors*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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

LABORATORY RESISTORS –

Part 1: Laboratory DC resistors

1 Scope

This document applies to resistors intended for use as laboratory DC resistors (hereinafter referred to as "resistors") comprising standard resistors, single or multiple resistors of accuracy Classes 0,000 05 to 10 and single or multi-dial resistors of accuracy Classes 0,000 5 to 10.

This document does not apply to:

1) resistors which are intended for use solely as permanently mounted circuit components,
2) resistors used on alternating current or on pulsed current,
3) active resistors,
4) series resistors and shunts which are considered as accessories of electrical measuring instruments in the relevant IEC document (examples of these are as follows).

EXAMPLE 1 IEC 60051 series: Recommendations for direct acting indicating analogue electrical measuring instruments and their accessories.

EXAMPLE 2 IEC 60258: Direct acting recording electrical measuring instruments and their accessories.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 (all parts), *Letter symbols to be used in electrical technology*

IEC 60417 (all parts), *Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
IEC 61010-1:2010/AMD1:2016

IEC 61010-2-030, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for equipment having testing or measuring circuits*