BS EN IEC 60477-1:2022

BSI Standards Publication

Laboratory resistors

Part 1: Laboratory DC resistors

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National foreword

This British Standard is the UK implementation of EN IEC 60477-1:2022. It is identical to IEC 60477-1:2022. It supersedes BS EN 60477:1999, which will be withdrawn on 7 December 2022.

The UK participation in its preparation was entrusted to Technical Committee PEL/85, Measuring equipment for electrical and electromagnetic quantities.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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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)

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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

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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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-05-04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)

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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	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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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;

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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.

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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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

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