SLOVENSKI STANDARD
SIST EN 60477:2000

01-september-2000

Laboratorijski upori za enosmerni tok (IEC 60477:1974)

Laboratory d.c. resistors

Gleichstrom-Meßwiderstände

Résistances de laboratoire à courant continu

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Laboratory d.c. resistors
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Résistances de laboratoire à courant continu
(CEI 60477:1974)

Gleichstrom-Meßwiderstände
(IEC 60477:1974)

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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

The text of the International Standard IEC 60477:1974, prepared by IEC TC 85, Measuring equipment for electromagnetic quantities, was approved by CENELEC as HD 249 S1 on 1975-10-08.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60477 on 1997-10-01.

The following date was 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) 1998-09-01

Endorsement notice

The text of the International Standard IEC 60477:1974 was approved by CENELEC as a European Standard without any modification.

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Résistances de laboratoire à courant continu

Laboratory d.c. resistors

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http: //www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LABORATORY D.C. RESISTORS

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This recommendation has been prepared by Sub-Committee 13B, Indicating Instruments, of IEC Technical Committee No. 13, Measuring Instruments.

Drafts were discussed at the meetings held in Budapest in 1970 and in Stresa in 1971. As a result of this latter meeting, a final draft, document 13B(Central Office)38, was submitted to the National Committees for approval under the Six Months' Rule in October 1972.

The following countries voted explicitly in favour of publication:

Argentina	Hungary
Australia	Israel
Austria	Japan
Belgium	Portugal
Canada	South Africa (Republic of)
Denmark	Sweden
Egypt	Turkey
Finland	United Kingdom
France	Yugoslavia
Germany	

LABORATORY D.C. RESISTORS

1. Scope

1.1 This recommendation applies to resistors intended for use as laboratory d.c. resistors (hereinafter referred to as "resistors") comprising single or multiple resistors of accuracy Classes 0.0005 ... 0.2 (5 ppM ... 2000 ppM) and single or multi-decade resistors of accuracy Classes 0.0005 ... 5 (5 ppM ... 50 000 ppM).

1.2 This recommendation does not apply to:

— resistors which are intended for use solely as permanent mounted circuit components,

— resistors used on alternating current or on pulsed currents,

— series resistors and shunts which are considered as accessories of electrical measuring instruments in the relevant IEC publications.

Note. — Examples are the following publications:
Publication 51: Recommendations for Direct Acting Indicating Electrical Measuring Instruments and Their Accessories.
Publication 258: Direct Recording Electrical Measuring Instruments and Their Accessories.

2. Definitions

2.1 *General terms*

2.1.1 *Point of connection*

A single terminal for both current and potential or a pair of terminals, one each for current and for potential.

2.1.2 *Single resistor*

A device which provides a single definite resistance value between certain points of connection.

2.1.3 *Multiple resistor*

An assembly comprising a number of resistors which are accessible either singly or in combination and which provides definite resistance values between certain points of connection.

2.1.4 *Measurement standard resistor*

A single or multiple resistor intended for reference measurement purposes.

2.1.5 *Resistance decade*

A multiple resistor which, by means of a switching device, generally allows the selection of a combination of resistance values rising in equal steps, each step corresponding to an increment of a decadic resistance value (e.g. 0.1 Ω or 1 Ω or 10 Ω ...).

Note. — A resistance decade generally allows a selection of 10, 11 or 12 resistance values (including zero).

2.1.6 *Multi-decade resistor*

A multiple resistor comprising a number of resistance decades which are generally connected in series.

2.1.7 *Leakage current screen*

A path which conducts leakage currents to earth or to a fixed point so that they do not pass through the resistor or other parts of the measuring circuit.

2.1.8 *Electrostatic screen*

A covering in the form of metal foil, fine mesh wire netting or conductive coating intended to protect the enclosed space from external electrostatic effects.

2.2 *Characteristic values*

2.2.1 *Nominal value*

A value which designates a single resistor or a selected combination of a multiple resistor.

2.2.2 *Actual value*

A value obtained under specified test conditions and at a specified time. For a multiple resistor with switching devices having a zero position, the actual value for a given setting is the value obtained for that setting minus the actual residual resistance (see Sub-clause 2.2.5.2).

Note. — Since the true value cannot be determined by measurement, a value traceable to national measurement standards, or a measurement standard agreed upon by manufacturer and user, and having a stated uncertainty, is used in place of the true value. This value, known as the actual value, may be found by applying small corrections according to the known variations with influence quantities, if necessary.

2.2.3 *Certified value*

The actual value, with its associated uncertainty, at the date when it is reported in the accompanying document.

2.2.4 *Fiducial value*

A value to which the errors of a resistor are referred in order to specify its accuracy. The fiducial value corresponds to:

— the selected value for a resistance decade,

— the certified value for a single or a multiple resistor of Classes 0.0005 . . . 0.01 (5 ppM . . . 100 ppM),

— the nominal value for a single or a multiple resistor of Classes 0.02 . . . 5 (200 ppM . . . 50 000 ppM).

2.2.5 *Residual resistance*

The resistance value between the points of connection of a multiple resistor having switching devices with a zero position, when all switching elements are set to the zero position.

2.2.5.1 *Nominal residual resistance*

A rounded off value which designates the value of the residual resistance.

2.2.5.2 *Actual residual resistance*

A value of residual resistance obtained under specified conditions and at a specified time.

2.3 *Influence quantities, reference conditions, nominal range of use*

2.3.1 *Influence quantity*

A quantity which is liable to cause unwanted variation in the value of a resistor.

Note. — Generally, it covers such quantities as ambient temperature and humidity, position and power dissipation. These quantities will have reference ranges and nominal ranges of use, which are given in the appropriate tables.

2.3.2 *Limiting values of an influence quantity*

Extreme values which an influence quantity may assume without the resistor being damaged or permanently altered in such a way that it no longer satisfies the requirements of its accuracy class, e.g. the limiting power dissipation (see Sub-clause 6.3.2).

2.3.3 *Reference conditions*

The specified conditions under which the resistor meets the requirements concerning intrinsic errors. For each influence quantity, these conditions may be either a fixed value or a range of values.

2.3.3.1 *Reference value*

A single value of an influence quantity at which (within the tolerance stated in Clause 5) the resistor complies with the requirements concerning intrinsic errors.