SLOVENSKI STANDARD
SIST EN 60564:1999

01-julij-1999

Enosmerni mostički za meritve upornosti (IEC 60564:1977 + A1:1981)

D.C. bridges for measuring resistance

Gleichstrom-Widerstandsmeßbrücken

Ponts à courant continu pour mesure de résistance

Ta slovenski standard je istoveten z: **EN 60564:1993**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities

SIST EN 60564:1999 **en**

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPÄISCHE NORM

EN 60564

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Descriptors: Measuring instrument, resistance measurement, bridge for measuring resistance, DC bridge

ENGLISH VERSION

D.C. bridges for measuring resistance
(IEC 564:1977 + A1:1981)

Ponts à courant continu pour mesure de résistance
(CEI 564:1977 + A1:1981)

Gleichstrom-Widerstandsmeßbrücken

(IEC 564:1977 + A1:1981)

This European Standard was approved by CENELEC on 1993-03-09. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

At the request of 72 Technical Board, HD 615 S1:1992 (IEC 564:1977 + A1:1981) was submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard was approved by CENELEC as EN 60564 on 9 March 1993.

The following dates were fixed:

- latest date of publication of an identical national standard	(dop)	1994-03-01
- latest date of withdrawal of conflicting national standards	(dow)	-

Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

ENDORSEMENT NOTICE

The text of the International Standard IEC 564:1977 and its amendment 1:1981 was approved by CENELEC as a European Standard without any modification.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
27	series	Letter symbols to be used in electrical technology	HD 245	series
51*	-	Recommendations for direct acting indicating electrical measuring instruments and their accessories	-	-
160	1963	Standard atmospheric conditions for test purposes	-	-
414 (mod)	1973	Safety requirements for indicating and recording electrical measuring instruments and their accessories	HD 215 S1	1974

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* superseded by IEC 51 series - Direct acting indicating analogue electrical measuring instruments and their accessories - which is harmonized as EN 60051 series

NORME INTERNATIONALE

INTERNATIONAL STANDARD

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Ponts à courant continu pour mesure de résistance

D.C. bridges for measuring resistance

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

D.C. BRIDGES FOR MEASURING RESISTANCE

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 recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 13B, Electrical Measuring Equipment, of IEC Technical Committee No. 13, Electrical Measurements.

Drafts were discussed at the meetings held in Toronto in 1972 and in Bucharest in 1974. As a result of this latter meeting, the draft, Document 13B(Central Office)49, was submitted to the National Committees for approval under the Six Months' Rule in July 1975.

The following countries voted explicitly in favour of publication:

Argentina	Poland
Austria	Romania
Belgium	South Africa (Republic of)
Denmark	Sweden
France	Switzerland
Germany	Turkey
Hungary	United Kingdom
Israel	United States of America
Italy	Yugoslavia
Japan	

Other IEC publications quoted in this standard:

Publication Nos. 27: Letter Symbols to be Used in Electrical Technology.
51: Recommendations for Direct Acting Indicating Electrical Measuring Instruments and their Accessories.
160: Standard Atmospheric Conditions for Test Purposes.
414: Safety Requirements for Indicating and Recording Electrical Measuring Instruments and their Accessories.

D.C. BRIDGES FOR MEASURING RESISTANCE

1. Scope

This standard applies to d.c. bridges for measuring resistance. It also applies to auxiliary equipment which is a built-in part of the bridge.

This standard does not apply to bridge comparators*, nor to self-balancing bridges nor to those which employ graduations on the null detector to obtain a part of the indicated value, nor to external auxiliary equipment used with the bridge.

2. Terms and definitions

For the purposes of this standard, the following definitions apply:

2.1 *D.C. bridge for measuring resistance (hereinafter designated "bridge")*

The assembly of at least three resistance arms which, together with a test resistor, forms a bridge network; a source of direct current and a null detector are also required for its operation: these may or may not be built-in. At balance, there exists a calculable relationship between the resistance values of the resistors.

Note. — A d.c. bridge for measuring resistance may be intended to measure two-terminal or four-terminal resistors each with or without a leakage current screen (circuit): it will be termed accordingly a two-terminal bridge or a four-terminal bridge with or without provision for a leakage current screen (circuit).

2.2 *Test resistor*

The resistor whose resistance value is to be measured.

2.3 *Two-terminal resistor*

A resistor having a single combined current-potential terminal at each end.

2.4 *Four-terminal resistor*

A resistor having two terminals at each end, one for connection into a current-carrying circuit and one for connection to a potential measuring circuit.

Note. — The value of the resistance is defined as the quotient of the potential difference between the two potential terminals to the current entering and leaving the current terminals, provided that no current is drawn from the potential terminals.

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* A bridge comparator is a device intended to compare two resistors, e.g. a two-arm adjustable ratio set.

2.5 *Resistor with leakage current screen (circuit)*

A resistor having a leakage current screen (circuit) connected to a separate terminal, which is often called the "guard terminal".

Note. — A resistor with leakage current screen (circuit) may be represented as a delta network consisting of an equivalent value of resistance connected between each pair of terminals. Of these three resistances, the resistance between the two main terminals is the main equivalent resistance which is intended to be measured. The other two resistances of the delta network are usually insulation (leakage) resistances which, for very high values of the main equivalent resistance, may be of the same order or smaller than it. The main equivalent resistance may appear either as a two-terminal resistor or as a four-terminal resistor.

2.6 *Resistance decade*

A multiple resistor which, usually by means of a switching device, allows the selection of a combination of resistance values rising in equal steps, each step corresponding to an increment of a decadic resistance value such as, for example, 0.1 Ω, 1 Ω or 10 Ω.

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

2.7 *Range-changing device*

A switch or similar device whereby the effective range may be multiplied by a factor (e.g. 0.1) which is known as the "range factor" or "range multiplier".

2.8 *Measuring dials*

The dials from which, taking into account the setting of the range-changing device(s), if any, the value of the test resistor is determined.

2.9 *Connecting resistance (potential)*

For a four-terminal bridge, the resistance of the conductor connecting a potential terminal of the bridge to the corresponding potential terminal of the test resistor, plus the resistance of the potential conductor inside the test resistor.

2.10 *Link resistance (current)*

For a four-terminal bridge, the resistance of the conductor connecting a current terminal of the bridge to the corresponding current terminal of the test resistor, plus the resistance of the current conductor inside the test resistor.

2.11 *Auxiliary equipment*

Additional equipment, which is or is not an integral part of the bridge, necessary to enable the bridge to operate accurately and safely as specified.

2.12 *Ripple content*

The ripple content of a d.c. supply, expressed as a percentage of the mean value of the supply is:

$$\frac{\text{r.m.s. value of the fluctuating component}}{\text{mean value of the supply}} \times 100$$