SLOVENSKI STANDARD
SIST EN 60618:2000

01-september-2000

Induktivni napetostni delilniki (IEC 60618:1978 + A1:1981)

Inductive voltage dividers

Induktive Spannungsteiler

Diviseurs de tension inductifs

Ta slovenski standard je istoveten z: **EN 60618:1997**

ICS:

29.200	Usmerniki. Pretvorniki. Stabilizirano električno napajanje	Rectifiers. Convertors. Stabilized power supply

SIST EN 60618:2000 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60618

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ICS 29.200

Supersedes HD 390 S2:1992

Descriptors: Laboratory inductive voltage dividers, definitions, requirements, symbols

English version

Inductive voltage dividers
(IEC 60618:1978 + A1:1981)

Diviseurs de tension inductifs
(CEI 60618:1978 + A1:1981)

Induktive Spannungsteiler
(IEC 60618:1978 + A1:1981)

This European Standard was approved by CENELEC on 1997-10-01. 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.

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.

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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 60618:1978 and its amendment 1:1981, prepared by IEC TC 85, Measuring equipment for electromagnetic quantities, was approved by CENELEC as HD 390 S2 on 1979-06-26.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60618 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

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60618:1978 and its amendment 1:1981 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

Publication	Year	Title	EN/HD	Year
IEC 60027	series	Letter symbols to be used in electrical technology	HD 245	series
IEC 60051	series	Recommendations for direct acting indicating electrical measuring instruments and their accessories	EN 60051	series
IEC 60160	1963	Standard atmospheric conditions for test purposes	-	-
IEC 60186 (mod)	1987	Voltage transformers	HD 554 S1[1)]	1992
IEC 60414 (mod)	1973	Safety requirements for indicating and recording electrical measuring instruments and their accessories	HD 215 S1[2)]	1974

1) HD 554 S1 includes A1:1988 to IEC 60186.

2) HD 215 S1 is superseded by EN 61010-1:1993/A2:1995, which is based on IEC 61010-1:1990/A2:1995.

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Inductive voltage dividers

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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 The Hague in 1975 and in Warsaw in 1976. As a result of this latter meeting, the draft, Document 13B(Central Office)55, was submitted to the National Committees for approval under the Six Months' Rule in November 1976.

The following countries voted explicitly in favour of publication:

Argentina	Japan
Australia	Poland
Belgium	Romania
Canada	South Africa (Republic of)
Denmark	Sweden
Egypt	Switzerland
Finland	Turkey
Germany	Union of Soviet Socialist Republics
Hungary	United Kingdom
Italy	United States of America

Other IEC publications quoted in this standard:

Publications 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.
186: Voltage Transformers.
414: Safety Requirements for Indicating and Recording Electrical Measuring Instruments and Their Accessories.

INDUCTIVE VOLTAGE DIVIDERS

1. Scope

This standard applies to inductive voltage dividers which are designed to provide a number of accurate ratios of alternating voltage over a range of frequencies and are intended to be used with negligible burden on their output.

Notes 1. — Transformer devices intended to supply a burden for measurement purposes are covered by IEC Publication 186, Voltage Transformers.

2. — In some multi-dial inductive voltage dividers, the setting circuit of the last (least significant) dial is resistive.

This standard does not apply to any auxiliary equipment used with inductive voltage dividers.

2. Terms and definitions

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

2.1 *Inductive voltage divider (for brevity, in this standard, referred to as "IVD")*

A device comprising one transformer or more than one interconnected transformers which, by means of switches or otherwise, can be set to provide output voltages equal to a selected proportion of the input voltage.

Notes 1. — Such IVDs include devices which are referred to as "precision autotransformers", "decade transformer dividers", "inductive dividers" and "ratio transformers".

2. — The main characteristics of IVDs are discussed in Appendix A.

3. — Some IVDs have a separate auxiliary winding (the magnetizing winding) which supplies the magnetization and losses of the magnetic core. Use of this winding greatly increases the input impedance of the measuring winding and reduces the errors of the IVD. These IVDs are called "2-stage IVDs".

2.2 *Transfer ratio*

The ratio of the complex value representing the open circuit output voltage (phasor) of an IVD to the complex value representing its input voltage (phasor).

2.2.1 *Nominal transfer ratio*

The ratio between the open circuit output voltage and the input voltage indicated either by the setting(s) of the switch(es) or by some other method of selecting the ratio.

Note. — This ratio is a pure number obtained by reading the instrument dials or similar indication.

2.3 *Fiducial value*

A value to which reference is made in order to specify the accuracy of an IVD.

The fiducial value for an IVD is unity, i.e. the ratio which corresponds (or which would correspond) to an open circuit output voltage equal to the input voltage.

2.4 *Transfer ratio error*

The value obtained by subtracting the true value of the transfer ratio from the value of the nominal transfer ratio.

Notes 1. — When the transfer ratio error is expressed as a proportion of the fiducial value, its numerical value remains unchanged, as the fiducial value is a ratio of unity.

2. — Although the transfer ratio error (e) is complex, containing both an in-phase (e_p) and a quadrature (e_q) component, for the purpose of this standard, only the modulus of this complex quantity is used.

The modulus of the transfer ratio error is expressed mathematically by:

$|e| = \sqrt{e_p^2 + e_q^2}$ (see Appendix A, Clause A7).

3. — The modulus of the transfer ratio error is expressed in per cent (%), in parts per million (ppm) or in proportional parts using scientific notation, of the fiducial value (see Clause 3 and Table I).

2.4.1 *Intrinsic transfer ratio error*

Transfer ratio error determined under reference conditions.

2.5 *Input impedance*

2.5.1 *Input impedance of the measuring winding*

Under specified conditions, the impedance presented to the source by an IVD when its output terminals are open circuited. For an IVD with a separate magnetizing winding ("2 stage"), this is the impedance at the measuring input terminals when the magnetizing winding is energized by a voltage of the same amplitude and phase as the voltage at the measuring input terminals.

Note. — The impedance of the magnetizing winding is not part of the input impedance of the measuring winding.

2.5.2 *Input impedance of the magnetizing winding*

Under specified conditions, the impedance presented to the source by the magnetizing winding of a 2-stage IVD when the measuring winding is energized by a voltage having the same amplitude and phase as the voltage at the magnetizing winding terminals.

Note. — The impedance of the measuring winding is not part of the input impedance of the magnetizing winding.

2.6 *Output impedance*

Under specified conditions, the impedance presented to any load by an IVD when its input terminals are connected together by a link of negligible impedance.

2.6.1 *Maximum output resistance*

The highest value of the resistive component of the output impedance at any setting of the switch(es) or other ratio adjusting arrangement.

2.6.2 *Maximum output inductance*

The inductance which, at a particular frequency, produces the highest value of the reactive component of the output impedance at any setting of the switch(es) or other ratio adjusting arrangement.