SLOVENSKI STANDARD
SIST EN 60742:1999

01-maj-1999

Nadomeġļa:
SIST EN 60742:1995

Isolating transformers and safety isolating transformers – Requirements (IEC 60742:1983 + A1:1992, modified)

Isolating transformers and safety isolating transformers - Requirements (IEC 60742:1983 + A1:1992, modified)

Trenntransformatoren und Sicherheitstransformatoren - Anforderungen

Transformateurs de séparation des circuits et transformateurs de sécurité - Règles

Ta slovenski standard je istoveten z: EN 60742:1995

ICS:

29.180 Transformatorji. Dušilke Transformers. Reactors

SIST EN 60742:1999 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60742

June 1995

ICS 29.180

Supersedes EN 60742:1989

Descriptors: Isolating transformers, safety isolating transformers, safety requirements, shaver transformers, transformers for toys, bell transformers, transformers for class III luminaires

English version

Isolating transformers and safety isolating transformers Requirements
(IEC 742:1983 + A1:1992, modified)

Transformateurs de séparation des circuits et transformateurs de sécurité Règles
(CEI 742:1983 + A1:1992, modifiée)

Trenntransformatoren und Sicherheitstransformatoren Anforderungen
(IEC 742:1983 + A1:1992, modifiziert)

This European Standard was approved by CENELEC on 1994-12-06. 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 BTTF 64-1 and according to the relevant CENELEC Technical Board decision, the text of the International Standard IEC 742:1983 and its amendment 1:1992 together with common modifications prepared by BTTF 64-1 was submitted to the formal vote and was approved by CENELEC as EN 60742 on 1994-12-06.

The following dates were 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) 1995-10-15
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1995-10-15

For products which have complied with EN 60742:1989 before 1995-10-15, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-10-15.

Appendices and annexes designated "normative" are part of the body of the standard.
Appendices and annexes designated "informative" are given for information only.
In this standard, appendices ID, II-1-A and A and annexes ZA, ZB and ZC are normative, appendices IA, IB, IC and IE are informative. Annexes ZA, ZB and ZC have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 742:1983 and its amendment 1:1992 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

4 General notes on tests

4.2 *After the 7th line add the following:*

For testing a series of transformers see Annex ZA.

4.12 *Delete the reference to subclause* "7.13" *(not existing, editorial)*

4.13 *Add the following paragraph:*

For IP 00 transformers the temperature rises of supports reported on Tables I and III are not necessarily applicable as maximum values, but shall be complying with the value declared by the manufacturer.

Add the following subclause:

4.14 Transformers with a protection index IP 00 the application of which is known are tested according to the manufacturer's mounting instructions.

7 Marking

7.1 *Add to the sixth indent on page 31 of IEC 742 the following:*

Not required for transformers rated below 25VA

13 Heating

Add the following under Table I:

If the temperature rise exceeds 45K at terminals for external conductors, another insulating material for wiring or a sleeve with a higher resistance to high temperatures shall be used according to the relevant harmonized standards. The use of such cable, cord or sleeve shall be required in the instruction sheet.

19 Components

19.1 *Add after the first paragraph:*

In some countries other requirements may be valid for components for which no Harmonization Document or European Standard exists.

Add before the explanation:

- where no IEC Standard exists for the relevant component or where the component is used not in accordance with its marking, the component is tested under the conditions occurring in the transformer, the number of samples being "in general" that required by a similar specification

19.3 *Add the following note:*

NOTE - While awaiting CENELEC harmonization of IEC 884-1 and IEC 83 the National standards for socket-outlets are applicable.

21 Supply connection and external flexible cables and cords

21.4 Add the following explanation:

NOTE - IEC code designations for cables and cords are replaced by the relevant designations according to HD 21 and HD 22.

22 Terminals for external conductors

Replace the note by:

NOTE - Terminals and clamping units according to EN 60999 and EN 60998 are equally acceptable.

CHAPTER II: SUPPLEMENTARY REQUIREMENTS FOR ISOLATING TRANSFORMERS

SECTION ONE - ISOLATING TRANSFORMERS FOR GENERAL USE, SHAVER TRANSFORMERS AND SHAVER SUPPLY UNITS

7 Marking

7.9 *Replace this subclause by the following:*

The following symbol shall be used:

for shaver supply units

APPENDIX II-I-A

REQUIREMENTS FOR SPECIAL SOCKET-OUTLETS
FOR SHAVER SUPPLY UNITS

Replace the text at the bottom of the page by the following:

While awaiting CLC harmonization of IEC 884-1 and IEC 83 the national standards for socket-outlets are applicable.

CHAPTER III: SUPPLEMENTARY REQUIREMENTS FOR SAFETY ISOLATING TRANSFORMERS

SECTION 2 - TRANSFORMERS FOR TOYS.

4 General notes on tests

Add:

4.12 *Not applicable because the toys standard does not cover voltages above 24 V a.c. or d.c.*

5 Rating

5.1 *Replace the existing subclause by:*

The rated output voltage shall not exceed 24 V a.c. or d.c.

SECTION 3 - BELL TRANSFORMERS

18 Construction

18.1 *Add the following explanation to 1):*

NOTE - The words "for certain types" denote transformers used in certain countries.

APPENDICES

Delete appendix A (as added by amendment 1)

Add the following annexes:

ANNEX ZA (Normative)

TESTING OF A SERIES OF TRANSFORMERS

The prescriptions of this annex are intended to facilitate the testing of a series of transformers.

ZA.1 If a series of transformers is to be tested, the number of samples to be tested may be reduced

Transformers can be considered as a series if

a) they are of the same family this meaning covered by the same Chapter and the same Section of the part dealing with supplementary requirements;

b) they are of the same construction this concept implying

1) they have lamination or core from the same pattern range

2) same type of winding technology (e.g. concentric or two chambers, same insulation system)

3) same assembled technology (e.g. open type, enclosed type, encapsulated type, impregnated, potted, ...)

4) same type of protection against overload (e.g. fuses, thermal cut out, ...)

c) they have same minimum and maximum ambient temperatures.

The following variations are permitted provided that the transformers comply in all other respects with the rules detailed above:

1) input voltage range

2) output voltage range

3) number of tapping and/or windings

4) frequency

5) rated output

ZA.2 The number of samples needed in case of testing a series of transformers as defined above shall be

for parameters 1) 2) and 3):

- two samples minimum and no more than four samples chosen in order to be sure that they represent the most unfavourable situation in the family to be tested;

NOTE 1 - The samples should be chosen according to the following rules:
- one of the lowest rated output with the highest voltages and the lowest number of tapping
- one of the highest rated output with the lowest voltages and the lowest number of tapping
- one of the lowest rated output with the highest number of tapping with the highest voltage difference between adjacent windings
- one of the medium rated output with medium voltages and medium number of tapping.

When only two samples are chosen the first two should be chosen.

for parameter 4):

- one sample of the lowest frequency;

NOTE 2 - If possible the sample may be the second sample chosen for parameters 1, 2 and 3

for parameter 5):

- two samples minimum taken from the extremities of the range.

NOTE 3 - The samples should be chosen according to the following rules:
- one of the lowest rated output with the highest difference in percentage between the value of the current of the transformer and the value of the current of the relevant protective device if any
- one of the highest rated output with the highest difference in percentage between the value of the current of the transformer and the value of the current of the relevant protective device if any
- one sample representing the most unfavourable temperature of winding and core
- one sample representing the most unfavourable temperature rise of the enclosure.

To be sure that in any case the most unfavourable situation is covered the manufacturer shall declare the type in the series having the maximum losses in normal condition; this type shall be chosen as one of the samples to be tested.

The conditions above may be covered by a minimum of two samples.

The number of specimens for each sample shall be in accordance with 4.2, except for:

- test of 13.3 where only two samples of three specimens in total are needed for the series, the samples being the two first of parameter 5;

- test of 14.5 where only two samples of three specimens in total are needed for the series, the samples being the two first of parameter 5;

- test of 15.4 where only three specimens in total are needed for the series, the heaviest type being chosen.

ZA.3 At least one specimen of each lamination or core size shall be provided for constructional clearance, mechanical strength, etc...

NOTE - The sample required in ZA.2 shall be inclusive with the sample required with samples in ZA.3.

ANNEX ZB (normative)

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

NOTE: 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
38	1975[1]	IEC standard voltages	-	-
50	-	International Electrotechnical Vocabulary (IEV)	-	-
51	1973	Recommendations for direct acting indicating electrical measuring instruments and their accessories	HD 233 S1[2]	1977
65 (mod)	1981	Safety requirements for mains operated electronic and related apparatus for household and similar general use	HD 195 S4[3]	1985
68-2-2	1974	Basic environmetal testing procedures Part 2: Tests - Test B: Dry heat	EN 60068-2-2[4]	1993
68-2-32	1975	Part 2: Tests - Test Ed: Free fall	EN 60068-2-32[5]	1993
76	Series	Power transformers	HD 398	Series
83	1975	Plugs and socket-outlets for domestic and similar general use - Standards	-	-
85	1957[6]	Recommendations for the classification of materials for the insulation of electrical machinery and apparatus in relation to their thermal stability in service	-	-
127	1974	Cartridge fuse-links for miniature fuses	HD 109 S3[7]	1983
227 (mod)	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	HD 21	Series
245 (mod)	Series	Rubber insulated cables of rated voltages up to and including 450/750 V	HD 22	Series

1) IEC 38:1983, mod, is harmonized as HD 472 S1:1989.

2) HD 233 S1 is superseded by the EN 60051 series.

3) HD 195 S4 is superseded by EN 60065:1993, which is based on IEC 65:1985 + A1:1987 + A2:1989 + A3:1992, mod.

4) EN 60068-2-2 includes supplement A:1976 to IEC 68-2-2.

5) EN 60068-2-32 includes A2:1990 to IEC 68-2-32.

6) IEC 85:1984, Thermal evaluation and classification of electrical insulation, is harmonized as HD 566 S1:1990.

7) HD 109 S3 is superseded by the EN 60127 series.

IEC Publication	Date	Title	EN/HD	Date
269-2	1973[8]	Low-voltage fuses - Part 2: Supplementary requirements for fuses for industrial applications	-	-
269-3	1973[8]	Part 3: Supplementary requirements for fuses for domestic and similar applications	-	-
309	Series	Plugs, socket-outlets and couplers for industrial purposes	HD 196 S1 EN 60309	1978 Series
317	Series	Specifications for particular types of winding wires	HD 555 EN 60317	Series Series
320 (mod)	1981	Appliance couplers for household and similar general purposes	EN 60320-1[10]	1987
364-4-41 (mod)	1977	Electrical installations of buildings Part 4: Protection for safety Chapter 41: Protection against electric shock	HD 384.4.41 S1	1980
364-5-51 (mod)	1979	Part 5: Selection and erection of equipment Chapter 51: Common rules	HD 384.5.51 S1	1985
454	Series	Specifications for pressure-sensitive adhesive tapes for electrical purposes	EN 60454	Series
529	1976	Classification of degrees of protection provided by enclosures	HD 365 S3[11]	1985
584-1	1977	Thermocouples - Part 1: Reference tables	HD 446.1 S1	1984
664	Series	Insulation coordination for equipment within low-voltage systems	-	-
685-1	1980	Connecting devices (junction and/or tapping) for household and similar fixed electrical installations Part 1: General requirements	-	-
685-2-1	1980	Part 2: Particular requirements - Screwless terminals for connecting copper conductors without special preparation	-	-
884-1	1987	Plugs and socket-outlets for household and similar purposes - Part 1: General requirements	-	-
998	Series	Connecting devices for low voltage circuits for household and similar purposes	EN 60998	Series
999 (mod)	1990	Connecting devices - Safety requirements for screw-type and screwless-type clamping units for electrical copper conductors	EN 60999	1993
1058-1	1990	Switches for appliances - Part 1: General requirements	EN 61058-1	1992

8) IEC 269-2:1986 is harmonized as EN 60269-2:1995.

9) IEC 269-3:1987 is harmonized as EN 60269-3:1995.

10) EN 60320-1 includes A1:1984 + A2:1985 to IEC 320.

11) Although HD 365 S3 is superseded by EN 60529:1991, which is based on IEC 529:1989 - Degrees for protection provided by enclosures (IP Code) - for the purposes of this standard references to IEC 529 are to the 1976 edition.

Annex ZC (normative)

Special national conditions

Special national condition: National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions. If it affects harmonization, it forms part of the European Standard.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

Clause	Special national condition
CHAPTER I	
	Finland (Resolution of the Ministry of Trade and Industry n° 205/74)
	For the test voltages, the factors 0,94 and 1,06 (6%) are replaced by the factors 0,9 and 1,1 (10%)
7.7	**Denmark**
	Supply cords of class I transformers which are supplied without a plug, shall be provided with a visible tag containing the following text:

Vigtigt!
Lederen med grøn/gul isolation
må kun tilsluttes en klemme mærket
⏚ eller ⏚ .

(Important!
The conductor having green/yellow insulation shall only be connected to a terminal marked ⏚ or ⏚ .)

If it is essential for the safety of the transformer, the tag shall be provided either with a wiring diagram showing the connection of the other conductors or with the following text:

For tilslutning af de øvrige ledere,
se medfølgende installationsvejledning.

(For the connection of the other conductors, see the enclosed instructions for installation.)

14.3.2	**France** (Décret n° 66.660 du 8 septembre 1966 en application de la loi n° 60.1375 du 21 décembre 1960).
	The general French regulations prescribe that transformers having a rated supply voltage of 127 V require also the value 220 V.

21.6 **Denmark**

Replace the second paragraph by the following:

Supply cords of single-phase portable transformers having a rated current not exceeding 10 A shall be provided with a plug according to the following:

- Class I transformers having a protection index IPX 3 or lower . . . . . Section 107-2-D1, Standard Sheet DK 2-1a or IEC 83, Standard Sheet C 2b, C 3b or C 4

- Other class I transformers . . . . . Section 107-2-D1, Standard Sheet DK 2-1a

- Class II transformers . . . . . IEC 83, Standard Sheet C5 or C8

If stationary single-phase transformers having a rated current not exceeding 10 A are provided with a supply cord and a plug, the plug shall be in accordance with the requirement specified above.

If multi-phase transformers and single-phase transformers having a rated current exceeding 10 A are provided with a supply cord and a plug, the plug shall comply with the following table:

Class	Plug **	
	Section 107-2-D1 Standard Sheet	EN 60309-2 Standard Sheet
I	DK 6-1a	2-II, 2-IV
II	DK 6-1a*	2-II, 2-IV*

* Earthing contact not connected.
** These plugs are also allowed for transformers having a rated current equal to or less than 10 A.

Finland (Resolution of the Ministry of Trade and Industry n° 205/74)

Power supply flexible cables or cords of single-phase portable transformers having an input current at rated output not exceeding 16 A, shall be provided with a plug complying with CEE Publication 7, Standard sheets to be applied being as follows:

Class I transformers Standard sheet IV, VI or VII;
Class II transformers Standard sheet XVI or XVIII.

CHAPTER II
Section 1

5.1 **Sweden** (Ordinance ELSÄK-FS 1994:4, subclause 13f or ELSÄK-FS 1994:7, subclause 413.5.1.2)

For isolationg transformers, other than shaver transformers and shaver supply units, the highest allowed output voltage is 500 V.

CHAPTER III
Section 2

5.1 & 11.1 **United Kingdom** (Statutory Instrument n° 1367/1974 regulation 5)

The maximum allowed voltage is 24 V a.c. or d.c.

7.1 **United Kingdom**

Transformers for toys limited to indoor dry conditions shall be marked on the equipment.

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

NORME DE LA CEI

INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC STANDARD

Publication 742

Première édition – First edition

1983

Transformateurs de séparation des circuits et transformateurs de sécurité

Règles

Isolating transformers and safety isolating transformers

Requirements

Bureau Central de la Commission Electrotechnique Internationale

3, rue de Varembé

Genève, Suisse