

Safety of power transformers, power supply units and similar - Part 2-15: Particular requirements for isolating transformers for the supply of medical locations

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EUROPEAN STANDARD

EN 61558-2-15

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2001

ICS 29.180

English version

**Safety of power transformers, power supply units and similar
Part 2-15: Particular requirements for isolating transformers for the
supply of medical locations
(IEC 61558-2-15:1999, modified)**

Sécurité des transformateurs, blocs
d'alimentation et analogues
Partie 2-15: Règles particulières pour les
transformateurs de séparation de circuits
pour locaux à usages médicaux
(CEI 61558-2-15:1999, modifiée)

Sicherheit von Transformatoren,
Netzgeräten und dergleichen
Teil 2-15: Besondere Anforderungen an
Trenntransformatoren zur Versorgung
medizinischer Räume
(IEC 61558-2-15:1999, modifiziert)

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This European Standard was approved by CENELEC on 2000-08-01. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, 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

The text of document 96/119/FDIS, future edition 1 of IEC 61558-2-15, prepared by IEC TC 96, Small power transformers, reactors and power supply units: Safety requirements, was submitted to the IEC/CENELEC parallel vote.

The CENELEC Technical Board asked BTTF 64-1 to assess the comments received and to prepare common modifications, as appropriate. The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 61558-2-15 on 2000-08-01.

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) 2001-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-08-01

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.

This Part 2-15 of EN 61558 is to be used in conjunction with EN 61558-1:1997.

This Part 2-15 supplements or modifies the corresponding clauses of EN 61558-1, so as to convert it into the European Standard "Particular requirements for isolating transformers for the supply of medical locations".

When a particular clause or subclause of Part 1 is not mentioned in this Part 2-15, that clause or subclause applies as far as is reasonable. Where this Part 2-15 states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

Subclauses, tables and figures which are in addition to those of Part 1 are numbered starting with 101. The reference of subclauses, notes, figures and annexes which have been added by CENELEC is prefixed with the letter Z.

There are no special national conditions (snc) causing a deviation from this European Standard other than those listed in annex ZA of EN 61558-1.

Endorsement notice

The text of the International Standard IEC 61558-2-15:1999 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope

Replace the second paragraph by:

This part 2-15 of EN 61558 applies to stationary, single-phase or polyphase, air-cooled (natural or forced) **isolating transformers** for the supply of group II medical locations, designed to be permanently connected to the fixed wiring and intended to form the IT system on the secondary side, having a **rated supply voltage** not exceeding AC 1 kV and **rated frequency** not exceeding 500 Hz. The **rated output** shall not be less than 0,5 kVA and shall not exceed 10 kVA.

Add:

NOTE Z1 Transformers for medical appliance are not covered by this standard.

8 Marking and other information

8.14 Addition: iTeh STANDARD PREVIEW (standards.iteh.ai)

The instruction sheet has to state that screens the connection of which to earth is necessary for compliance with the standard (e.g. compliance with clause 18 on leakage current) has to be connected to earth.

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18 Insulation resistance and dielectric strength

Replace the addition by:

18.101 Void

18.102 Void

18.Z101 The leakage current of the output winding to earth, measured in no-load condition, at room temperature and the transformer supplied at rated voltage and rated frequency, as shown in Figure Z101, shall not exceed 0,5 mA.

For this test the core and the functional screen, if any, shall be connected to earth.

Compliance is checked by measurements.

18.Z102 The leakage current of the enclosure to earth, measured in no-load condition, at room temperature and the transformer supplied at rated voltage and rated frequency, as shown in Figure 104, shall not exceed 3,5 mA.

For this test the core and the functional screen, if any, shall be connected to earth.

Compliance is checked by measurements.

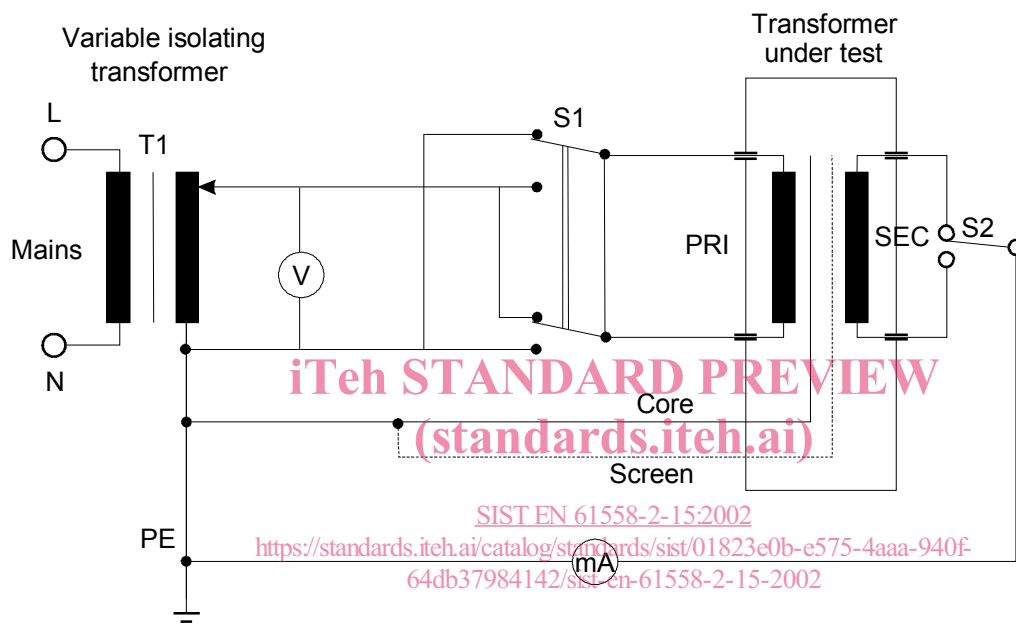
19 Construction

Order the subclauses correctly according to the numbering as follows:

19.1
19.1.1 up to 19.1.4
19.101 up to 19.121

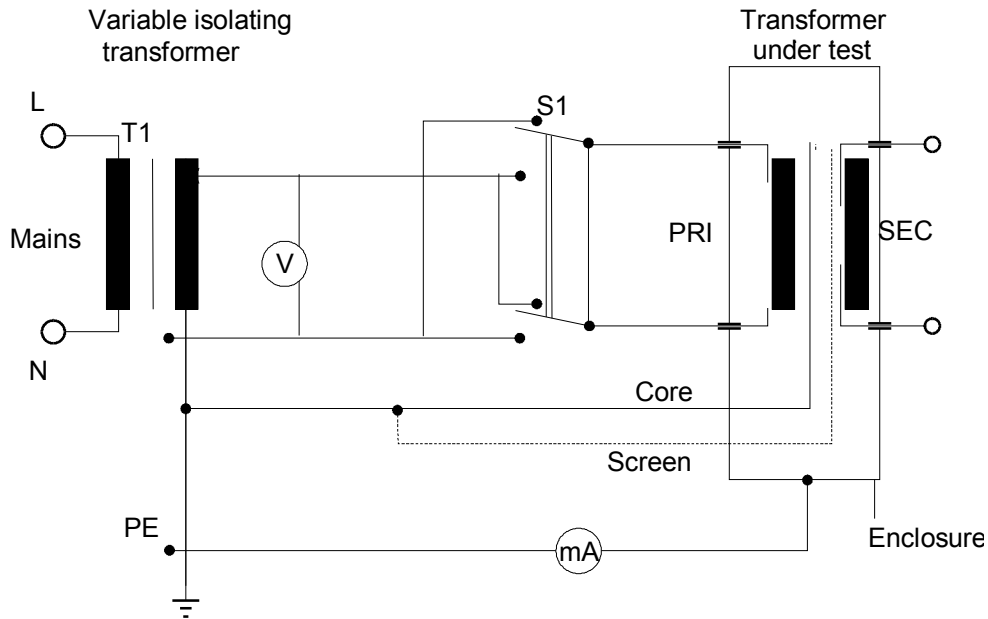
Figures

Delete the figures 101 and 102 and **add** the figures Z101 and Z102:



- The test shall be carried out with all combinations of S1 and S2
- For three-phase (or polyphase) transformers the switch S1 is used only in closed position. The measurements with switch S2 are repeated connecting it to all phases, in turn.
- The current is measured with an ammeter of negligible impedance.

Figure Z101 - Measuring circuit for the leakage current of the output winding to earth



- a) The test shall be carried out with all combinations of S1.
- b) For three-phase (or polyphase) transformers the switch S1 is used only in closed position.
- c) The current is measured with an ammeter of negligible impedance.

Figure Z102 - Measuring circuit for the leakage current of the enclosure to earth

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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.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|---|-------------------------|--------------|
| IEC 60252 (mod) | 1993 | A.C. motor capacitors | EN 60252 + corr. May | 1994 1994 |
| IEC 60364-3 (mod) | 1993 | Electrical installations of buildings Part 3: Assessment of general characteristics | HD 384.3 S2 | 1995 |

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC

61558-2-15

Première édition
First edition
1999-02

PUBLICATION GROUPEE DE SÉCURITÉ
GROUP SAFETY PUBLICATION

**Sécurité des transformateurs,
blocs d'alimentation et analogues –**

**Partie 2-15:
Règles particulières pour les transformateurs
de séparation de circuits pour locaux
à usages médicaux**

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**Safety of power transformers,
power supply units and similar –**

**Part 2-15:
Particular requirements for isolating transformers
for the supply of medical locations**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

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*Pour prix, voir catalogue en vigueur
For price, see current catalogue*

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF POWER TRANSFORMERS,
POWER SUPPLY UNITS AND SIMILAR –Part 2-15: Particular requirements for isolating transformers for
the supply of medical locations

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a world-wide organisation for standardisation comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organisation for Standardisation (ISO) in accordance with conditions determined by agreement between the two organisations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patents rights. The IEC shall not be held responsible for identifying any or all such patents rights.

International standard IEC 61558-2-15 has been prepared by technical committee 96: Small power transformers, reactors and **power supply units** and special transformers, reactors and **power supply units**: Safety requirements.

It has the status of a group safety publication in accordance with IEC Guide 104: The preparation of safety publications and the use of basic safety publications and group safety publications (1997).

The text of this standard is based on the following documents:

| FDIS | Report on Voting |
|-------------|------------------|
| 96/119/FDIS | 96/124/RVD |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This part 2 is intended to be used in conjunction with IEC 61558-1. It was established on the basis of the first edition (1997) of that standard.

This part 2 supplements or modifies the corresponding clauses in IEC 61558-1, so as to convert that publication into the IEC standard: Particular requirements for **isolating transformers** for the supply of medical locations.

When a particular subclause of part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text of part 1 is to be adapted accordingly.

In this standard, the following print types are used :

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

In the text of the standard, the words in **bold** are defined in clause 3.

Subclauses which are additional to those in part 1 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

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