



**NSAI**  
Standards

Irish Standard  
I.S. EN 61558-2-15:2012

Safety of transformers, reactors, power supply units and combinations thereof  
-- Part 2-15: Particular requirements and tests for isolating transformers for the supply of medical locations (IEC 61558-2-15:2011 (EQV))

## I.S. EN 61558-2-15:2012

*Incorporating amendments/corrigenda issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i> EN 61558-2-15:2001 + corr. April 2004	<i>This document is based on:</i> EN 61558-2-15:2012	<i>Published:</i> 3 February, 2012
This document was published under the authority of the NSAI and comes into effect on:  28 February, 2012		ICS number: 29.180
<b>NSAI</b> 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie  W NSAI.ie	<b>Sales:</b> T +353 1 857 6730 F +353 1 857 6729 W standards.ie
Údarás um Chaighdeáin Náisiúnta na hÉireann		

EUROPEAN STANDARD

**EN 61558-2-15**

NORME EUROPÉENNE

February 2012

EUROPÄISCHE NORM

ICS 29.180

Supersedes EN 61558-2-15:2001 + corr. Apr.2004

English version

**Safety of transformers, reactors, power supply units and combinations thereof -  
Part 2-15: Particular requirements and tests for isolating transformers for the supply of medical locations  
(IEC 61558-2-15:2011)**

Sécurité des transformateurs, bobines d'inductance, blocs d'alimentation et des combinaisons de ces éléments -  
Partie 2-15: Règles particulières et essais pour les transformateurs de séparation de circuits pour locaux à usages médicaux  
(CEI 61558-2-15:2011)

Sicherheit von Transformatoren, Drosseln, Netzgeräten und entsprechenden Kombinationen -  
Teil 2-15: Besondere Anforderungen und Prüfungen an Trenntransformatoren zur Versorgung medizinischer Räume  
(IEC 61558-2-15:2011)

This European Standard was approved by CENELEC on 2011-12-27. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## I.S. EN 61558-2-15:2012

EN 61558-2-15:2012

- 2 -

### Foreword

The text of document 96/384/FDIS, future edition 2 of IEC 61558-2-15, prepared by IEC/TC 96, "Transformers, reactors, power supply units and combinations thereof" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61558-2-15:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-09-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2014-12-27

This document supersedes EN 61558-2-15:2001 + corrigendum April 2004.

The main changes consist of updating EN 61558-2-15:2012 in accordance with EN 61558-1:2005.

This standard is to be used in conjunction with EN 61558-1:2005.

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

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

In this part, 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 this part, the words in **bold** are defined in Clause 3.

Subclauses, notes, figures and tables additional to those in Part 1 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

### Endorsement notice

The text of the International Standard IEC 61558-2-15:2011 was approved by CENELEC as a European Standard without any modification.

#### **Addition to Bibliography of EN 61558-1:2005:**

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60364-1:2005      NOTE Harmonized as HD 60364-1:2008 (modified).

IEC 60364-4-41:2005      NOTE Harmonized as HD 60364-4-41:2007 (modified).

**I.S. EN 61558-2-15:2012**

- 3 -

EN 61558-2-15:2012

IEC 60364-7-710:2002 NOTE Harmonized as HD 60364-7-710:2012 (modified).

IEC 61557-8:2007 NOTE Harmonized as EN 61557-8:2007 (not modified).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

***Addition to Annex ZA of EN 61558-1:2005:***

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61558-1	2005	Safety of power transformers, power supplies,	EN 61558-1	2005
+ corr. March	2010	reactors and similar products -	+ corr. August	2006
+ corr. March	2008	Part 1: General requirements and tests		

## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	6
3 Terms and definitions .....	6
4 General requirements .....	6
5 General notes on tests.....	7
6 Ratings.....	7
7 Classification .....	7
8 Marking and other information.....	7
9 Protection against electric shock.....	8
10 Change of input voltage setting.....	8
11 Output voltage and output current under load.....	8
12 No-load output voltage.....	8
13 Short-circuit voltage and inrush currents .....	9
14 Heating.....	10
15 Short-circuit and overload protection .....	10
16 Mechanical strength.....	10
17 Protection against harmful ingress of dust, solid objects and moisture.....	10
18 Insulation resistance, dielectric strength and leakage current .....	10
19 Construction .....	12
20 Components .....	14
21 Internal wiring.....	14
22 Supply connection and other external flexible cables or cords.....	14
23 Terminals for external conductors .....	14
24 Provisions for protective earthing .....	15
25 Screws and connections .....	15
26 Creepage distances, clearances and distances through insulation .....	15
27 Resistance to heat, fire and tracking .....	15
28 Resistance to rusting .....	15
Annexes.....	16
Annex H Electronic circuits.....	16
Annex L Routine tests (production tests) .....	16
Bibliography.....	17
Index of defined terms.....	18
Figure 101 – The required circuit for measuring the leakage current from the output winding to earth.....	11
Figure 102 – The required circuit for measuring the leakage current at the protective earth conductor.....	12

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

### **SAFETY OF TRANSFORMERS, REACTORS, POWER SUPPLY UNITS AND COMBINATIONS THEREOF –**

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

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International standard IEC 61558-2-15 has been prepared by IEC technical committee 96: Transformers, reactors, power supply units and combinations thereof.

This second edition cancels and replaces the first edition published in 1999. It constitutes a technical revision. The main changes consist of updating this part in accordance with IEC 61558-1:2005.

This part has the status of a group safety publication in accordance with IEC Guide 104:2010, *The preparation of safety publications and the use of basic safety publications and group safety publications*.



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

FDIS	Report on voting
96/384/FDIS	96/385/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part is intended to be used in conjunction with the latest edition of IEC 61558-1 and its amendments. It is based on the second edition (2005) of that standard.

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

A list of all parts of the IEC 61558 series, under the general title: *Safety of transformers, reactors, power supply units and combination thereof*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

In this part, 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 this part, the words in **bold** are defined in Clause 3.

Subclauses, notes, figures and tables additional to those in Part 1 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months from the date of publication.

## SAFETY OF TRANSFORMERS, REACTORS, POWER SUPPLY UNITS AND COMBINATIONS THEREOF –

### Part 2-15: Particular requirements and tests for isolating transformers for the supply of medical locations

#### 1 Scope

##### *Replacement:*

This part of IEC 61558 deals with safety aspects of **isolating transformers for the supply of medical locations**.

NOTE 1 Safety includes electrical, thermal and mechanical aspects.

Unless otherwise specified, from here onward, the term **transformer** covers **isolating transformers for the supply of medical locations**.

This part is applicable to **stationary**, single-phase or three-phase, air-cooled (natural or forced) **independent dry-type isolating transformers** for the supply of medical IT systems for group 2 medical locations, designed to be permanently connected to the fixed wiring and intended to form the IT power system on the secondary side. The windings may be encapsulated or non-encapsulated.

NOTE 2 IT power systems are defined in IEC 60364-1.

NOTE 3 The installation rules for medical IT systems for group 2 medical locations are covered by IEC 60364-7-710.

NOTE 4 **Transformers** covered by this standard are intended for the supply of medical locations. All other transformers or equipments connected downstream from the **transformer** are not covered by this Part 2.

The **rated supply voltage** does not exceed 1 000 V a.c. The **rated supply frequency and internal operational frequency** do not exceed 500 Hz.

The **rated output** does not be less than 0,5 kVA and does not exceed 10 kVA for single-phase and three-phase **transformers**.

This part is applicable to **transformers** without limitation of the **rated output** subject to an agreement between the purchaser and the manufacturer.

NOTE 5 Transformers intended to supply power to distribution networks are not covered by this standard.

The **no-load output voltage** and the **rated output voltage** does not exceed 250 V a.c. for single-phase or three-phase **transformer** (phase-to-phase voltage).

This standard do not cover **power supply unit**.

This part is not applicable to external circuits and their components intended to be connected to the input terminals and output terminals of the **transformers**. **Transformers** covered by this part are used in applications where **double or reinforced insulation** between circuits is required by the installation rules or by the appliance specification.

NOTE 6 Attention is drawn to the following:

- for **transformers** intended to be used in vehicles, on board ships, and aircraft, additional requirements (from other applicable standards, national rules, etc.) may be necessary;
- measures to protect the **enclosure** and the components inside the enclosure against external influences such as fungus, vermin, termites, solar-radiation, and icing should also be considered;
- the different conditions for transportation, storage, and operation of the **transformers** should also be considered;
- additional requirements in accordance with other appropriate standards and national rules may be applicable to **transformers** intended for use in special environments.

## 2 Normative references

This clause of Part 1 is applicable, except as follows:

*Addition:*

IEC 61558-1:2005, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

## 3 Terms and definitions

This clause of Part 1 is applicable, except as follows:

*Addition:*

### 3.1.101

#### **isolating transformer for the supply of medical locations**

**isolating transformer** used for the supply of medical IT systems for group 2 medical locations, designed to be permanently connected and with **double** or **reinforced insulation** between each part of the transformer (body, screen, circuits, thermal sensitive device) except between the core and the **body**

### 3.4.101

#### **functional screening**

separation between two windings or between a winding and the core or shielding of a part or of the whole **transformer**, by means of a conductive material for functional reasons

### 3.5.101

#### **rated input current**

input current, when the **transformer** is loaded with **rated output**

### 3.6.101

#### **no-load input current**

**input current** when the **transformer** is connected to the **rated supply voltage**, at the **rated frequency**, with no-load on the output

### 3.6.102

#### **inrush current**

the maximum instantaneous value of the **no-load input current** of the **transformer** (peak value) when is switched on at **rated supply voltage**

## 4 General requirements

This clause of Part 1 is applicable.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-