



NSAI
Standards

Irish Standard
I.S. EN 61558-2-6:2009

Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V -- Part 2 -6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers (IEC 61558-2-6:2009 (EQV))

I.S. EN 61558-2-6:2009

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NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
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EUROPEAN STANDARD
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EN 61558-2-6

August 2009

ICS 29.180

Supersedes EN 61558-2-6:1997

English version

**Safety of transformers, reactors, power supply units
and similar products for supply voltages up to 1 100 V -
Part 2-6: Particular requirements and tests
for safety isolating transformers and power supply units
incorporating safety isolating transformers
(IEC 61558-2-6:2009)**

Sécurité des transformateurs,
bobines d'inductance, blocs d'alimentation
et produits analogues pour des tensions
d'alimentation jusqu'à 1 100 V -
Partie 2-6: Règles particulières et essais
pour les transformateurs de sécurité
et les blocs d'alimentation incorporant
des transformateurs de sécurité
(CEI 61558-2-6:2009)

Sicherheit von Transformatoren, Drosseln,
Netzgeräten und dergleichen
für Versorgungsspannungen bis 1 100 V -
Teil 2-6: Besondere Anforderungen
und Prüfungen
an Sicherheitstransformatoren
und Netzgeräte,
die Sicherheitstransformatoren enthalten
(IEC 61558-2-6:2009)

This European Standard was approved by CENELEC on 2009-07-01. 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, Bulgaria, 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 and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

I.S. EN 61558-2-6:2009

EN 61558-2-6:2009

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Foreword

The text of document 96/317/FDIS, future edition 2 of IEC 61558-2-6, prepared by IEC TC 96, Transformers, reactors, power supply units and similar products for low voltage up to 1 100 V, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61558-2-6 on 2009-07-01.

This European Standard supersedes EN 61558-2-6:1997.

The main changes consist of updating EN 61558-2-6:1997, in accordance with EN 61558-1:2005, and increasing the supply voltages up to 1 100 V to be in line with the standards of TC 14.

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) 2009-10-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-07-01

This standard is to be used in conjunction with EN 61558-1 and its amendments. It is based on EN 61558-1:2005.

This Part 2-6 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 safety isolating transformers and power supply units incorporating safety isolating transformers*.

When a particular subclause of Part 1 is not mentioned in this part, 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 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 standard, 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.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61558-2-6:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61558-2-16 NOTE Harmonized as EN 61558-2-16:200X (not modified).

Annex ZA
(normative)

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

Addition to Annex ZA of EN 61558-1:

<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, reactors and similar products - Part 1: General requirements and tests	EN 61558-1 + corr. August	2005 2006

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF TRANSFORMERS, REACTORS, POWER SUPPLY UNITS AND SIMILAR PRODUCTS FOR SUPPLY VOLTAGES UP TO 1 100 V –

Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers

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.
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- 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 61558-2-6 has been prepared by IEC technical committee 96: Transformers, reactors, power supply units and similar products for low voltages up to 1 100 V.

This second edition cancels and replaces the first edition published in 1997. It constitutes a technical revision. The main changes consist of updating this part in accordance with Part 1 (2005), and increasing the supply voltages up to 1 100 V to be in line with the standards of TC 14.

This part has the status of a group safety publication in accordance with IEC Guide 104: (1997): *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
96/317/FDIS	96/322/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 safety isolating transformers and power supply units incorporating safety isolating transformers*.

A list of all parts of the IEC 61558 series can be found on the IEC website under the title: *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V*.

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 maintenance result 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 SIMILAR PRODUCTS FOR SUPPLY VOLTAGES UP TO 1 100 V –

Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers

1 Scope

Replacement:

This part of IEC 61558 deals with the safety of **safety isolating transformers** for general applications and **power supply units** incorporating **safety isolating transformers** for general applications. **Transformers** incorporating **electronic circuits** are also covered by this standard.

NOTE 1 Safety includes electrical, thermal and mechanical aspects.

Unless otherwise specified, from here onward, the term **transformer** covers **safety isolating transformers** for general applications and **power supply units** incorporating **safety isolating transformers** for general applications.

NOTE 2 For **power supply units** (linear) this part is applicable. For **switch mode power supply units**, IEC 61558-2-16 is applicable together with this part.

This part is applicable to **stationary** or **portable**, single-phase or polyphase, air-cooled (natural or forced) **independent** or **associated dry- type transformers**. The windings may be encapsulated or non-encapsulated.

The **rated supply voltage** does not exceed 1 100 V a.c., and the **rated supply frequency** and the **internal operating frequencies** do not exceed 500 Hz.

The **rated output** does not exceed:

- 10 kVA for single-phase **transformers**;
- 16 kVA for polyphase **transformers**.

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

NOTE 3 **Transformers** intended to supply distribution networks are not included in the scope.

The **no-load output voltage** or the **rated output voltage** does not exceed 50 V a.c. or 120 V ripple-free d.c.

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 end product standard.

NOTE 4 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.

NOTE 5 Future technological development of **transformers** may necessitate a need to increase the upper limit of the frequencies, until then this part may be used as a guidance document.

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.

4 General requirements

This clause of Part 1 is applicable.

5 General notes on tests

This clause of Part 1 is applicable.

6 Ratings

This clause of Part 1 is applicable except as follows.

Addition:

6.101 The **rated output voltage** shall not exceed 50 V a.c. or 120 V ripple-free d.c.

6.102 The **rated output** shall not exceed:

- 10 kVA for single-phase **transformers**;
- 16 kVA for polyphase **transformers**.

Transformers without limitation of the **rated output** shall be subject to agreement between the purchaser and the manufacturer.

6.103 The **rated supply frequency** and the **internal operating frequencies** shall not exceed 500 Hz.

6.104 The **rated supply voltage** shall not exceed 1 100 V a.c.

Compliance with the requirements of 6.101 to 6.104 is checked by inspection of the marking.

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