



NSAI
Standards

Irish Standard
I.S. EN 61558-2-12:2011

Safety of transformers, reactors, power supply units and combinations thereof
-- Part 2-12: Particular requirements and tests for constant voltage transformers and power supply units for constant voltage (IEC 61558-2-12:2011 (EQV))

I.S. EN 61558-2-12:2011

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.

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EUROPEAN STANDARD

EN 61558-2-12

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2011

ICS 29.180

Supersedes EN 61558-2-12:2001

English version

**Safety of transformers, reactors, power supply units
and combinations thereof -
Part 2-12: Particular requirements and tests for constant voltage
transformers and power supply units for constant voltage
(IEC 61558-2-12:2011)**

Sécurité des transformateurs, bobines
d'inductance, blocs d'alimentation et des
combinaisons de ces éléments -
Partie 2-12: Exigences particulières et
essais pour les transformateurs à tension
constante et les blocs d'alimentation pour
tension constante
(CEI 61558-2-12:2011)

Sicherheit von Transformatoren, Drosseln,
Netzgeräten und entsprechende
Kombinationen -
Teil 2-12: Besondere Anforderungen und
Prüfungen für magnetische
Spannungskonstanthalter und Netzgeräte,
die Spannungskonstanthalter enthalten
(IEC 61558-2-12:2011)

This European Standard was approved by CENELEC on 2011-03-03. 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, 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 and the United Kingdom.

CENELEC

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

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Foreword

The text of document 96/370/FDIS, future edition 2 of IEC 61558-2-12, 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 61558-2-12 on 2011-03-03.

This European Standard supersedes EN 61558-2-12:2001.

The main changes consist of updating EN 61558-2-12:2011 in accordance with EN 61558-1:2005 + A1:2009.

This standard is to be used in conjunction with EN 61558-1:2005 + A1:2009

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 constant voltage transformers and power supply units for constant voltage*.

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 has to be adopted 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 are 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. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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) 2011-12-03
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2014-03-03

Endorsement notice

The text of the International Standard IEC 61558-2-12:2011 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 61558-2-16:2009 NOTE Harmonized as EN 61558-2-16:2009 (not modified).

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	7
3 Terms and definitions	7
4 General requirements	7
5 General notes on tests	7
6 Ratings.....	7
7 Classification.....	8
8 Marking and other information	8
9 Protection against electric shock	9
10 Change of input voltage setting	9
11 Output voltage and output current under load	9
12 No-load output voltage	10
13 Short-circuit voltage	11
14 Heating	11
15 Short-circuit and overload protection	11
16 Mechanical strength	12
17 Protection against harmful ingress of dust, solid objects and moisture.....	12
18 Insulation resistance, dielectric strength and leakage current	12
19 Construction.....	13
20 Components	17
21 Internal wiring.....	17
22 Supply connection and other external flexible cables or cords	17
23 Terminals for external conductors.....	17
24 Provision for protective earthing	17
25 Screws and connections.....	17
26 Creepage distances, clearances and distances through insulation.....	17
27 Resistance to heat, fire and tracking.....	18
28 Resistance to rusting.....	18
Annexes	19
Annex C (normative)	19
Annex D (normative)	19
Annex L (normative)	19
Annex R (normative)	19
Bibliography.....	20

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

**Part 2-12: Particular requirements and tests
for constant voltage transformers
and power supply units for constant voltage**

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.
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International Standard IEC 61558-2-12 has been prepared by IEC technical committee 96: Transformers, reactors, power supply units, and combination thereof.

This second edition cancels and replaces the first edition published in 2001. It constitutes a technical revision. The main changes consist of updating this part in accordance with IEC 61558-1:2009.

This part 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*.

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

FDIS	Report on voting
96/253/FDIS	96/266/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 constant voltage transformers and power supply units for constant voltage*.

A list of all parts of the IEC 61558 series, under the general title: *Safety of transformers, reactors, power supply units and combinations 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 has to be adopted 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 are 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 COMBINATION THEREOF –

Part 2-12: Particular requirements and tests for constant voltage transformers and power supply units for constant voltage

1 Scope

Replacement:

This part of IEC 61558 deals with the safety of **constant voltage transformers** for general applications and **power supply units for constant voltage** for general applications. **Constant voltage 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 **constant voltage transformers** for general applications and **power supply units for constant voltage** for general applications.

This part is applicable to **stationary** or **portable**, single-phase or polyphase, air-cooled (natural or forced), **independent** or **associated dry-type**:

- **constant voltage auto-transformers;**
- **constant voltage separating transformers;**
- **constant voltage isolating transformers;**
- **constant voltage safety isolating transformers.**

The windings may be encapsulated or non-encapsulated.

This standard is applicable to **transformers** and **power supply** (linear) with internal operating frequencies not exceeding 500 Hz.

This standard used in combination with Part 2-16 for **switch mode power supply** (SMPS) units is also applicable to power supplies with internal operating frequencies higher than 500 Hz. Where the two requirements are in conflict, the most severe take precedence.

The **rated supply voltage** does not exceed 1 000 V a.c., the **rated supply frequency** does not exceed 500 Hz, the **internal operating resonant frequency** does not exceed 30 kHz and the **internal operating frequency** does not exceed 100 MHz.

The **rated output** does not exceed:

- 40 kVA for single-phase **constant voltage auto-transformers;**
- 200 kVA for poly-phase **constant voltage auto-transformers;**
- 25 kVA for single-phase **constant voltage separating transformers** and **constant voltage isolating transformers;**
- 40 kVA for poly-phase **constant voltage separating transformers** and **constant voltage isolating transformers;**
- 10 kVA for single-phase **constant voltage safety isolating transformers;**

- 16 kVA for poly-phase **constant voltage safety isolating transformers**.

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

NOTE 2 Transformers intended to supply distribution networks are not included in the scope.

Where applicable to constant voltage auto-transformers

- the **no-load output voltage** or the **rated output voltage** does not exceed 1 000 V a.c. or 1 415 V ripple-free d.c., and for **independent constant voltage auto-transformers**, the **no-load output voltage** and the **rated output voltage** exceed 50 V a.c. or 120 V ripple-free d.c.;
- **constant voltage auto-transformers** covered by this part are used only in applications where no **insulation** between circuits is required by the installation rules or by the end product standard.

Where applicable to **constant voltage separating transformers**

- the **no-load output voltage** or the **rated output voltage** does not exceed 1 000 V a.c. or 1 415 V ripple-free d.c., and for **independent constant voltage separating transformers**, the **no-load output voltage** and the **rated output voltage** exceed 50 V a.c. or 120 V ripple-free d.c.;
- **constant voltage separating transformers** covered by this part are used only in applications where **double** or **reinforced insulation** between circuits is not required by the installation rules or by the end product standard.

Where applicable to **constant voltage isolating transformers**

- the **no-load output voltage** or the **rated output voltage** does exceed 50 V a.c. or 120 V ripple-free d.c. and where applicable, does not exceed 500 V a.c. or 708 V ripple-free d.c. The **no-load output voltage** and the **rated output voltage** may be up to 1 000 V a.c. or 1 415 V ripple-free d.c. for special applications;
- **constant voltage isolating transformers** covered by this part are used only in applications where **double** or **reinforced insulation** between circuits is required by the installation rules or by the end product standard.

Where applicable to **constant voltage safety isolating transformers**

- the **no-load output voltage** or the **rated output voltage** does not exceed 50 V a.c. or 120 V ripple-free d.c.;
- **constant voltage safety isolating transformers** covered by this part are used only in applications where **double** or **reinforced insulation** between circuits is required by the installation rules or by the end product standard.

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**.

NOTE 3 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 4 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.

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