SVENSK STANDARD SS-EN 61558-2-14

Fastställd	Utgåva	Sida	Ansvarig kommitté
2013-05-08	1	1 (1+22)	SEK TK 96

Transformatorer, strömförsörjningsdon och liknande – Säkerhet – Del 2-14: Särskilda fordringar på vridtransformatorer och strömförsörjningsenheter med vridtransformatorer

Safety of transformers, reactors, power supply units and combination thereof – Part 2-14: Particular requirements and tests for variable transformers and power supply units incorporating variable transformers

Som svensk standard gäller europastandarden EN 61558-2-14:2013. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61558-2-14:2013.

Nationellt förord

Europastandarden EN 61558-2-14:2013

består av:

- **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
- **IEC 61558-2-14, First edition, 2012 - Safety of transformers, reactors, power supply units and combination thereof - Part 2-14: Particular requirements and tests for variable transformers and power supply units incorporating variable transformers**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN 61558-1, utgåva 2, 2006 och SS-EN 61558-1/A1, utgåva 1, 2009.

ICS 29.180.00

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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SEK är Sveriges röst i standardiseringsarbetet inom elområdet

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Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61558-2-14

March 2013

ICS 29.180

English version

Safety of transformers, reactors, power supply units and combination thereof - Part 2-14: Particular requirements and tests for variable transformers and power supply units incorporating variable transformers

(IEC 61558-2-14:2012)

Sécurité des transformateurs, bobines d'inductance, blocs d'alimentation et des combinaisons de ces éléments - Partie 2-14 : Exigences particulières et essais pour les transformateurs variables et les blocs d'alimentation incorporant des transformateurs variables
(CEI 61558-2-14:2012)

Sicherheit von Transformatoren, Drosseln, Netzgeräten und deren Kombinationen - Teil 2-14: Besondere Anforderungen und Prüfungen für Stelltransformatoren und Netzgeräte, die Stelltransformatoren enthalten
(IEC 61558-2-14:2012)

This European Standard was approved by CENELEC on 2012-12-27. 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, Former Yugoslav Republic of Macedonia, 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

Ref. No. EN 61558-2-14:2013 E

SEK Svensk Elstandard

Foreword

The text of document 96/395/FDIS, future edition 1 of IEC 61558-2-14, prepared by IEC/TC 96 "Transformers, reactors, power supply units and combination thereof" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61558-2-14:2013.

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)	2013-09-27
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-12-27

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 EN standard: *Particular requirements and tests for variable transformers and power supply units incorporating variable transformers.*

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

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.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 61558-2-14:2012 was approved by CENELEC as a European Standard without any modification.

In the Bibliography of EN 61558-1:2005, the following notes have to be **added** for the standards indicated:

IEC 60076-11	NOTE	Harmonised as EN 60076-11.
IEC 61558-2-16	NOTE	Harmonised as EN 61558-2-16.

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.

Annex ZA of EN 61558-1:2005 is applicable except as follows:

Publication	Year	Title	EN/HD	Year
In Annex ZA of EN 61558-1:2005 ***add****:*				
IEC 61558-1 + corr. March + corr. March + corr. April + A1	2005 2010 2008 2011 2009	Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests	EN 61558-1 + corr. August + A1	2005 2006 2009

CONTENTS

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

Part 2-14: Particular requirements and tests for variable transformers and power supply units incorporating variable transformers

1 Scope

Replacement:

This part of IEC 61558 deals with safety of **variable transformers** for general applications and **power supply units** incorporating **variable transformers** for general applications.

Transformers incorporating **electronic circuits** are also covered by this standard.

NOTE 1 Safety includes electrical, thermal, mechanical and chemical aspects.

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

The **rated supply voltage** does not exceed 1 000 V a.c., and the **rated supply frequency** does not exceed 500 Hz.

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

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

This part does not apply to **transformers** covered by IEC 60076-11.

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

– **variable auto-transformers** and **power supply units** incorporating **variable auto-transformers;**

– **variable separating transformers** and **power supply units** incorporating **variable separating transformers;**

– **variable isolating transformers** and **power supply units** incorporating **variable isolating transformers;**

– **variable safety isolating transformers** and **power supply units** incorporating **variable safety isolating transformers.**

The windings may be encapsulated or non-encapsulated.

The **rated output** does not exceed:

– 40 kVA for single-phase **variable auto-transformers** and **power supply units** incorporating single-phase **variable auto-transformers**;

– 200 kVA for poly-phase **variable auto-transformers** and **power supply units** incorporating poly-phase **variable auto-transformers**;

– 1 kVA for single-phase **variable separating transformers** and **power supply units** incorporating single-phase **variable separating transformers**;

– 5 kVA for poly-phase **variable separating transformers** and **power supply units** incorporating poly-phase **variable separating transformers**;

– 25 kVA for single-phase **variable isolating transformers** and **power supply units** incorporating single-phase **variable isolating transformers**;

– 40 kVA for poly-phase **variable isolating transformers** and **power supply units** incorporating poly-phase **variable isolating transformers**;

– 10 kVA for single-phase **variable safety isolating transformers** and **power supply units** incorporating single-phase **variable safety isolating transformers**;

– 16 kVA for poly-phase **variable safety isolating transformers** and **power supply units** incorporating poly-phase **variable 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.

For variable auto-transformers and **power supply units** incorporating **variable 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.;

– for **independent auto-transformers** the **rated output voltage** does exceed 50 V a.c or 120 V ripple-free d.c. but not exceed 250 V a.c. .

NOTE 3 Normally, the **variable auto-transformers** and **power supply units** are intended to be associated with the equipment to provide voltages different from the supply voltage for the functional reasons. The protection against electric shock can be provided by other features of the equipment, such as the **body**.

Variable auto-transformers and **power supply units** incorporating **variable auto-transformers** intended to be used by technically skilled or trained personnel are considered as **associated transformers** and **associated power supply units** and may have a **rated output voltage** less than 50 V a.c.

For variable separating transformers and **power supply units** incorporating **variable 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.;

– for **portable separating transormers** the **rated output voltage** does exceed 50 V a.c or 120 V ripple-free d.c.;

– covered by this part may only be used where **double** or **reinforced insulation** between circuits is not required by the installation rules or by the end product standard.

NOTE 4 Normally, **variable separating transformers** and **power supply units** are intended to be associated with equipment to provide voltages different from the supply voltage for the functional reasons. The protection against electric shock can be provided (or completed) by other features of the equipment, such as the **body**. Parts of **output circuits** can be connected to the protective earth.

NOTE 5 **Variable separating transformers** and **power supply units** incorporating **variable separating transformers** intended to be used by technically skilled or trained personal are considered as **associated transformers** and **associated power supply units** and can have a **rated output voltage** less than 50 V a.c. or 120 V ripple-free d.c.

For variable isolating transformers and **power supply units** incorporating **variable isolating transformers:**

– the **no-load output voltage** or the **rated output voltage** 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 or in accordance with national wiring rules;

– for **independent isolating transformers** the **rated output voltage** does not exceed 250 V a.c.; .

– are used where **double** or **reinforced insulation** between circuits is required by the installation rules or by the end product standard.

For variable safety isolating transformers and **power supply units** incorporating **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.;

– are used 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 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.) can 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 are also considered;

– the different conditions for transportation, storage, and operation of the **transformers** are also be considered;

– additional requirements in accordance with other appropriate standards and national rules can be applicable to **transformers** intended for use in special environments, such as tropical environment.

Future technological development of **transformers** can 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*

Amendment 1 (2009)