
Varnost močnostnih transformatorjev, napajalnikov, reaktorjev in podobnih izdelkov – 2-2. del: Posebne zahteve za kontrolne transformatorje in napajalnike s kontrolnimi transformatorji

Safety of power transformers, power supplies, reactors and similar products – Part 2-2: Particular requirements for control transformers and power supplies incorporating control transformers

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61558-2-2:2007

<https://standards.iteh.ai/catalog/standards/sist/be150a12-77e7-4aa7-93e5-010df720f7e6/sist-en-61558-2-2-2007>

**96/223/CDV****COMMITTEE DRAFT FOR VOTE (CDV)
PROJET DE COMITÉ POUR VOTE (CDV)**

Project number Numéro de projet		IEC 61558-2-2 Ed.2	
IEC/TC or SC: TC 96 CEI/CE ou SC:	Date of circulation Date de diffusion 2005-05-13	Closing date for voting (Voting mandatory for P-members) Date de clôture du vote (Vote obligatoire pour les membres (P)) 2005-10-14	
Titre du CE/SC:		TC/SC Title: Safety of power transformers, power supplies, reactors and similar products	
Secretary: Wolfgang Reichelt /DE Secrétaire:			
Also of interest to the following committees Intéresse également les comités suivants		Supersedes document Remplace le document 96/222/MCR	
Functions concerned Fonctions concernées <input checked="" type="checkbox"/> Safety Sécurité <input type="checkbox"/> EMC CEM <input type="checkbox"/> Environment Environnement <input type="checkbox"/> Quality assurance Assurance qualité			

CE DOCUMENT EST TOUJOURS À L'ÉTUDE ET SUSCEPTIBLE DE MODIFICATION. IL NE PEUT SERVIR DE RÉFÉRENCE.

LES RÉCIPIENDAIRES DU PRÉSENT DOCUMENT SONT INVITÉS À PRÉSENTER, AVEC LEURS OBSERVATIONS, LA NOTIFICATION DES DROITS DE PROPRIÉTÉ DONT ILS AURAIENT ÉVENTUELLEMENT CONNAISSANCE ET À FOURNIR UNE DOCUMENTATION EXPLICATIVE.

THIS DOCUMENT IS STILL UNDER STUDY AND SUBJECT TO CHANGE. IT SHOULD NOT BE USED FOR REFERENCE PURPOSES.

RECIPIENTS OF THIS DOCUMENT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

Titre :

SIST EN 61558-2-2:2005
IEC 61558-2-2 Ed.2 SAFETY OF POWER TRANSFORMERS, POWER SUPPLIES, REACTORS AND SIMILAR PRODUCTS

Part 2-2: Particular requirements for control transformers and power supplies incorporating control transformers:

Note d'introduction

Introductory note

This part 2-2 of IEC 61558 applies to **stationary** or **portable**, single-phase or poly-phases, air-cooled (natural or forced), **independent** or **associated control transformers and power supplies incorporating control transformer**, having a **rated supply voltage** not exceeding 1000 V a.c. and **rated supply and internal operating frequency** not exceeding 500 Hz.

ATTENTION	ATTENTION
CDV soumis en parallèle au vote (CEI) et à l'enquête (CENELEC)	Parallel IEC CDV/CENELEC Enquiry

Copyright © 2005 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY OF POWER TRANSFORMERS, POWER SUPPLIES,
REACTORS AND SIMILAR PRODUCTS****Part 2-2: Particular requirements for control transformers and power
supplies incorporating control 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.
- 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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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.

This International standard IEC 61558-2-2 has been prepared by technical committee 96: Small power transformers, reactors and power supply units and similar products.

It has the status of a group safety publication in accordance with IEC Guide 104.

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

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 2 is intended to be used in conjunction with the latest Edition of IEC 60558-1 and its amendments. It is based on the second edition 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 control transformers and power supplies incorporating control transformers"

This standard replaces Edition 1

Where a specific 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.

iTeh STANDARD PREVIEW

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date¹⁾ 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.

¹⁾ The National Committees are requested to note that for this publication the maintenance result date is .2009...

SAFETY OF POWER TRANSFORMERS, POWER SUPPLIES, REACTORS AND SIMILAR PRODUCTS

Part 2-2: Particular requirements for control transformers and power supplies incorporating control transformers

1 Scope

Replacement:

This International standard deals with safety aspects such as electrical, thermal and mechanical safety of control transformers and power supplies incorporating control transformers.

This standard is applicable to transformers and power supplies incorporating electronic circuits. This standard is not applicable to external circuits and their components intended to be connected to the input and output terminals or socket- outlets of the transformer and power supplies

This part 2-2 of IEC 61558 applies to **stationary** or **portable**, single-phase or poly-phases, air-cooled (natural or forced), **independent** or **associated control transformers and power supplies incorporating control transformer**, having a **rated supply voltage** not exceeding 1 000 V a.c. and **rated supply and internal operating frequency** not exceeding 500 Hz.

The **rated output** does not exceed:

- 25 kVA for single-phase **control transformers; and power supplies incorporating control transformer**
- 40 kVA for poly-phase **control transformers; and power supplies incorporating control transformer**

This standard is also applicable to **control transformers and power supplies incorporating control transformer** without limitation of the **rated output** subject to an agreement between the purchaser and the supplier.

This standard is applicable to **dry-type transformers**. The windings may be encapsulated or non-encapsulated.

The **no-load output voltage** and the **rated output voltage** do not exceed 1 000 V a.c. or 1 415 V ripple free d.c.

For **independent control transformers** the **no-load output voltage** is not less than 50 V a.c., Small power transformers, reactors, power suppl units and similar products and for independent power supplies incorporating control transformer the no load output voltage not less than 50 V a.c or 120 V ripple free d.c.

Transformers covered by this standard are used only in applications where **double** or **reinforced insulation** between circuits is not required by the installation rules or by the appliance specification.

NOTE 1 – Normally, the transformers are intended to be **associated** with the equipment to provide voltages different from the supply voltage for the functional requirement of the equipment. The protection against electric shock may be provided (or completed) by other features of the equipment, such as the **body**.

NOTES 2 – Attention is drawn to the following:

- for transformers **and power supplies incorporating control transformer** 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 like fungus, vermin and termites should also be considered (mainly in tropical environment)

-additional requirements in accordance with other appropriate standards and national rules may be applicable to **transformers and power supplies incorporating control transformer** intended for use in special environments, such as tropical environment

This standard is also applicable to transformers and power supplies associated with specific equipment, to the extent decided upon by the relevant IEC technical committees.

2 Normative references

This clause of part 1 is applicable.

3 Definitions

This clause of part 1 is applicable except as follows:

Addition:

When the term control transformer is used it covers power supplies incorporating control transformer

3.1.101

control transformer

separating transformer intended to supply power to control circuits (e.g. controlling, signalling, interlocking, etc.)

3.5.101

rated thermal output

maximum output delivered in continuous operation when the **control transformer** is supplied at the **rated supply voltage** and **rated supply frequency** and loaded at power factor equal to 1

3.5.102

admissible instantaneous output

maximum output delivered at a power factor equal to 0,5 for a short time when the **control transformer** is supplied at **rated supply voltage** and **rated supply frequency**

4 General requirements

This clause of part 1 is applicable.

5 General notes on tests

This clause of part 1 is applicable.

6 Ratings

Replacement:

6.1 The **rated output voltage** shall not exceed 1000 V a.c or 1415 V ripple-free d.c. and for **independent control transformers** shall exceed 50 V a.c. or 120 V d.c.

6.2 The **rated thermal output** is not limited.

6.3 The **rated supply and internal operating frequency** shall not exceed 500 Hz.

6.4 The **rated supply voltage** shall not exceed 1000 V a.c.

Compliance with the requirements of 6.1, 6.2, 6.3, and 6.4 is checked by inspection of the marking.

7 Classification

This clause of part 1 is applicable.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61558-2-2:2007

<https://standards.iteh.ai/catalog/standards/sist/be150a12-77e7-4aa7-93e5-010df720f7e6/sist-en-61558-2-2-2007>

8 Marking and other information

This clause of part 1 is applicable except as follows:

8.1 c) Replacement:

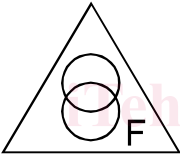
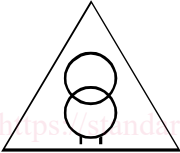
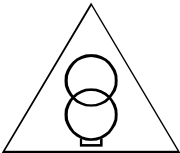
The **control transformer** shall be marked with the **rated thermal output** and the **admissible instantaneous output** in volt-amperes, separated by an oblique stroke (e.g. 100/300 VA);

8.1 d) is not applicable

8.1 h) Replacement:

The transformers shall be marked with one of the graphical symbols shown in 8.11;

8.11 Addition:

Graphical symbol	Title and description	Reference number in IEC 60417
	Fail-safe control transformer	number to be introduced
	Non-short-circuit proof control transformer	number to be introduced
	Short-circuit proof control transformer (inherently or non-inherently)	number to be introduced

Addition:

8.101 If **control transformers** are provided with input tapplings to allow adjustments to the supply voltage, these tapplings shall be marked with the value of the input voltage corresponding to the tapping.

NOTE – If **control transformers** are provided with input tapplings to allow adjustments to the supply voltage, tapplings in steps of 5 % are preferred.

9 Protection against electric shock

This clause of part 1 is applicable.

10 Change of input voltage setting

This clause of part 1 is applicable.

11 Output voltage and output current under load

This clause of part 1 is applicable except as follows:

11.1 Replacement:

When the transformer is connected to the **rated supply voltage**, at **rated supply frequency**, and loaded with a resistor which would give **rated thermal output**, the output voltage shall not differ from the rated value by more than $\pm 5\%$.

Compliance is checked by measuring the output voltage when steady-state conditions are established.

Immediately after the transformer is loaded with the rated load for the **admissible instantaneous output** at a power factor equal to 0,5 (inductive), the output voltage is measured and shall not be less than 95 % of the measured voltage at rated thermal output.

NOTE – The output voltage measurement for the **admissible instantaneous output** should be carried out within 50 ms after applying this overload to minimise the effects of supplementary heating of the transformer.

For transformers with more than one **rated supply voltage**, the requirement is applicable for each of the **rated supply voltages**.

12 No-load output voltage

This clause of part 1 is applicable except as follows:

Addition:

12.101 The **no-load output voltage** shall not exceed 1000 V a.c. or 1415 V ripple-free d.c. This limitation applies even when **independent output windings**, not intended for interconnection, are connected in series.

12.102 The difference between the **no-load output voltage** and the **output voltage** under load shall not be excessive.

The difference between the no-load output voltage measured in this clause and the output voltage under load measured during the test of clause 11, expressed as a percentage of the latter voltage, shall not exceed the values shown in table 101.

NOTE – The ratio is defined as follows:

$$\frac{U_{\text{no-load}} - U_{\text{load}}}{U_{\text{load}}} \times 100 [\%]$$

Compliance with the requirements of 12.101 and 12.102 is checked by measuring the no-load output voltage when at ambient temperature, the transformer is connected to the rated supply voltage at rated supply frequency and at rated thermal output.

13 Short-circuit voltage

This clause of part 1 is applicable.

14 Heating

This clause of part 1 is applicable except as follows: