

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

GROUP ENERGY EFFICIENCY PUBLICATION  
PUBLICATION GROUPEE SUR L'EFFICACITE ENERGÉTIQUE

**Safety of transformers, reactors, power supply units and combinations thereof –  
Part 2-23: Particular requirements and tests for transformers and power supply  
units for construction sites**

**Sécurité des transformateurs, bobines d'inductance, blocs d'alimentation et des  
combinaisons de ces éléments –  
Partie 2-23: Règles particulières et essais pour les transformateurs et les blocs  
d'alimentation pour chantiers**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY OF TRANSFORMERS, REACTORS,  
POWER SUPPLY UNITS AND COMBINATIONS THEREOF –****Part 2-23: Particular requirements and tests for transformers and  
power supply units for construction sites**

## FOREWORD

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IEC 61558-2-23 has been prepared by IEC technical committee 96: Transformers, reactors, power supply units and combinations thereof. It is an International Standard.

This third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) adjustment of structure and references in accordance with IEC 61558-1:2017;
- b) new symbol for power supply units with linearly regulated output voltage.

The text of this International Standard is based on the following documents:

Draft	Report on voting
96/590/FDIS	96/596/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

It has the status of a group safety publication in accordance with IEC Guide 101.

This International Standard is to be used in conjunction with IEC 61558-1:2017.

This document supplements or modifies the corresponding clauses in IEC 61558-1:2017, so as to convert that publication into the IEC standard: *Particular requirements and tests for transformers and power supply units for construction sites*.

A list of all parts in the IEC 61558 series published 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 this document states "*addition*", "*modification*" or "*replacement*", the relevant text of IEC 61558-1:2017 is to be adapted accordingly.

In this document, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in normal roman type.

In the text of this document, the words in **bold** are defined in Clause 3.

Subclauses, notes, figures and tables additional to those in IEC 61558-1:2017 are numbered starting from 01; supplementary annexes are entitled AA, BB, etc.

The committee has decided that the contents of this document will remain unchanged until the expiry date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

## INTRODUCTION

IEC/TC 96 has a group safety function in accordance with IEC Guide 104 for transformers other than those intended to supply distribution networks, in particular transformers and power supply units intended to allow the application of protective measures against electric shock as defined by TC 64, which is about electrical installations and protection against electric shock, but in certain cases including the limitation of voltage and horizontal safety function for **SELV**, in accordance with IEC 60364-4-41.

The group safety function (GSF) is used because of responsibility for **safety extra-low voltage (SELV)** in accordance with IEC 61140:2016, 5.2.6 and IEC 60364-4-41:2005, 414.3.1 or control circuits in accordance with IEC 60204-1:2016, 7.2.4.

The group safety function is used for each part of IEC 61558-2 because different standards of the IEC 61558 series can be combined in one construction but in certain cases with no limitation of **rated output** power.

For example an **auto-transformer** in accordance with IEC 61558-2-13 can be designed with a separate **SELV-circuit** in accordance with the particular requirements for IEC 61558-2-6 relating to the general requirements of IEC 61558-1.

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

## Part 2-23: Particular requirements and tests for transformers and power supply units for construction sites

### 1 Scope

#### *Replacement:*

This part of IEC 61558 deals with the safety of **transformers** for construction sites and **power supply units** incorporating **transformers** for construction sites. **Transformers** incorporating **electronic circuits** are also covered by this document.

NOTE 1 Safety includes electrical, thermal and mechanical aspects.

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

This document is applicable to **stationary** or **portable**, single-phase or polyphase, air-cooled (natural or forced) **independent** or **associated transformers**, being **isolating** or **safety isolating dry-type transformers** for the use on construction sites. The windings can be encapsulated or non-encapsulated.

For **power supply units** (linear) this document is applicable. For **switch mode power supply units**, IEC 61558-2-16 is applicable together with this document. Where two requirements are in conflict, the most severe takes precedence.

The **rated supply voltage** does not exceed 1 000 V AC, and the **rated supply frequency** and the **internal operating frequencies** do not exceed 500 Hz.

The **rated output** does not exceed:

- 25 kVA for single-phase **transformers**;
- 40 kVA for polyphase **transformers**.

This document 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.

**Isolating transformers** for construction sites have a **no-load output voltage** and a **rated output voltage** exceeding 50 V AC and not exceeding 250 V AC.

**Safety isolating transformers** for construction sites have a **no-load output voltage** and a **rated output voltage** not exceeding 50 V AC.

NOTE 3 This document is applicable to **transformers** for the supply of electricity in locations as specified in IEC 60364-7-704. The latter also specifies the protection by using an earthed midpoint or starpoint of the **output winding**.

NOTE 4 **Transformers** covered by this document are used in applications where it is required by the installation rules or by the appliance specification for protection purposes.