



UL 5085-1

STANDARD FOR SAFETY

Low Voltage Transformers – Part 1: General Requirements

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UL Standard for Safety for Low Voltage Transformers – Part 1: General Requirements, UL 5085-1

First Edition, Dated April 17, 2006

Summary of Topics

This revision of ANSI/UL 5085-1 dated June 2, 2022 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

As noted in the Commitment for Amendments statement located on the back side of the title page, UL and CSA are committed to updating this harmonized standard jointly. However, the revision pages dated June 2, 2022 will not be jointly issued by UL and CSA as these revision pages only address UL ANSI approval dates.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated March 25, 2022.

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CSA Group
CSA C22.2 No. 66.1-06
First Edition



Underwriters Laboratories Inc.
UL 5085-1
First Edition

Low Voltage Transformers – Part 1: General Requirements

April 17, 2006

(Title Page Reprinted: June 2, 2022)

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ANSI/UL 5085-1-2013 (R2022)

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This ANSI/UL Standard for Safety consists of the First edition including revisions through June 2, 2022.

The most recent designation of ANSI/UL 5085-1 as a Reaffirmed American National Standard (ANS) occurred on May 24, 2022. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

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Preface

This is the harmonized CSA Group and UL standard for low voltage transformers. It is the first edition of CSA C22.2 No. 66.1 and the first edition of UL 5085-1. This harmonized standard has been jointly revised on December 6, 2013. For this purpose, CSA Group and UL are issuing revision pages dated December 6, 2013.

This harmonized standard was prepared by a Technical Harmonization Committee comprised of members from CSA Group, Underwriters Laboratories Inc. (UL), and representatives of the low voltage transformer manufacturing industry. The efforts and support of members of the Technical Harmonization Committee are gratefully acknowledged.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This standard was reviewed by the CSA Subcommittee on C22.2 No. 66, under the jurisdiction of the CSA Technical Committee on Industrial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of harmonization

This standard uses the IEC format but is not based on, nor is it to be considered equivalent to, an IEC standard. This standard is published as an equivalent standard for CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

Reasons for Differences from IEC

The Technical Harmonization Committee identified the following IEC Standard within the scope of this standard: IEC 61558-1 (1998-07), Safety of power transformers, power supply units, and similar - Part 1: General requirements.

The THC determined that the safe use of transformers and reactors is critically dependent on the electrical system in which they are intended to be installed. Significant investigation is required to assess safety and system compatibility issues that may lead to harmonization of traditional North American transformers and reactors with those presently addressed in the known IEC standards. The THC agreed such future investigation might be facilitated by completion of harmonization of North American standards for transformers and reactors.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules

of the standards development organization. If more than one literal interpretation has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

Parts

The Standard for Low Voltage Transformers is divided into the following parts:

Part Number	Standard Title	Standard Number
1	General Requirements	CSA C22.2 No. 66.1/UL 5085-1
2	General Purpose Transformers	CSA C22.2 No. 66.2/UL 5085-2
3	Class 2 and Class 3 Transformers	CSA C22.2 No. 66.3/UL 5085-3

NOTES –

1. Part 1 covers the general requirements for transformer characteristics, marking, construction, and tests. Additional specific requirements are provided in the subsequent parts.
2. Part 2 and Part 3 supplement requirements and/or modify the corresponding clauses in Part 1 and should be applied together with Part 1. The numbered clauses in Part 2 and Part 3 correspond to the numbered clauses in Part 1.

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PART 1: GENERAL REQUIREMENTS

1 Scope

1.1 These requirements cover the following types of transformers:

- a) Air-cooled transformers and reactors for general use;
- b) General purpose autotransformers;
- c) Ferroresonant transformers;
- d) Class 2 and Class 3 transformers (which are evaluated in accordance with Part 3);
- e) Cord-connected transformers (which are evaluated in accordance with Part 2);
- f) Transformers incorporating overcurrent or over-temperature protective devices, transient voltage surge protectors, or capacitors; and
- g) Permanently-connected transformers.

1.2 These transformers are intended to be used in accordance with the National Electrical Code, ANSI/NFPA 70, or CSA C22.1, the Canadian Electrical Code, Part I. The Canadian Electrical Code defines low voltage as any voltage from 31 to 750 V inclusive and high voltage as any voltage above 750 V. The National Electrical Code, ANSI/NFPA 70, defines low voltage as any voltage up to 600 V, nominal. Therefore, low voltage transformers intended for use in Canada may be rated above 600 V up to 750 V. Low voltage transformers intended for use in the United States are rated up to 600 V. Where information in clauses and tables in this standard reference voltage ranges, the limit of 600 V applies in the United States, while the limit of 750 V applies in Canada.

1.3 The standard does not cover the following transformers:

- a) Direct plug-in types;
- b) Neon;
- c) Liquid-immersed;
- d) Variable voltage (Variac);
- e) Low voltage landscape;
- f) Swimming pool and spa;
- g) Ignition;
- h) High intensity lighting;
- i) Toy;
- j) Fluorescent lamp types;
- k) Transformers for welders;
- l) Distribution;