

UL 1876

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Isolating Signal and Feedback Transformers for Use in Electronic Equipment



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September 15, 1995

Standard for

Isolating Signal and Feedback Transformers for Use In Electronic Equipment

UL 1876, Second Edition

Accompanying this transmittal notice is a copy of the second edition of UL 1876.

THIS EDITION OF THE STANDARD IS NOW IN EFFECT.

As indicated on the title page, this UL Standard for Safety is an American National Standard. Attention is directed to the note on the title page of this standard outlining the procedures to be followed to retain the approved text of ANSI/UL 1876-1995.

Revised and/or additional pages may be issued from time to time.

SEPTEMBER 15, 1995



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UL 1876

Standard for

**Isolating Signal and Feedback Transformers
for Use in Electronic Equipment**

First Edition – September, 1989

Second Edition**September 15, 1995**

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated September 15, 1995. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Approved as ANSI/UL 1876-1990, October 31, 1990

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Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest published set of revision pages.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements apply to isolating signal and feedback transformers intended to be used in electronic equipment where only audio, video, and other signal waveforms are transformed. These transformers are intended to provide isolation from circuits that are either conductively connected to a branch circuit supply or connected to secondary circuits involving voltages that are considered to present a risk of electric shock by the nature of their use in an end-product.

1.2 These requirements do not apply to transformers and motor-transformers that are connected to a supply circuit to power a secondary circuit.

1.3 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard cannot be judged to comply with this standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.1.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard or
- b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

2.1.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions for which they have been recognized.

2.2 Units of measurement

2.2.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

2.2.2 Unless otherwise indicated, all voltage and current values mentioned in this standard are root-mean-square (rms).

2.3 Undated references

2.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

3 Glossary

3.1 For the purpose of this standard the following definitions apply.

3.2 **ENCAPSULATION COMPOUND** — A material, generally of the polymeric type, that is at least 1/32 inch (0.8 mm) thick and that encapsulates the transformer by being molded around the coil windings where the transformer is not provided with any other housing material.

3.3 **HAZARDOUS CIRCUIT** — A circuit in an appliance that either is conductively connected to a branch circuit or involves a risk of electric shock.

3.4 **HAZARDOUS CIRCUIT WINDING** — A winding of an isolating signal transformer that is intended to be connected to a hazardous circuit.

3.5 **HOUSING** — A partial or complete enclosure, generally of polymeric material or metal, that is around the outside of all or part of the transformer (such as end bells) but is not in contact with current-carrying parts.

3.6 **IMPREGNATION COMPOUND** — A material, generally of the polymeric type and commonly in the form of varnish, that is absorbed by insulating materials such as electrical grade paper and that provides a coating of less than 1/32 inch (0.8 mm) thick over all transformer parts.

3.7 **ISOLATED CIRCUIT** — A circuit that is not conductively connected to the supply circuit.

3.8 **ISOLATED WINDING** — A winding of an isolating signal transformer that is intended to be connected to a nonhazardous circuit.

3.9 **POTTING COMPOUND** — A material, generally of the polymeric type, that seals the transformer by filling the space between the coil windings and the housing. Potting material differs from impregnation material in that impregnation material is not intended to completely fill the space between the coil windings and the housing.

3.10 **TRANSFORMER FAMILY** — A series of transformer models which have identical insulating materials provided between each winding. The number of windings may vary for different models in a family, but the models must either all be suitable for securement to a live chassis or not suitable for securement to a live chassis.

3.11 **WINDING** — A coil of wire including the start, finish, and crossover leads up to the point where insulated leads or terminals are connected.

CONSTRUCTION

4 Housing

4.1 A material provided as a housing around all or part of a transformer shall comply with 4.2 if of metal and 4.3 if of polymeric material.