



TRANSFORMERS / POWER UNITS

These product category descriptions are to be used in conjunction with the “Overview of ARL’s Listing, Labeling and Follow-Up Inspection Services” (LSc001) which details ARL’s system requirements for obtaining a listed product certification.

This includes the following subcategories:

- **Specialty Transformers**
- **Low Voltage Transformers**
- **Class 2 and Class 3 Transformers**

Specialty Transformers

The products listed here are air-cooled transformers and reactors for general use; ignition transformers for use with gas burners and oil burners; and gas tube sign transformers for use with inert gas tubes. Transformers incorporating over current or over temperature protective devices, transient voltage surge protectors, or power factor correction capacitors are also covered by the requirements for this category of products.

These requirements for this category **do not** cover liquid immersed transformers, variable voltage autotransformers, transformers having a nominal primary rating of more than 600 volts, transformers having over voltage taps rated over 660 volts, cord and plug connected transformers (other than gas tube sign transformers), garden light transformers, voltage regulators, swimming pool and spa transformers, or other special types of transformers covered in requirements for other electrical devices or appliances. In addition, not covered are:

- a) Autotransformers used in industrial control equipment;
- b) Class 2 or Class 3 transformers;
- c) Toy transformers;
- d) Transformers for use with radio and television type appliances;
- e) Transformers for use with high intensity discharge lamps;
- f) Transformers for use with fluorescent lamps;
- g) Ventilated transformers for general use or non-ventilated transformers for general use (other than compound filled or exposed core types);
- h) Dry type distribution transformers rated over 600 volts;
- i) Transformers incorporating rectifying or wave shaping circuitry; and
- j) Transformers of the direct plug-in type.

Each product is marked with the name or trademark of the (manufacturer) or vendor, a distinctive style, type, catalog or model designation, electrical ratings, percent impedance, environmental type, temperature class, wiring diagram, electrical hazard and cautionary warnings, installation warnings, date code, and other markings as required for specific transformer types and applications.

These products comply with ARL requirements which include pertinent sections of the **Standard for Safety, ANSI/UL 506, Specialty Transformers**, and are intended to be employed in accordance with the National Electrical Code, ANSI/NFPA 70.

Low Voltage Transformers

General

This category covers the following types of transformers:

- a) Air-cooled transformers and reactors for general use;
- b) General purpose autotransformers;
- c) Ferro-resonant transformers;
- d) Class 2 and Class 3 transformers (which are evaluated in accordance with UL 5085-3);
- e) Permanently-connected transformers.

These transformers are intended to be used in accordance with the National Electrical Code, ANSI/NFPA 70. The National Electrical Code, ANSI/NFPA 70, defines low voltage as any voltage up to 600 V, nominal. 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.

This category does not include the following transformers:

- a) Direct plug-in types;
- b) Neon;
- c) Liquid-immersed;
- d) Variable voltage;
- 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;
- m) Transformers intended for use in the United States with a nominal primary rating of more than 600 V;
- n) Transformers incorporating rectifying or wave-shaping circuitry;
- o) Transformers for use with radio- and television-type appliances;
- p) Transformers intended for use in the United States having overvoltage taps rated over 660 V;
- q) Autotransformers used in industrial control equipment, which are evaluated in accordance with the requirements of the Standard for Industrial Control Equipment, UL 508, Industrial Control Equipment; and

- r) Other special types of transformers covered in requirements for other electrical devices or appliances.

These products comply with ARL requirements which include applicable sections of the **UL Standard 5085-1, Low Voltage Transformers - Part 1: General Requirements. UL 5085 Part 1**, that establish the characteristics, construction, operating conditions, markings, and test conditions for each type of transformer.

The requirements for this category may be modified by requirements in an end product standard if a transformer is intended for use only as a component in other equipment.

Each listed product is marked with the name or trademark of the (manufacturer) or vendor, a distinctive type, style, model or catalog designation, date code, electrical ratings, electrical hazard warnings, and other markings and cautionary warnings as required for specific types of products.

Class 2 and Class 3 Transformers

The scope of the category includes Class 2 transformers for use with Class 2 circuits in accordance with the National Electrical Code, ANSI/NFPA 70. They are intended for connection to essentially sinusoidal supply sources.

This category also covers Class 3 transformers for use with Class 3 circuits in accordance with the National Electrical Code, ANSI/NFPA 70, unless otherwise specified. Refer to Annex D of the standard for Class 3 requirements.

In addition to the items specified in Part 1, the category of Part 3 does not include:

- a) Power supplies (a transformer provided with a rectifier is considered a power supply);
- b) Toy transformers;
- c) Cord and plug connected transformers other than Class 3;
- d) Direct plug-in transformers;
- e) Transformers intended for use in audio, radio, or television type appliances; or
- f) Other special types of transformers covered in requirements for other electrical devices or appliances.

Advisory Note: The scope of this category does not cover transformers intended for use in the United States having a nominal primary rating of more than 600 V and transformers having overvoltage taps rated over 660 V.

The requirements for products in this category are intended to be used in conjunction with the general requirements.

A Class 2 transformer that includes a separate current-limiting impedance such as a resistor or a positive temperature coefficient device (PTC) is covered by these requirements.

A Class 2 transformer that includes a resonance regulating circuit is covered by these requirements.

These products comply with ARL requirements which include applicable sections of the **UL Standard 5085-3, Low Voltage Transformers - Part 3: Class 2 and Class 3 Transformers.**

Each listed product is marked with the name or trademark of the (manufacturer) or vendor, a distinctive type, style, model or catalog designation, date code, electrical ratings, electrical hazard warnings, and other markings and cautionary warnings as required for specific types of products.

An appliance designed so that it can be mounted and supported at an outlet box, such as a food warmer.

A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements of the standard, and that involve a risk of fire, electric shock, or injury to persons, have been 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 the standard. A product whose features, characteristics, components, materials, or systems conflict with specific provisions of the standard have been judged to be in non-compliance with the standard.

Only products which properly bear the ARL Listing Mark (Label) are considered Listed by ARL.