UL 1481

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Power Supplies for Fire-Protective Signaling Systems

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New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing, Recognition, and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

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This Standard consists of pages dated as shown in the following checklist:

UL 1481

Standard for Power Supplies for Fire-Protective Signaling Systems

First Edition – August, 1978
Second Edition – May, 1987
Third Edition – February, 1994
Fourth Edition – April, 1999

Fifth Edition

December 12, 2006

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

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 set of revised requirements. Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at http://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover commercial stationary and fixed power supplies for fire-protective signaling systems, having input and output ratings of not more than 300 volts, direct- and alternating-current, (DC and AC), for use in indoor locations in accordance with the following Standards of the National Fire Protection Association:

NFPA 70
National Electrical Code

NFPA 72
National Fire Alarm Code

1.2 These requirements also cover power supply-battery charger combinations used as power supplies, and battery charger units for use as components in fire-protective signaling systems.

1.3 These requirements do not cover power supplies or battery chargers integral with control units or amplifiers intended for fire-protective signaling service.

1.4 These requirements do not cover power supplies for use in hazardous locations, as defined in the National Electrical Code, ANSI/NFPA 70.

1.5 These requirements do not cover commercial power supplies covered by the Standard for Power Units Other Than Class 2, UL 1012, or commercial battery chargers covered by the Standard for Battery Chargers for Charging Engine-Starter Batteries, UL 1236.

1.6 A power supply that is not a complete assembly and depends upon installation in an end product for compliance with the requirements of this standard shall be investigated under the requirements of the standard for that end product.

1.7 The term ″product″ as used in this standard refers to all power supplies, battery chargers, power supply-battery charger combinations, and battery charger units or any part thereof covered by this standard unless specifically noted otherwise.

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

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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 specific limits, and shall be used only under those specific conditions for which they have been recognized.

2.2 Units of measurement

2.2.1 When a value for measurement is followed by a value in other units in parentheses, 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.

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3 Glossary

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

3.2 AVERAGE VALUE – The sum of all instantaneous values of current (or voltage), averaged over one-half of an alternating cycle.

3.3 BATTERY CHARGER – A product intended to deliver sufficient current to maintain storage batteries in their fully-charged condition while the batteries are not connected to a load. The storage batteries are intended to provide a secondary source of operating power in response to failure of the primary source of operating power.

3.4 CIRCUITS, ELECTRICAL:

a) High-Voltage – A circuit involving a potential of not more than 300 volts and having circuit characteristics in excess of those of a low-voltage circuit.

b) Low-Voltage – A circuit involving a potential of not more than 30 volts alternating current (AC) rms, 42.4 volts direct current (DC) or AC peak.

c) Power Limited – A circuit wherein the power is limited as described in Power-Limited Circuits, Section 31.

3.5 GAGES – Wherever they appear in this standard, the abbreviations MSG, GSG, and AWG mean, respectively, Manufacturers' Standard Gage for Steel Sheets, Galvanized Sheet Gage, and American Wire Gage. Reference to sheet metal by gage number is intended only as auxiliary information. Sheet metal of the indicated gage number may not be used if the forming processes have reduced the thickness of the sheet to a point below the specified minimum thickness.

3.6 LINE REGULATION – The change in steady state output resulting from a change in input line voltage.

3.7 LOAD REGULATION – The change in steady state output voltage resulting from a change in output current.

3.8 OPERATOR ACCESS AREA – An area to which, under normal operating conditions, either:

a) Access can be gained without the use of a tool;

b) The means of access is deliberately provided to the operator; or

c) The operator is instructed to enter regardless of whether or not tools are needed to gain access.

3.9 POWER SUPPLY – A source of electrical operating power including the circuits and terminations connecting it to the dependent system components.

a) Fixed – A power supply that is intended to be permanently connected to the electrical supply.

b) Stationary – A power supply that is intended to be fastened in place or located in a dedicated space.

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3.10 POWER SUPPLY-BATTERY CHARGER – A power supply that serves the dual function of providing operating power and charging storage batteries. The power supply is usually permanently connected to storage batteries, and the power supply-battery combination is intended to provide all of the electrical operating power required by the equipment to which the combination is connected, when the equipment is operating in its intended manner.

3.11 RIPPLE – An AC component superimposed on the DC output of a power supply, specified in terms of either its effective value or peak-to-peak value.

INSTRUCTIONS AND DRAWINGS

4 Details

4.1 General

4.1.1 Each product shall include instructions necessary for its intended installation and operation, as described in the following paragraphs.

4.2 Installation drawings

4.2.1 Installation instructions and drawings shall include at least the following information:

a) Typical installation drawing layouts and complete representative installation wiring diagram for the product, indicating field connections, wiring methods in accordance with the National Electrical Code, ANSI/NFPA 70, and input and output ratings.

b) A concise description of the operation, testing, and proper maintenance procedures for the product(s). The frequency of testing shall be in accordance with the requirements of the authorities having jurisdiction.

c) Replacement parts shall be identified in the instructions.

4.2.2 The instructions may be incorporated inside the enclosure, on a separate sheet, or as part of a manual. If not included directly on the product, the instructions or manuals shall be referenced in the marking information on the product.

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4.3 Operating instructions

4.3.1 Operating instructions shall include at least the following:

a) A description of the operation of the product and the function of controls and/or adjustments used during intended operation of the product;

b) Input and output ratings;

c) A space for the name, address, and telephone number of the local service representative; and

d) The load with which the product is intended to operate.

4.3.2 With reference to 4.3.1(d), the operating instructions for a power supply-battery charger unit shall include:

a) The maximum charging current (trickle charge and fast charge) and

b) The maximum ampere-hour capacity of the battery which the product is intended to charge.

4.3.3 The operating instructions shall appear on the front of the outer enclosure, or on a separate sheet that can be framed and located adjacent to the product.

4.3.4 If provided on a separate sheet in accordance with 4.3.3, the operating instructions shall include the model number (or other specific identification) of the product, and the product marking shall refer to the operating instructions by drawing number, issue number and/or date.

CONSTRUCTION

ASSEMBLY

5 General

5.1 Unless specifically indicated otherwise, the construction requirements specified for a product shall apply also for any remote accessories with which it is to be used.

5.2 The test means shall be constructed and located so as to prevent tampering by unauthorized personnel.

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