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# UL 603

## **STANDARD FOR SAFETY**

### Power Supplies for Use with Burglar-Alarm Systems

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UL Standard for Safety for Power Supplies for Use with Burglar-Alarm Systems, UL 603

Fifth Edition, Dated February 18, 2008

### **Summary of Topics**

***This revision of ANSI/UL 603 is being issued to update the title page to reflect the reaffirmation of ANSI approval. No changes in requirements are involved.***

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## INTRODUCTION

### 1 Scope

1.1 These requirements cover:

a) Power supplies for use with burglar-alarm systems installed in accordance with the Standard for Installation and Classification of Burglar and Holdup Alarm Systems, UL 681; and

b) Power supplies used to provide electrical power and standby power for burglar-alarm equipment constructed in accordance with the following:

- 1) The Standard for Police Station Connected Burglar Alarm Units and Systems, UL 365;
- 2) The Standard for Local Burglar-Alarm Units and Systems, UL 609;
- 3) The Standard for Central-Station Alarm Services, UL 827;
- 4) The Standard for Holdup Alarm Units and Systems, UL 636;
- 5) The Standard for Intrusion-Detection Units, UL 639;
- 6) The Standard for Household Burglar-Alarm System Units, UL 1023;
- 7) The Standard for Antitheft Alarms and Devices, UL 1037;
- 8) The Standard for Proprietary Burglar Alarm Units and Systems, UL 1076;
- 9) The Standard for Central-Station Burglar-Alarm Units, UL 1610;
- 10) The Standard for Digital Alarm Communicator System Units, UL 1635.

1.2 The input ratings of power supplies covered by these requirements are not more than 300 volts and the output ratings are low-voltage, power-limited. See 3.2.

1.3 These requirements cover power supplies for use as components in burglar-alarm system units.

1.4 These requirements do not cover power supplies for use at a central station. Such power supplies are covered by the Standard for Central-Station Alarm Services, UL 827.

1.5 These requirements do not cover power supplies integral with a burglar-alarm system unit, nor do they cover separate power supplies intended for use with a specific unit. These are covered by the standards specified in 1.1.

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

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

1.8 With reference to 1.1, the Standard for Police Station Connected Burglar Alarm Units and Systems, UL 365; the Standard for Local Burglar Alarm Units and Systems, UL 609; the Standard for Proprietary Burglar Alarm Units and Systems, UL 1076; the Standard for Central-Station Burglar-Alarm Units, UL 1610; and the Standard for Digital Alarm Communicator System Units, UL 1635, contain requirements for attack resistance against a power supply providing energy to a local audible alarm sounding device or to a device that will transmit a signal from the protected area to a remote location, such as a central station or police station. A power supply complying with the requirements of this standard that is to be used for any of these purposes shall be capable of being mounted inside an enclosure that will provide the required attack resistance, or shall be provided with an enclosure that will provide the required attack resistance. See UL 365, UL 609, UL 1076, UL 1610, and UL 1635 to determine the attack resistance requirements that will apply.

## 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 is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required 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 rating established for the intended conditions of use.

2.1.4 Specific components are 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.

## 2.2 Units of measurement

2.2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

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.

## 2.4 Terminology

2.4.1 The term "product" as used in these requirements refers to all power supplies or any part thereof covered by these requirements unless specifically noted otherwise.

## 3 Glossary

3.1 For the purpose of these requirements, the following definitions apply.

### 3.2 CIRCUITS, ELECTRICAL:

a) HIGH-VOLTAGE (CLASS 1) – A circuit involving a potential of not more than 300 volts and having circuit characteristics in excess of those of a low-voltage, power-limited circuit.

b) LOW-VOLTAGE – A circuit involving a potential of not more than 30 volts AC rms (42.4 volts DC or AC peak).

c) POWER-LIMITED – A circuit whose output is limited as specified in Power-Limited Circuits, Section 25.

d) CLASS 2 – A circuit in which the voltage and power limitations are in accordance with the requirements of Table 25.1 for AC circuits and Table 25.2 for DC circuits.

e) CLASS 3 – A circuit in which the voltage and power limitations are in accordance with the requirements of Table 25.1 for AC circuits and Table 25.2 for DC circuits.

3.3 CORD-CONNECTED PRODUCT – A product intended for connection to the power source by means of a supply cord. By its nature, such a product is intended to be moved for reasons of interchange or relocation of the products of a system.

3.4 LINE-VOLTAGE – The voltage at any field connected source of supply, nominally 50 – 60 hertz; 115, 208, or 230 volts.

3.5 SAFETY CIRCUIT – Any circuit that is intended to reduce the risk of fire, electric shock, or unintentional contact with moving parts that may cause injury to persons, such as an interlock circuit.

## 4 Installation and Operating Instructions

4.1 Each product shall be provided with installation instructions and drawings which shall include the following information:

- a) Typical installation drawing layouts and complete representative installation wiring diagram for the product(s) indicating recommended locations and wiring methods which shall be in accordance with the National Electrical Code, NFPA 70. See 53.1.1 (j).
- b) A concise description of the operation, testing, and maintenance procedures for the product(s), and recommended testing frequency (which shall be at least once a year).
- c) Replacement parts, such as lamps, shall be identified in the instructions by a part number, manufacturer's model number, or the equivalent.
- d) A description of the conditions which might be expected to result in unintended or impaired operation of the product(s).
- e) A statement of actions necessary to reduce the risk of premature loss of battery power, which shall include discussion of position of mounting, temperature limits, state-of-charge, and periods of inactivity if the battery is a type which may lose capacity due to these conditions. Markings on the product adjacent to the battery shall indicate battery type and estimated life or a method of testing battery condition.

4.2 The installation and operating instructions are to be used as a guide in the examination and test of the product. For this purpose, a final printed edition is not required.

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

## CONSTRUCTION

### ASSEMBLY

## 5 Protection of Service Personnel

### 5.1 General

5.1.1 Uninsulated high-voltage live parts that are made accessible by opening or removing a cover, door, panel, or other closure on or within the product (see 7.7.1), shall be provided with guards over the parts to reduce the risk of service personnel unintentionally touching them during servicing of the product or shall be provided with a safety circuit. See also 5.1.2, 5.1.3, and 7.3.2 – 7.3.7.

5.1.2 Parts that must be in motion during servicing operations shall be provided with guards to reduce the risk of service personnel unintentionally contacting them if they:

- a) Present a risk of pinching, snagging, cutting, or otherwise injuring persons and
- b) Are made accessible by opening or removing a cover, door, panel, or other closure on the product for the purpose of affording access to the interior of the product.

See also 5.1.3.

5.1.3 If the guards mentioned in 5.1.1 must be removed during servicing of the parts mentioned in 5.1.1, the guards shall be such that they can be removed and replaced with hand-operated fasteners or hand tools.

## 5.2 Electric shock

5.2.1 Any part that is exposed only during operator servicing shall not present the risk of electric shock. See the Electric Shock Current Test, Section 36.

## 6 Test Features

6.1 If provision is made for testing the condition of a power supply, the means provided shall not result in a risk of injury to persons, electric shock, or fire.

6.2 If a standby battery is the nonrechargeable type, a means shall be provided to test if the battery has enough energy to provide the required standby power. See the Standby Power Tests, Section 26.

## 7 Enclosures

### 7.1 General

7.1.1 The frame and enclosure of the product shall have the strength and rigidity to resist total or partial collapse, with the attendant reduction of spacings, loosening or displacement of parts, and development of other conditions that could impair the operation of the product or result in a risk of fire, electric shock, or injury to persons. See the Mechanical Strength Tests for Enclosures, Section 48.

7.1.2 Electrical parts of a product shall be located or enclosed to reduce the risk of unintentional contact with uninsulated high-voltage live parts. See 7.3.2 – 7.3.7.

7.1.3 Operating parts, such as gear mechanisms, light-duty relays, and similar devices, shall be enclosed to reduce the risk of malfunction from dust or from other material which may impair their intended operation.

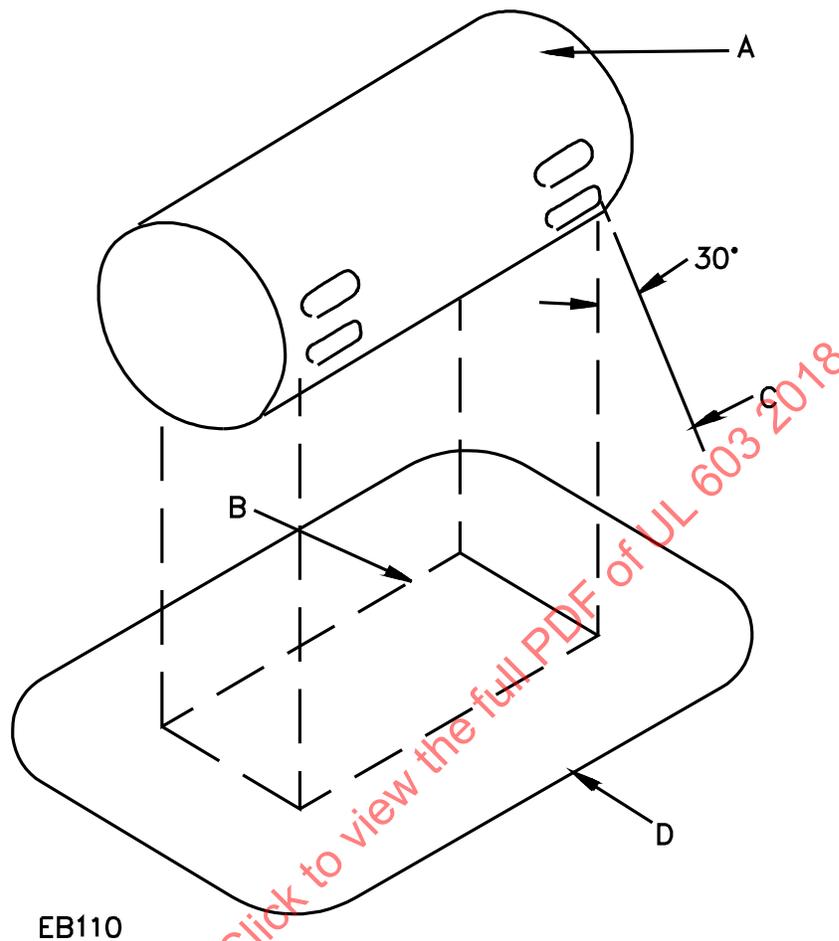
7.1.4 A power supply shall be provided with a means for mounting.

7.1.5 The mounting means of an enclosure shall be accessible without disassembly of any operating part of the product. Removal of a completely assembled panel to mount the enclosure is not considered to be disassembly of an operating part.

7.1.6 An enclosure containing other than power-limited circuits shall be constructed to reduce the risk of emission of flame, molten metal, flaming or glowing particles, or flaming drops. See the Abnormal Operation Test, Section 42, and the Ignition Through Bottom-Panel Openings Tests, Section 47.

7.1.7 The requirement in 7.1.6 necessitates either a nonflammable bottom in accordance with 7.3.8, or a barrier as described in Figure 7.1 under all areas containing flammable materials. See 7.3.9 for exception.

**Figure 7.1**  
**Protective barrier**



A – The entire component under which a barrier (flat or dish with or without a lip or other raised edge) of nonflammable material is to be provided. The sketch above is of a metal enclosed component with ventilating openings to show that the protective barrier is required only for those openings from which flaming parts might come. If the component or assembly does not have its own nonflammable enclosure, the area to be protected would be the entire area occupied by the component or assembly.

B – Projection of the outline of the area of (A) which needs a bottom barrier vertically downward onto the horizontal plane of the lowest point on the outer edge (D) of the barrier.

C – Inclined line that traces out an area (D) on the horizontal plane of the barrier. Moving around the perimeter of the area (B) which needs a bottom barrier, this line projects at a 30-degree angle from the line extending vertically at every point around the perimeter of (A) and oriented to trace out the largest area, except that the angle may be less than 30 degrees if the barrier or portion of the bottom cover contacts a vertical barrier or side panel of nonflammable material, or if the horizontal extension of the barrier (B) to (D) would exceed 6 inches (152 mm).

D – Minimum outline of the barrier, except that the extension (B) – (D) need not exceed 6 inches (flat or dished with or without lip or other raised edge). The bottom of the barrier may be flat or formed in any manner provided that every point of area (D) is at or below the lowest point on the outer edge of the barrier.