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UL 498B

Outline of Investigation for Receptacles with Integral Switching Means

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Summary of Topics

This is the third issue of the Outline of Investigation for Receptacles with Integral Switching Means, UL 498B. This new issue clarifies the following:

Clarified Insulating material requirements

Added the word "CONTROLLED" to required markings in Supplement SA

Added Input Test

Added Overvoltage and Undervoltage test

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INTRODUCTION

1 Scope

1.1 These requirements cover a receptacle with integral switching means rated 600 V or less, used in ordinary dry locations and intended for connection to a branch circuit in accordance with the National Electrical Code, NFPA 70.

1.2 A receptacle with integral switching means covered by this Outline shall meet the following requirements:

- a) No voltage greater than 600 V above ground will be present in the device,
- b) An isolation transformer, if provided, will generally furnish power at a lower potential than the primary voltage; and
- c) The output of the device will not be located in a circuit operating at greater than 600 V above ground.
- d) The switching device shall be integral to the receptacle.
- e) A receptacle that is marked with the symbol shown in Table SA8.1 Reference No. 2 and does not employ an integral switching means intended for energy management and building automation, are covered by the Standard for Attachment Plugs and Receptacles, UL 498.

1.3 This Outline does not directly apply to, but may supplement the following standards:

- a) Devices produced integrally with flexible cord or cable, covered by the Standard for Cord Sets and Power-Supply Cords, UL 817;
- b) Current taps and adapters covered by the Standard for Current Taps and Adapters, UL 498A;
- c) Devices employing male or female screwshells, covered by the Standard for Lampholders, UL 496;
- d) Single and multipole connectors intended for factory assembly to copper or copper alloy conductors or printed wiring boards for use in data, signal, control and power applications within and between electrical equipment, covered by the Standard for Component Connectors for Data, Signal, Control and Power Applications, UL 1977;
- e) Devices intended for installation and use in hazardous (classified) locations in accordance with the National Electrical Code, NFPA 70, covered by the Standard for Explosion-Proof and Dust-Ignition-Proof Equipment for Use in Hazardous (Classified) Locations, UL 1203;
- f) Devices intended for use with telecommunications networks, covered by the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1, or the Standard for Communications Circuit Accessories, UL 1863;
- g) Devices incorporating ground-fault circuit interruption circuitry, covered by the Standard for Ground-Fault Circuit Interrupters, UL 943;

- h) Direct plug-in devices incorporating transient voltage surge suppression circuitry, covered by the Standard for Surge Protective Devices, UL 1449;
- i) Direct plug-in devices incorporating electromagnetic interference filter circuitry, covered by the Standard for Electromagnetic Interference Filters, UL 1283;
- j) Cord-connected, relocatable power taps intended only for indoor use as a temporary extension of a grounding alternating-current branch circuit for general use, covered by the Standard for Relocatable Power Taps, UL 1363.
- k) Energy management equipment covered by the Standard for Energy Management Equipment, UL 916.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this Outline 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 Outline.

2.2 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 Outline; or
- b) Is superseded by a requirement in this Outline.

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

2.4 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.

3 Units of Measurement

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

3.2 Unless indicated otherwise, voltage and current values specified in this Outline are rms, and wattage values are average power.

4 Undated References

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

5 Glossary

5.1 For the purpose of this Outline the following definitions apply:

5.2 CLASS 2 CIRCUIT – An isolated secondary circuit involving a potential of not more than 42.4 V peak supplied by:

- a) An inherently-limited Class 2 transformer;
- b) A combination of an isolated transformer secondary winding and a fixed impedance or regulating network that together comply with the performance requirements for an inherently-limited Class 2 transformer;
- c) A dry-cell battery having output characteristics not greater than those of an inherently-limited Class 2 transformer;
- d) Any combination of (a), (b), and (c) that together comply with the performance requirements for an inherently-limited Class 2 transformer; or
- e) One or more combinations of a Class 2 transformer and an overcurrent protective device that together comply with the performance requirements for a noninherently-limited Class 2 transformer.

A circuit derived from a line-connected circuit by connecting impedance in series with the supply circuit as a means of limiting the voltage and current is not a Class 2 circuit. See Class 2 Circuits, Section 20.

5.3 CLASS 2 SEPARABLE LEAD ASSEMBLY – Consists of a factory-made, power-limited cable assembly provided with a connector, intended for Class 2 signaling between a device such as a sensor, timer or energy-management equipment and a wired controlled receptacle.

5.4 CONFORMAL COATING – An insulating coating which conforms to the configuration of the object coated and is used as a protective covering against environmental conditions or when electrical spacings are insufficient.

5.5 CONTROLLED ENVIRONMENT – An environment:

- a) Relatively free of conductive contaminants, such as normal cooking vapors, carbon dust, and similar contaminants, which are a result of the end-use product in which a control will be installed or due to the location of the end-use product, and
- b) Not subject to humidity and the formation of condensation. A controlled environment is provided, for example, by means of a:
 - 1) Hermetically sealed enclosure;
 - 2) Encapsulation;