



UL 962A

STANDARD FOR SAFETY

Furniture Power Distribution Units

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UL Standard for Safety for Furniture Power Distribution Units, UL 962A

Fourth Edition, Dated February 22, 2016

Summary of Topics

The Fourth Edition of the Standard for Safety for Furniture Power Distribution Units, UL 962A, has been issued to incorporate the proposals dated January 11, 2016. These proposals include the following:

- ***Clarification of enclosure requirements.***
- ***Mechanical assembly clarification of requirements.***
- ***Label markings.***

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated January 11, 2016.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

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February 22, 2016

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UL 962A

Standard for Furniture Power Distribution Units

First Edition – September, 2003

Second Edition – December, 2008

Third Edition – September, 2014

Fourth Edition

February 22, 2016

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 indoor use cord and plug connected furniture power distribution units (FPDU) rated 250 V AC or less and 20 Amperes or less. FPDU's are for fixed mounting to furnishings as a power supply connection for cord and plug connected electrical utilization equipment in accordance with the National Electric Code, NFPA 70.

1.2 A cord and plug connected product as described in 1.1 with less than three receptacle outlets and provided with a Luminaire is covered under the Standard for Portable Electric Luminaires, UL 153.

1.3 A cord and plug connected product as described in 1.1 with less than three receptacle outlets that employs an electromagnetic interference filter is covered under the Standard for Electromagnetic Interference Filters, UL 1283.

1.4 A cord and plug connected product as described in 1.1 with less than three receptacle outlets that employs a surge protective device (SPD) is covered under the Standard for Surge Protective Devices, UL 1449.

1.5 A cord and plug connected product as described in 1.1 that employs ground-fault protection is covered under the requirements for portable GFCIs in the Standard for Ground-Fault Circuit Interrupters, UL 943.

1.6 This standard does not cover FPDU's intended for use with medical equipment.

1.7 These requirements cover FPDU's provided with isolated secondary circuits.

1.8 These requirements cover FPDU's provided with batteries located in isolated secondary circuits.

1.9 A product that has a battery backup feature or other uninterruptible power supply equipment located in the Primary Circuit shall comply with the applicable requirements in the Standard for Uninterruptible Power Supply Equipment, UL 1778.

1.10 A FPDU with three or more receptacle outlets may employ a Light Emitting Diode (LED) Luminaire.

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2 General

2.1 Components

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

2.1.5 A FPDU that incorporates a LED Luminaire and LED components and subassemblies shall comply with the applicable requirements of the Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products, UL 8750.

2.2 Use

2.2.1 A FPDU is intended to be connected to a permanently installed branch circuit receptacle outlet.

2.2.2 A FPDU is intended to be mounted to an indoor use furnishing.

2.2.3 FPDU are not intended to be series connected (daisy chained) to other FPDUs to relocatable power taps or to extension cords.

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3 Units of Measurement

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

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

4 Undated References

4.1 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.

5 Glossary

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

5.2 ATTACHMENT PLUG – A male contact device for the temporary connection of a flexible cord or cable to a receptacle outlet or cord connector.

5.3 CORD CONNECTOR – A female contact device assembled or molded on flexible cord to allow a detachable electrical connection to an attachment plug.

5.4 FIXED FURNISHING – Intended to be permanently connected electrically to a source of supply.

5.5 FURNITURE POWER DISTRIBUTION UNIT (FPDU) – An electrical enclosure provided with an attached power supply cord and attachment plug for connection to a permanently installed branch circuit receptacle outlet. The FPDU is provided with a mounting means for attachment to a furnishing. The electrical enclosure may be provided with one or more receptacle outlets. The FPDU may also be provided in any combination of the following configurations:

- a) The electrical enclosure connected to the power supply cord and attachment plug may be supplied with up to six lengths of flexible cord not exceeding 6 feet in length; each length shall be terminated with a maximum of 3 receptacle outlets within an electrical enclosure or 3 cord connectors. Refer to Clause 13.6 limiting the total number of outlets, Table 12.1 for overload requirements and 12.1.8 for interconnecting cord requirements.
- b) Provided with supplementary overcurrent protection.
- c) Provided with manual or automatic switch(es) such as an integral appliance timer to control all or some of the receptacle outlets.
- d) Provided with indicator lights.
- e) When provided with three or more receptacle outlets the FPDU may be provided with a surge protective device (SPD) or an electromagnetic interference (EMI) filter.
- f) A FPDU may employ non-electrical decorative features. The decorative features may include various shapes such as rocks, birds and animals, etc.
- g) A FPDU may employ telephone equipment and communication circuit protectors.

h) A FPDU may employ an antenna discharge unit or provide antenna connections for televisions and video products.

i) When provided with three or more receptacle outlets the FPDU may be provided with LED (Light Emitting Diode) Luminaire(s).

j) A FPDU may be provided with a wireless charging circuit.

k) Provided with isolated secondary circuits.

l) Provided with batteries located in isolated secondary circuits. See UL 962A Supplement SA – Furniture Power Distribution Units Incorporating Batteries.

5.6 ISOLATED SECONDARY CIRCUIT – A circuit derived from an isolating source (such as a transformer, optical isolator, limiting impedance or electro-mechanical relay) and having no direct connection back to the primary circuit (other than through the grounding means). A secondary circuit that has a direct connection back to the primary circuit is considered part of the primary circuit.

5.7 PORTABLE FURNISHING – Meets all of the following:

a) Not secured to the building structure unless provided with a securement means that allows the furnishing to be removed without the use of tools, and

b) Connected electrically to an electrical source of supply with a power supply cord and plug.

5.8 PRIMARY CIRCUIT – A circuit in which the wiring and components are conductively connected to the AC power interface.

5.9 RECEPTACLE OUTLET – A female contact device mounted within an electrical enclosure to allow a detachable electrical connection of an attachment plug.

5.10 RISK OF FIRE – A risk of fire is considered to exist at any two points in a circuit where:

a) The open circuit voltage is more than 30 Vrms (42.4 V peak) and the energy available to the circuit under any condition of load including short circuit, results in a current of 8 A or more after 1 minute of operation; or

b) A power of more than 15 watts can be delivered into an external resistor connected between the two points.

5.11 STATIONARY FURNISHING –

a) Intended to be fastened in place requiring tools for removal and connected electrically to an electrical source of supply with a power supply cord and plug; or

b) Unlikely to be frequently relocated due to size, weight or configuration and connected electrically to an electrical source of supply with a power supply cord and plug.

5.12 SUPPLEMENTARY PROTECTOR – A manually resettable device designed to open the circuit automatically on a predetermined value of time versus current or voltage within an appliance or other electrical equipment. It is permitted to be provided with a manual means for opening or closing the circuit.

CONSTRUCTION

6 Enclosure

6.1 General

6.1.1 The enclosure shall be formed and assembled so that it has the strength and rigidity required to resist the abuses to which it is subjected, without resulting in a risk of fire, electric shock, or injury to persons, due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts or other serious defects.

6.1.2 An opening in an enclosure shall have such size and shape - or shall be so covered by screening or barrier or by an expanded, perforated, or louvered panel - that a test rod having a maximum diameter of 1/16 in (1.6 mm) shall be prevented from contacting live parts. See Accessibility Test, Section 41.

6.1.3 A keyhole slot, notch, or similar means for mounting, when provided, shall be located so that the supporting screws or the like cannot damage any electrical insulation or reduce spacings to live parts.

6.1.4 A barrier that covers a mounting hole and thereby forms part of the required enclosure shall be subjected to the Mounting Hole Barrier Tests, Section 32.

6.1.5 If a FPDU employs a decorative or ancillary feature, such as a rock, bird, animal, Luminaire, or a storage compartment, it shall be designed so that the addition of the decorative feature part(s) does not:

- a) Interfere with the function or mounting means described in Section 9;
- b) Interfere with turning the power "on" or "off" using the switch provided on the FPDU; or
- c) Interfere with an attachment plug from fully seating in the receptacle outlet slot(s) of the FPDU.

6.1.6 A FPDU that incorporates devices such as an integral appliance timer to control all or some of the receptacles shall comply with the Standard for Clock-Operated Switches, UL 917 or the Standard for Solid-State Controls for Appliances, UL 244A. Compliance with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1, and/or the applicable Part 2 standard from the UL 60730 series fulfills the UL 244A requirements.

6.1.7 Products that employ timer(s) as specified in 5.3 shall be marked as specified in 50.21 to warn the user of the possible hazards.

6.1.8 Telephone equipment and communication circuit protectors included in a FPDU shall comply with the requirements in the Standard for Information Technology Equipment Safety - Part 1: General Requirements, UL 60950-1 or the Standard for Safety for Audio/Video, Information and Communication Technology Equipment - Part 1: Safety Requirements, UL 62368-1 and the requirements in the Standard for Secondary Protectors for Communications Circuits, UL 497A.

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6.1.9 A FPDU that incorporates an antenna discharge unit or provides antenna connections to a television, a high-voltage video product, or antenna shall comply with the applicable requirements in the Standard for Antenna Discharge Units, UL 452, and the Standard for Audio-Video Products and Accessories, UL 1492 or the Standard for Safety for Audio, Video, and Similar Electronic Apparatus-Safety Requirements or Audio/Video, UL 60065, or the Standard for Safety for Information and Communication Technology Equipment - Part 1: Safety Requirements, UL 62368-1.

6.1.10 A cord and plug connected FPDU with three or more receptacle outlets that employs an electromagnetic interference filter shall also comply with the Standard for Electromagnetic Interference Filters, UL 1283.

6.1.11 A cord and plug connected FPDU with three or more receptacle outlets that employs a surge protective device shall also comply with the Standard for Surge Protective Devices, UL 1449.

6.1.12 A FPDU that employs an uninterruptible power supply located in the primary circuit shall comply with the requirements in the Standard for Uninterruptible Power Systems, UL 1778.

6.2 Metallic

6.2.1 A metal enclosure of a FPDU shall have a minimum thickness in accordance with Table 6.1.

Table 6.1
Minimum thicknesses of enclosure metal

Metal	At small, flat unreinforced surfaces and at surfaces of a shape or size to provide adequate mechanical strength		At relatively larger unreinforced flat surfaces	
	inch	(mm)	inch	(mm)
Die-cast metal	3/64	1.2	5/64	2.0
Cast malleable iron	1/16	1.6	3/32	2.4
Other cast metal	3/32	2.4	1/8	3.2
Uncoated sheet steel	0.026	0.66	0.026	0.66
Galvanized sheet steel	0.029	0.74	0.029	0.74
Nonferrous sheet metal	0.036	0.91	0.036	0.91

6.2.2 The enclosure shall comply with the strain relief, impact, and crush test requirements of Sections 33, 35, and 36 respectively, of this standard.

6.3 Nonmetallic

6.3.1 A polymeric enclosure of a FPDU for use in a portable furnishing shall comply with the flammability requirements in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, for non-attended, non-intermittent duty portable equipment and shall be marked in accordance with 50.15.

6.3.2 A polymeric enclosure of a FPDU for use in a stationary furnishing shall comply with the flammability requirements in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, for stationary equipment.

6.3.3 The enclosure shall comply with the strain relief, impact, crush and mold stress-relief test requirements of Sections 33, 35, 36 and 39 respectively, of this standard.

6.3.4 A decorative feature or mounting means of a FPDU which is constructed of polymeric material and does not function as an enclosure of live parts shall comply with the flammability requirements for an enclosure material as identified in the Standard for Polymeric Material - Use in Electrical Equipment Evaluations, UL 746C, for non-attended, non-intermittent duty portable equipment.

Exception: Decorative parts are not required to be made of a material classed 5VA, 5VB, V-0, V-1, V-2, or HB, providing the part does not occupy a volume greater than 2 cubic centimeters (0.122 cubic inch), does not have any dimension greater than 3 cm (1.18 inch), and is located so it cannot propagate flame from one area to another or bridge between a possible source of ignition and other ignitable parts.

6.3.5 A polymeric enclosure portion of a FPDU that houses solely an electrical part that is supplied from an isolated power supply of less than 42.4 volts AC or less than 60 volts DC and the power available is less than 15 watts shall comply with the flammability requirements for an enclosure material as identified in the Standard for Polymeric Material - Use in Electrical Equipment Evaluations, UL 746C, for non-attended, non-intermittent duty portable equipment.

7 Mechanical Assembly

7.1 A FPDU shall be formed and assembled so as to reduce the risk of contact with any sharp edges, fins, burrs or the like that are capable of increasing the risk of injury to persons, or abrade the insulation on conductors or otherwise damage wires.

7.2 A switch, a lampholder, a power-supply cord and its strain-relief bushing, receptacle, or similar component shall be mounted securely and, except as noted in 7.3 and 7.4, shall be restrained from turning. See 7.5.

7.3 The requirement that a switch be restrained from turning is capable of being waived when all of the following conditions are met:

- a) The switch is to be of the plunger or other type whose actuator does not tend to rotate when operated (the actuator of a toggle or rocker switch is considered to be subject to forces that tend to turn the switch during operation of the switch).
- b) The means of mounting the switch makes it unlikely that operation of the switch loosens it.
- c) The spacings are not to be reduced below the minimum acceptable values when the switch rotates.

7.4 A lampholder of a type in which the lamp is not intended to be replaced, such as a neon pilot or indicator light in which the lamp is sealed in a nonremovable jewel, is not required to be restrained from turning when the rotation is not capable of reducing spacings below the minimum acceptable values.

7.5 The means by which the turning specified in 7.2 is prevented is to include more than friction between surfaces. For example, a lockwasher, properly applied, is not prohibited from being used as a means to restrain turning of a device having a single-hole mounting means.

7.6 A FPDU with a retractable vertical tower, that has a horizontal platform area greater than 9 in² (58.1 cm²) and is also provided with a means for locking the vertical tower in an open (upright) position must remain in the open (upright) position when subjected to the Retractable Force Test in Section 38. A retractable vertical tower is considered to have a means for locking in an open (upright) position when a separate mechanism or motion, other than pushing the tower straight down, is required to release the locking mechanism to allow for closing (lowering) of the vertical tower.

Exception: A FPDU with a retractable vertical tower not provided with a means for locking the vertical tower in an open (upright) position does not need to comply with the Retractable Force Test in Section 38.

7.7 A FPDU with a retractable vertical tower intended to be closed with power supply cord(s) connected to each receptacle, must be able to completely close and reopen with the intended power supply cord(s) connected and shall be constructed so as not to pinch, compress or damage the power supply cord jacket or insulation and shall comply with the Cycling Test, Section 45.

7.8 To prevent personal injury, the retracting mechanism of a FPDU with a retractable vertical tower must not be accessible. Compliance is determined using the accessibility probe in Figure 8.1.

8 Accessibility of Live Parts

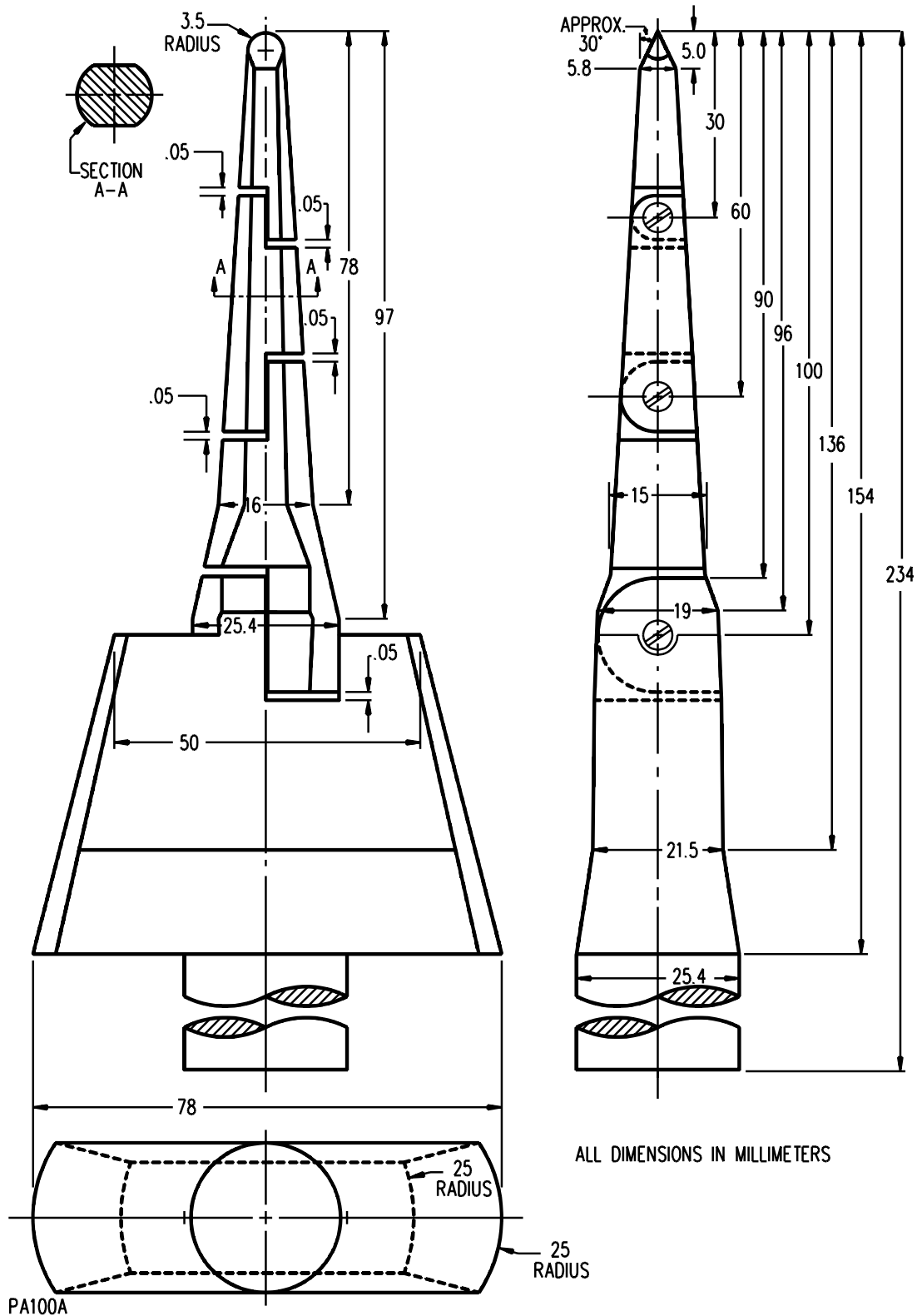
8.1 The electrical parts of a FPDU that do not require use of a tool for access shall be located or enclosed so that persons are protected against inadvertent contact with uninsulated live parts and film-coated magnet wire.

Exception: Connectors and contacts supplied by an isolated secondary circuit meeting Class 2 or Limited Power Circuit (LPS) power levels may be accessible to the user.

8.2 An opening in the enclosure of a FPDU is not prohibited when an uninsulated live part or film-coated magnet wire is not capable of being contacted by the probe shown in Figure 8.1. The probe shall be applied to any depth that the opening permits, and shall be rotated or angled before, during, and after insertion through the opening to any position that is required to examine the enclosure. The probe shall be applied in any possible configuration; and, when required, the configuration shall be changed after insertion through the opening.

8.3 The probe shall be used as a measuring instrument to evaluate the accessibility provided by an opening, and not as an instrument to evaluate the strength of a material; it shall be applied with the minimum force required to determine accessibility in accordance with the Accessibility Test, Section 41.

Figure 8.1
Accessibility probe



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9 Mounting Means

9.1 A FPDU shall be provided with a mounting means.

9.2 The mounting means shall comply with Section 33, Mounting Hole Barrier Test, and Section 37, Adequacy of Mounting Test.

9.3 Adhesive may be used to secure a FPDU when the adhesive complies with the Specialized Applications – General Adhesives, Functional Analysis, and Program of Investigation for Adhesives in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C. When performing the adhesive investigations, the maximum force for the Program of Investigation – End-Product Evaluation of UL 746C shall be the weight of the FPDU. When a suitable adhesive is used to mount the FPDU, the Adequacy of Mounting test is not required to be conducted.

10 Corrosion Protection

10.1 Iron and steel parts or other parts not inherently corrosion resistant shall be protected against corrosion by painting, enameling, galvanizing, plating, or other equivalent means.

Exception: This requirement does not apply to minor parts of iron or steel, such as washers, screws and the like that are not in the grounding conductor path.

11 Insulating Materials

11.1 A barrier or integral part, such as an insulating washer or bushing, and a base or support for the mounting of live parts, shall be of a moisture-resistant material that will not be damaged by the temperature and stresses to which it will be subjected under conditions of actual use.

11.2 An insulating material is to be investigated with regard to its acceptability for the application in accordance with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C. Materials, such as mica, ceramic, or some molded compounds are capable of being used as the sole support of live parts. When it is required to investigate a material to determine its acceptability, consideration is to be given to such factors as its mechanical strength, resistance to ignition sources, dielectric strength, insulation resistance, and heat-resistant properties in both the aged and unaged conditions, the degree to which it is enclosed, and any other features affecting the risk of fire and electric shock.

11.3 Vulcanized fiber, industrial laminates, polymeric films or similar materials are capable of being used for insulating bushings, washers, separators, and barriers, but not as sole support for uninsulated live parts. Hard rubber is not to be used.

Exception: Industrial laminates that have been investigated for the purpose are capable of being used as sole support for uninsulated live parts.

12 Power-Supply Cord

12.1 General

12.1.1 The power-supply cord shall be of the grounding type and shall employ one of the following flexible cord Types: SJ, SJE, SJO, SJT, SJTO, or equivalent.

Exception: SPT-3 is not prohibited from being used on a FPDU rated 15 A or less when marked in accordance with 50.14.

12.1.2 A detachable power-supply cord shall not be used.

12.1.3 The minimum conductor size of the power-supply cord shall be as indicated in Table 12.1.

12.1.4 The length of a power-supply cord – as measured from the outside surface of the enclosure of the FPDU to the plane of the face of the attachment plug – shall not exceed 25 ft (7.6 m) nor be less than 3 ft (0.9 m).

12.1.5 A power-supply cord shall have a voltage rating not less than the rated voltage of the FPDU and have an ampacity not less than the current rating of the FPDU.

Table 12.1
Guide to construction and performance requirements for furniture power distribution units

FPDU rating (A)	Minimum power cord size (AWG)	Number of receptacles	Supplementary OCP required? ^{a, d} (A)		Maximum supplementary OCP rating ^{a, d} (A)	Temperature test load (A)	Minimum internal wiring size ^b (AWG)
				When LED ⁱ Luminaire or wireless charging circuits are incorporated			
≤ 20	12	<6	NO	YES	20 ^c	20 ^j	12
≤ 20	12	≥6	YES	YES	20	20 ^h	12
≤ 15	14 ^g	<4	NO	YES	15 ^c	15 ^h	14 ^g
≤ 15	14 ^g	≥4	YES ^g	YES	15	15 ^h	14 ^g
≤ 15	14 ^g	<4	NO	YES	15 ^c	15 ^{e, f}	14 ^g
≤ 15	14 ^g	≥4	YES ^g	YES	15	OCP ^f	14 ^g

^a OCP shall not trip when the FPDU is operated at the FPDU marked rated current.

^b Smaller AWG is not prohibited from being used when an OCP is provided and the results of the Temperature Test (Section 26), the Fault Current Test (Section 30), and the Overcurrent Test (Section 31) comply with the requirements of those tests using the smaller AWG wire. Isolated secondary conductors shall also comply with Sections 17 and 21.

^c When provided with an OCP.

^d Maximum rating. An OCP rated less than the Maximum Supplementary OCP rating and not less than the FPDU rating complies with the intent of this requirement. See note (a) above.

^e Test is capable of being conducted at OCP rating when provided.

^f When the OCP rating is greater than the FPDU rating, conduct the Temperature Test at the OCP rating. The OCP is not prohibited from being bypassed when nuisance tripping occurs during the Temperature Test. If the OCP is bypassed during the Temperature Test at OCP rating, then the Temperature Test needs to be repeated at FPDU rating to confirm that the OCP does not nuisance trip at this level. See note (a) above.

Table 12.1 Continued

FPDU rating (A)	Minimum power cord size (AWG)	Number of receptacles	Supplementary OCP required? ^{a, d} (A)		Maximum supplementary OCP rating ^{a, d} (A)	Temperature test load (A)	Minimum internal wiring size ^b (AWG)
				When LED ⁱ Luminaire or wireless charging circuits are incorporated			
^g An OCP is not required and/or the power supply cord is permitted to be 16 AWG and/or the internal wiring is permitted to be 16 AWG for a household (residential) FPDU as long as: a) FPDU is not rated higher than 12 amps; b) Either one, two, three or four receptacles are provided; c) All other components are evaluated for use at 15 A; d) The Temperature Test load is 15 A. e) The FPDU is marked in accordance with 50.16, except for a FPDU with one receptacle. f) No LED Luminaire is provided. ^h The OCP is not prohibited from being bypassed when nuisance tripping occurs during the Temperature Test. If the OCP is bypassed during the Temperature Test at Temperature Test Load rating, then the Temperature Test needs to be repeated at FPDU rating to confirm that the OCP does not nuisance trip at this level. See note (a) above. ⁱ A FPDU incorporating an LED Luminaire shall be provided with supplementary OCP as shown in the column "Maximum Supplementary OCP rating^{a, d} (A)". The FPDU shall also be provided with instructions as indicated in 51.1.							

12.1.6 The power-supply cord shall not include a through-cord switch.

12.1.7 An FPDU as described in paragraph 1.1 shall be constructed such that the total combined length of the power supply cord and the longest interconnecting cord shall not exceed 25 ft (7.6 m).

12.1.8 An interconnecting cord shall comply with all the requirements of power supply cords except 12.1.4 and cannot exceed 6 ft (1.8 m) in length.

12.1.9 The cord connectors that are employed in a FPDU shall be molded-on or assembled-on to the flexible cord. The cord connector shall be the grounding type and shall comply with the requirements in the Standard for Attachment Plugs and Receptacles, UL 498 or the Standard for Cord Sets and Power Supply Cords, UL 817.

12.2 Bushings

12.2.1 Where the power-supply cord passes through an opening in the enclosure, a smooth, well-rounded surface shall be provided to protect the cord from damage.

12.3 Strain Relief

12.3.1 Strain relief shall be provided so that a mechanical stress on a power-supply cord is not transmitted to terminals, splices, or interior wiring. See Strain Relief Test, Section 33.

12.3.2 The strain relief means shall not damage the insulation or cord jacket. The normal compressive deformation inherent in providing strain relief is not considered to be damage.

12.4 Push Back Relief

12.4.1 Means shall be provided to prevent the supply cord or lead from being pushed into the enclosure of an appliance through the cord-entry hole when such displacement results in:

- a) Subjecting the supply cord or lead to mechanical damage;
- b) Exposing the supply cord or lead to a temperature higher than that for which it is rated;
- c) Reducing spacings (such as to a metal strain-relief clamp) below the minimum required values; or
- d) Damaging internal connections or components.

To determine compliance, the supply cord or lead shall be tested in accordance with Section 32, Push Back Relief Test.

13 Receptacles

13.1 The receptacle outlets of a FPDU shall have a current rating of 15 or 20 A and a voltage rating of 125 or 250 V. The contact components of a receptacle shall have a voltage and current rating equal to that of the attachment plug on the power-supply cord.

Exception: A 15 A receptacle is not prohibited from being used with a FPDU with a 20 A attachment plug.

13.2 All of the receptacle outlets of a FPDU shall have the same current rating and shall be of the grounding type. They are not prohibited from being of the same or different slot configurations (locking and non-locking).

13.3 The receptacle outlets of a FPDU shall comply with the applicable requirements in the Standard for Attachment Plugs and Receptacles, UL 498. The grounding contact of the receptacle shall comply with the requirements of the Grounding Contact Test in UL 498.

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13.4 The receptacle outlets of a FPDU that also incorporates terminals for coaxial cable (TV/CATV) connection shall be marked in accordance with 50.13.

13.5 A FPDU intended to be mounted on or inside a desk or similar furnishing surface shall be covered or otherwise protected from spillage while not in use and shall comply with the Spill Test, Section 40.

Exception: When the intended use of the FPDU is for it to be mounted above the furnishing surface and oriented such that spilled liquid on the furnishing surface cannot enter any part of the FPDU, these requirements do not apply.

13.6 A FPDU shall be provided with a maximum of eight receptacles.

Exception: A FPDU is able to be provided with more than eight receptacles when the FPDU is provided with a circuit breaker that complies with the requirements in the Standard for Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures, UL 489, and is in accordance with the National Electrical Code, ANSI/NFPA 70 branch circuit protection.

14 Supplementary Protection

14.1 A FPDU shall be provided with supplementary overcurrent protection as indicated in Table 12.1.

14.2 A supplementary protection device shall not open during the Temperature Test, Section 26.

14.3 A supplementary overcurrent protection device shall be capable of clearing a fault current of not less than that indicated in Table 14.1 and shall comply with the requirements in the Standard for Supplementary Protectors for Use in Electrical Equipment, UL 1077. The supplementary overcurrent protection device shall have been subjected to the Overload Test in UL 1077, tested for motor starting at 6 times the AC full load current rating.

Exception No. 1: A fuse that is capable of clearing a fault current of not less than that indicated in Table 14.1, and that complies with the requirements in the Standard for Low-Voltage Fuses – Part 14: Supplemental Fuses, UL 248-14, is not prohibited from being used as a supplementary overcurrent protection device.

Exception No. 2: A circuit breaker that complies with the requirements in the Standard for Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures, UL 489, and is in accordance with the National Electrical Code, ANSI/NFPA 70 for branch circuit protection, is not prohibited from being used in lieu of a supplementary overcurrent protection device.

14.4 A supplementary overcurrent protection device shall be capable of clearing a fault current of not less than that indicated in Table 14.1 and shall comply with the requirements in the Standard for Supplementary Protectors for Use in Electrical Equipment, UL 1077. The supplementary overcurrent protection device shall have been subjected to the Overload Test in UL 1077, tested for motor starting at 6 times the AC full load current rating.

Exception No. 1: A fuse that is capable of clearing a fault current of not less than that indicated in Table 14.1, and that complies with the requirements in the Standard for Low-Voltage Fuses – Part 14: Supplemental Fuses, UL 248-14, is not prohibited from being used as a supplementary overcurrent protection device.

Exception No. 2: A circuit breaker that complies with the requirements in the Standard for Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures, UL 489, and is in accordance with the National Electrical Code, ANSI/NFPA 70 for branch circuit protection, is not prohibited from being used in lieu of a supplementary overcurrent protection device.

14.5 The overcurrent protective device shall be a supplementary protector of the automatic-trip-free, manual-reset type or a replaceable fuse installed in an extractor type fuse holder. An FPDU that is provided with fuses that are intended to be replaced in the field shall be marked in accordance with the requirements in 50.10.

14.6 A single-pole supplementary protection device shall be connected in the ungrounded (line) conductor of the supply circuit only. A double-pole device shall be connected on both the ungrounded and grounded (neutral) conductors such that when it operates, it opens both ungrounded and grounded conductors.

14.7 A supplementary protection device shall not be connected in the grounding conductor.

14.8 The ampere rating of the overcurrent protective device of 15.2 shall not be greater than the ampacity of:

- a) The configuration of the receptacles it is to protect; or
- b) That of the power-supply cord; or
- c) Other electrical components, whichever is lower.

Exception: See note (g) of Table 12.1.

14.9 When a single overcurrent protective device does not protect all receptacle outlets, more than one overcurrent protective device shall be used, and each receptacle outlet shall be marked to indicate the rating of the overcurrent protective device connected to it. See 50.7.

14.10 Thermal cutoff devices, thermal relays, and similar devices, shall not be used as supplementary overcurrent protection devices.

14.11 A FPDU incorporating LED Luminaires or wireless charging circuits shall be provided with supplementary overcurrent protection. See Table 12.1.

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Table 14.1
Circuit capacity of supply source

Rating (VA)	Available fault current (A)
1875 or less	1000
More than 1875 to 3750	2000
More than 3750	3500

15 Switches

15.1 Each switch shall have a voltage and current rating not less than the load it is intended to control. A switch shall open all ungrounded circuit conductors and, in addition, is not prohibited from opening the grounded circuit conductor.

15.2 A switch provided in a FPDU shall comply with the requirements of the Standard for Switches for Appliances – Part 1: General Requirements – UL 61058-1. The switch shall be rated for use with other than resistive (Res), AC Tungsten filament lamp (L), or AC and DC Tungsten filament lamp (T) loads.

Exception: A switch that complies with the requirements of the Standard for General-Use Snap Switches, UL 20, for a general-use AC switch is not prohibited from being used in a FPDU.

15.3 Each switch shall indicate to the user when its associated circuit is energized. See 50.9.

Exception: A FPDU is not prohibited from being equipped with indicator or pilot lights, such as neon-series-resistor, LED type, or similar items, to show which receptacles are live, or to indicate that the unit is energized.

16 Live Parts

16.1 Current-carrying parts shall have adequate ampacity, and shall be of copper, a copper-base alloy, or other material determined to be acceptable for the use.

16.2 Uninsulated live parts shall be secured to the base or mounting surface so that they do not turn or shift in position, when such motion results in a reduction of spacings below the minimum acceptable values.

16.3 Friction between surfaces is not to be used as the sole means to prevent shifting or turning of live parts. A lockwasher is not prohibited from being used in such a manner.