UL 962A

STANDARD FOR SAFETY

Furniture Power Distribution Units

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

Sixth Edition, Dated July 13, 2023

Summary of Topics

This new Sixth Edition of ANSI/UL 962A dated July 13, 2023 includes the following changes in requirements:

– Addition of Exception for More Than 8 Receptacles; 14.6

– Addition of Requirements Allowing Electronic Installation Instructions; 54.2 and 54.3

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated March 3, 2023 and May 22, 2023.

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The most recent designation of ANSI/UL 962A as an American National Standard (ANSI) occurred on July 13, 2023. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to ULSE at any time. Proposals should be submitted via a Proposal Request in ULSE's Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover indoor use cord and plug connected of permanently connected, furniture power distribution units (FPDU) rated 250 V AC or less and 20 Amperes or less. An FPDU may provide one or more receptacle outlets, inclusive of one current tap integral to the attachment plug, if provided, for connection of utilization equipment. An FPDU may include an integral Class 2 power supply employing integral output lead(s) and/or output connector(s) and may include receptacles with integral power supplies employing Class 2 output connector(s). FPDU's are for fixed mounting to portable or stationary furnishings as a power supply connection for cord and plug connected electrical utilization equipment in accordance with the National Electrical Code, NFPA 70.

1.2 In accordance with the National Electrical Code, NFPA 70, furniture power distribution units (FPDUs) shall not serve as fixed wiring of a structure or of fixed furnishings, such as but not limited to applications in permanent countertops of kitchens and bathrooms.

1.3 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.

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

1.5 A cord-and-plug-connected product as described in 1.1 with less than three receptacle outlets and that employs a surge protective device (SPD) is covered under the Standard for Surge Protective Devices, UL 1449, for SPD Type 3.

1.6 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.

1.7 This standard does not cover FPDUs intended for use with medical equipment.

1.8 These requirements cover FPDUs provided with isolated secondary circuits.

1.9 These requirements cover FPDUs provided with batteries located in isolated secondary circuits.

1.10 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.

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

1.12 This standard contains the following Annexes:

a) Annex A – Furniture Power Distribution Units Incorporating Batteries.

b) Annex B – Furniture Power Distribution Units for Clustered Seating.

c) Annex C – Furniture Power Distribution Units for Kitchen and Bathroom Countertops.

d) Annex D – Furniture Power Distribution Units for Portable (Movable) Work Space Tables.

2 Components

2.1 Except as indicated in 2.2, a component of products covered by this standard shall comply with the requirements for that component. See Annex E for a list of standards covering components used in the products covered by this standard.

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 standard, or

b) Is superseded by a requirement in this standard.

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.

2.5 A FPDU that incorporates a LED Luminaire and LED components and subassemblies shall comply with the applicable requirements of UL 8750.

3 Use

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

3.2 A FPDU is intended to be mounted to an indoor use portable or stationary furnishing. A FPDU is not intended to serve as fixed wiring of a structure or of fixed furnishings.

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

4 Units of Measurement

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

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

5 Referenced Publications

5.1 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.

5.2 The following publications are referenced in this Standard:

ASTM E230/E230M, *Standard Specification and Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples*

ASTM G155, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*

NEMA WD6, *Wiring Devices – Dimensional Specifications*

NFPA 70, *National Electrical Code*

UL 13, *Power-Limited Circuit Cables*

UL 20, *General-Use Snap Switches*

UL 44, *Thermoset-Insulated Wires and Cables*

UL 50E, *Enclosures for Electrical Equipment, Environmental Considerations*

UL 62, *Flexible Cords and Cables*

UL 83, *Thermoplastic-Insulated Wires and Cables*

UL 94, *Tests for Flammability of Plastic Materials for Parts in Devices and Appliances*

UL 153, *Portable Electric Luminaires*

UL 157, *Gaskets and Seals*

UL 244A, *Solid-State Controls for Appliances*

UL 248-14, *Low-Voltage Fuses – Part 14: Supplemental Fuses*

UL 325, *Door, Drapery, Gate, Louver, and Window Operators and Systems*

UL 452, *Antenna-Discharge Units*

UL 467, *Grounding and Bonding Equipment*

UL 486C, *Splicing Wire Connectors*

UL 489, *Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures*

UL 497A, *Secondary Protectors for Communications Circuits*

UL 498, *Attachment Plugs and Receptacles*

UL 746C, *Polymeric Materials – Use in Electrical Equipment Evaluations*

UL 758, *Appliance Wiring Material*

UL 796, *Printed Wiring Boards*

UL 817, *Cord Sets and Power Supply Cords*

UL 840, *Insulation Coordination Including Clearance and Creepage Distances for Electrical Equipment*

UL 917, *Clock-Operated Switches*

UL 943, *Ground-Fault Circuit Interrupters*

UL 969, *Marking and Labeling Systems*

UL 969A, *Marking and Labeling Systems – Flag Labels, Flag Tags, Wrap-Around Labels and Related Products*

UL 1004-1, *Rotating Electrical Machines – General Requirements*

UL 1077, *Supplementary Protectors for Use in Electrical Equipment*

UL 1283, *Electromagnetic Interference Filters*

UL 1310, *Class 2 Power Units*

UL 1439, *Tests for Sharpness of Edges on Equipment*

UL 1449, *Surge Protective Devices*

UL 1492, *Audio-Video Products and Accessories*

UL 1642, *Lithium Batteries*

UL 1778, *Uninterruptible Power Supply Equipment*

UL 1977, *Component Connectors for Use in Data, Signal, Control and Power Applications*

UL 1989, *Standby Batteries*

UL 2054, *Household and Commercial Batteries*

UL 2238, *Cable Assemblies*

UL 2738, *Induction Power Transmitters and Receivers for Use with Low Energy Products*

UL 8750, *Light Emitting Diode (LED) Equipment for Use in Lighting Products*

UL 60065, *Audio, Video, and Similar Electronic Apparatus – Safety Requirements*

UL 60320-1, *Appliance Couplers for Household and Similar General Purposes – Part 1: General Requirements*

UL 60384-14, *Fixed Capacitors for Use in Electronic Equipment – Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains*

UL 60730-1, *Automatic Electrical Controls – Part 1: General Requirements*

UL 60950-1, *Information Technology Equipment – Safety – Part 1: General Requirements*

UL 61058-1, *Switches for Appliances – Part 1: General Requirements*

UL 62368-1, *Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements*

6 Glossary

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

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

6.3 CLASS 2 LEAD – Consists of a factory-made, power-limited cable with an output connector at one end. The other end is secured within the housing or enclosure of the FPDU. The output connector is intended for connection to the Class 2 separable interface (such as Universal Serial Bus [USB] connectors).

6.4 CLASS 2 SEPARABLE INTERFACE – A separable component containing Class 2 low-voltage connector(s) only (such as Universal Serial Bus (USB) connectors).

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

6.6 CURRENT TAP – A single-outlet contact device that is integral to the attachment plug of the FPDU power supply cord.

6.7 FIXED FURNISHING – Intended to be permanently connected electrically to a source of supply and meets any of the following:

a) Intended to be fastened in place and requiring tools for removal; or

b) Integrated into the structure as a permanent fixture, such as but not limited to permanent countertops of kitchens and bathrooms.

6.8 FURNITURE POWER DISTRIBUTION UNIT (FPDU) – An electrical enclosure provided with an attached power supply cord and attachment plug or current tap 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 14.6 limiting the total number of outlets, Table 13.1 for overload requirements and 13.1.8 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 Annex A – Furniture Power Distribution Units Incorporating Batteries.

m) Provided with an integral Class 2 lead and mating Class 2 separable interface, or an integral power supply with one or more Class 2 output connector(s).

n) Provided with receptacles with integral power supplies with Class 2 output connectors.

6.9 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.

6.10 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.

Exception: A securement means to the structure or to stationary or fixed furnishings in order to prevent tipping of the portable furnishing that requires the use of tools is not prohibited from being employed.

6.11 PORTABLE GROUND-FAULT CIRCUIT INTERRUPTER (GFCI) CLASS A – A plug-in type ground-fault circuit interrupter provided with male blades or with a power-supply cord with an attachment plug. Portable GFCIs are constructed so that when any single supply conductor, including the neutral conductor, is opened protection to the user is maintained. Class A GFCIs trip when the current to ground has a value in the range of 4 through 6 mA.

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

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

6.14 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.

6.15 STATIONARY FURNISHING – Intended to be relocatable and meets all of the following:

a) In normal use of the furnishing, not readily movable by an unaided individual due to the weight, size, or configuration of the furnishing, and

b) 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

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

Exception: A securement means to the structure or to fixed or other stationary furnishings in order to prevent tipping of the stationary furnishing that requires the use of tools is not prohibited from being employed.

6.16 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

7 Enclosure

7.1 General

7.1.1 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.

7.1.2 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 Tests, Section 44.

7.1.3 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.

7.1.4 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 35.

7.1.5 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 10, Mounting Means;

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.

7.1.6 An FPDU that employs an enclosure cap or cover over the reset actuator (i.e. stem) of a supplementary protector shall not interfere with trip and/or reset function of the supplementary overcurrent protector.

7.1.7 A FPDU that incorporates devices such as an integral appliance timer to control all or some of the receptacles shall comply with UL 917 or UL 244A. Compliance with UL 60730-1, and/or the applicable Part 2 standard from the UL 60730 series fulfills the UL 244A requirements.

7.1.8 Products that employ timer(s) as specified in 6.5 shall be marked as specified in 53.23 to warn the user of the possible hazards.

7.1.9 Telephone equipment and communication circuit protectors included in a FPDU shall comply with the requirements in UL 60950-1 or UL 62368-1 and the requirements in UL 497A.

7.1.10 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 UL 452, and UL 1492 or UL 60065, or UL 62368-1.

7.1.11 A cord-and-plug-connected FPDU with three or more receptacle outlets and that employs an electromagnetic interference filter shall also comply with UL 1283.

7.1.12 A cord-and-plug-connected FPDU with three or more receptacle outlets and that employs a surge protective device shall also comply with UL 1449, for SPD Type 3.

7.1.13 A FPDU that employs an uninterruptible power supply located in the primary circuit shall comply with the requirements in UL 1778.

7.1.14 The enclosure interior of 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. The FPDU enclosure interior containing power circuits shall comply with the Spill Test, Section 43. The FPDU enclosure interior portion containing solely Class 2 load circuits is not considered during this test.

Exception No. 1: When the instructed installation 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.

Exception No. 2: When the FPDU is provided with a portable GFCI Class A that complies with UL 943 and the GFCI is located at the attachment plug or within 12 in (305 mm) of the attachment plug compliance with the spill test is not required.

7.1.15 Removable knock-outs and pry-outs shall be fully concealed by any of the following:

a) A pressure-sensitive label that complies with UL 969, and includes markings or instructions, or

b) A blank pressure-sensitive label that complies with UL 969, provided that the FPDU also includes an installation instruction that complies with 54.6.

Exception: This requirement does not apply to removable knock-outs or pry-outs that, if removed, permit access solely to Class 2 wiring terminals or circuits.

7.2 Metallic

7.2.1 A metal enclosure of a FPDU shall have a minimum thickness in accordance with Table 7.1.

Table 7.1
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)

7.2.2 The enclosure shall comply with the strain relief, impact, and crush test requirements of Sections 36, 38, and 39 respectively, of this standard.

7.3 Nonmetallic

7.3.1 A polymeric enclosure of a FPDU for use in a portable furnishing shall comply with the flammability requirements in UL 746C, for non-attended, non-intermittent duty portable equipment and shall be marked in accordance with 53.15.

7.3.2 A polymeric enclosure of a FPDU for use in a stationary furnishing shall comply with the flammability requirements in UL 746C, for stationary equipment.

7.3.3 The enclosure shall comply with the strain relief, impact, crush and mold stress-relief test requirements of Sections 36, 38, 39 and 42 respectively, of this standard.

7.3.4 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 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.

7.3.5 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 UL 746C, for non-attended, non-intermittent duty portable equipment.

8 Mechanical Assembly

8.1 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.

8.2 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 8.3 and 8.4, shall be restrained from turning. See 8.5.

8.3 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.

8.4 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.

8.5 The means by which the turning specified in 8.2 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.

8.6 A FPDU with a retractable vertical tower, that has a horizontal platform area greater than 9 in^2 (58.1 cm^2) 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 41. 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 41.

8.7 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 48.

8.8 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 9.1.

9 Enclosure Accessibility and Accessibility of Live Parts

9.1 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.

9.2 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 probes specified in 44.1.2 and shown in Figure 9.1. The probes 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 probes shall be applied in any possible configuration; and, when required, the configuration shall be changed after insertion through the opening.