UL 2560

STANDARD FOR SAFETY

Emergency Call Systems for Assisted Living and Independent Living Facilities

UL Standard for Safety for Emergency Call Systems for Assisted Living and Independent Living Facilities, UL 2560

First Edition, Dated September 13, 2011

Summary of Topics

This revision of ANSI/UL 2560 dated October 26, 2023 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by ULSE's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated August 25, 2023.

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UL 2560

Standard for Emergency Call Systems for Assisted Living and Independent Living Facilities

First Edition

September 13, 2011

This ANSI/UL Standard for Safety consists of the First Edition including revisions through October 26, 2023.

The most recent designation of ANSI/UL 2560 as a Reaffirmed American National Standard (ANS) occurred on October 26, 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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CONTENTS

INTRODUCTION

CONSTRUCTION

PERFORMANCE

MANUFACTURING AND PRODUCTION TESTS

MARKINGS

INSTRUCTIONS AND INSTALLATION DRAWINGS

PROGRAM-CONTROLLED AND SIGNALING EQUIPMENT AND SYSTEMS

APPENDIX A

INTRODUCTION

1 Scope

1.1 These requirements cover the individual unit employed to form assisted and independent living emergency call systems (ECS) intended to provide audible and visual signaling between residents and assisted and independent living facility staff. Some examples include call initiation stations, call notification stations, and power supplies.

1.2 The units covered by these requirements are intended to be installed in either general or resident areas in accordance with the National Electrical Code, NFPA 70.

1.3 These requirements are not intended to cover signaling systems in a hospital or acute/skilled care environment. Requirements for systems of this nature are covered by the Standard for Hospital Signaling and Nurse Call Equipment, UL 1069.

2 General

2.1 System configuration

2.1.1 The minimum fundamental configuration shall consist of the following:

a) An emergency call-initiation station with a call assurance indicator suitable for permanent installation in each resident living unit. Typical applications will utilize pendants for residents, multiple call initiation stations in each living unit, and additional call initiation stations in common areas within the facility.

b) Call notification station(s) that receive calls, one of which must be installed at a fixed location.

2.1.2 An ECS employs a dedicated wired, dedicated wireless, or combination of these means for initiation of a resident or staff call, requiring attention.

2.1.3 An Emergency Call System has a Secondary (battery backup) Power Supply. The length of backup is specified by the manufacturer.

2.2 Components

2.2.1 Except as indicated in 2.2.2, 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.

2.2.2 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.

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

2.2.4 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.

2.3 Units of measurement

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

2.3.2 Unless otherwise specified, all voltages are rms.

2.4 Undated references

2.4.1 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.

2.5 Maximum voltage and power

2.5.1 The maximum voltages to an emergency call initiation station, where wet contact is likely to occur (see Wet Area, 3.44), shall not be more than 15 volts, 60 hertz sinusoidal, 30 volts continuous DC, 21.2 volts peak for nonsinusoidal AC, and 12.4 volts for DC that is interrupted at a rate of 10 – 200 hertz. See Voltage and Current Measurements, Section 19.

3 Glossary

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

3.2 ASSURANCE INDICATOR – Visual or audible indication on the call initiation station signifying placement of a call.

3.3 AUDIO COMMUNICATION – Two way voice communication between the call notification station and the call initiating device.

3.4 BATTERY, PRIMARY – A primary means of powering a device where the battery is not recharged during normal operation.

3.5 BATTERY, STANDBY – A power source utilizing a battery to provide secondary power or the battery used to provide secondary power. See Secondary Power, 3.39.

3.6 CALL CORD – A cord with a switch at one end and a connector at the other that typically plugs into a call initiation station. The resident places a call to the staff by momentarily pressing the switch.

3.7 CALL INITIATION STATION – Any of several types of devices that are able to initiate a call for assistance or to communicate a change in status (to reset or cancel the call) to the emergency call system.

3.8 CALL NOTIFICATION STATION – Any of several types of indicating devices that audibly and visually notify the appropriate staff that a call for assistance has been made.

3.9 CENTRALIZED SYSTEM – A system whose operations are monitored and controlled from a call notification station. It includes call initiation stations installed in resident and related areas that are not normally visible from the central control point.

3.10 CIRCUIT, HIGH-VOLTAGE – A circuit having characteristics in excess of those of a low-voltage, power-limited circuit as defined in 3.11.

3.11 CIRCUIT, LOW-VOLTAGE (POWER-LIMITED) – A circuit involving a potential of not more than 30 volts AC, rms (42.4 volts DC or AC peak) and not providing more than 100 volt-amperes rated output.

3.12 CLASS 2 CIRCUITS – Circuits that conform to the Class 2 circuit requirements of Article 725 of the National Electrical Code, NFPA 70. Class 2 circuits are power-limited, either inherently or by a combination of protections against excessive current at the power source and in the circuit itself.

3.13 CLASS 3 CIRCUITS – Circuits that conform to the Class 3 circuit requirements of Article 725 of the National Electrical Code, NFPA 70.

3.14 CORRIDOR LAMP – A visual indicator, mounted on the wall (or ceiling) outside a room that indicates calling activities or the presence of staff members. A corridor lamp incorporates either a single light source or multiple light sources of different colors to indicate the types of calls and staff members. Also referred to as a dome light.

3.15 DOME LIGHT – See Corridor Lamp, 3.14.

3.16 DWELLING UNIT – One or more rooms arranged for the use of one or more individuals living together, providing complete living facilities including permanent provisions for living, sleeping, and sanitation.

3.17 ELECTROSTATIC DISCHARGE (ESD) – The discharge of a voltage that is developed on both human bodies and objects with respect to a local electrostatic ground.

3.18 EMERGENCY CALL – A distinctive audible and visual signal that requires immediate action, but does not necessarily indicate a life-threatening situation. A call for assistance from a resident can be categorized as an emergency call.

3.19 EMERGENCY CALL SYSTEM – A system that provides a method for an individual to signal for help or assistance.

3.20 FIXED EQUIPMENT – Equipment that is intended to be permanently attached or tethered to a structure.

3.21 FUNDAMENTAL OPERATION – An essential/required operation whose primary function is to provide notification and/or reset/cancellation of a staff-initiated or resident-initiated call signal to alert the staff.

3.22 GROUND FAULT – An unintended electrical connection to ground.

3.23 GROUNDED CONDUCTOR (NEUTRAL) – A system or circuit conductor that provides a return path for high-voltage power.

3.24 GROUNDING – A system of conductors that provides a low-impedance path to earth ground for protection from leakage and fault currents.

3.25 GROUNDING CONDUCTOR – A conductor used to connect equipment or the grounded circuit of a wiring system to a grounded electrode or electrodes.

3.26 GROUNDING CONDUCTOR, EQUIPMENT – The conductor used to connect the non-current-carrying metal parts of equipment, raceways, and other enclosures to the system grounded conductor or the grounding electrode conductor, or both, at the service equipment or at the source of a separately derived system.

3.27 HARD-WIRED SYSTEM – Call initiation and call notification devices are connected using a dedicated cabling system installed within the building.

3.28 LEAKAGE CURRENT – Any current, including capacitively coupled currents that are capable of being conveyed from accessible parts of a product to ground or to other accessible parts of the product.

3.28A MESSAGE (CALL) – Communicated data that contains general information relating to the operation of the product, which may also include status information in the same message, and is transmitted via wired or wireless pathway from an origin to a destination.

3.28B MESSAGE (STATUS) – Communicated data that contains specific information relating to the status of the product and is transmitted via a wired or wireless pathway from an origin to a destination.

3.29 NORMAL/NON-EMERGENCY (ROUTINE) – A call placed by a resident that does not require immediate action.

3.30 OFF-NORMAL – Any change of state in a call initiation station from the normal idle condition. (e.g. in a wireless call initiation station, when an emergency call is being broadcast, that station is off-normal.)

3.31 OVERCURRENT – Any current in excess of the rated current of equipment or the ampacity of a conductor. It is capable of being caused by an overload, a short circuit, or a ground fault.

3.32 OVERLOAD – The operation of equipment in excess of its normal, full-load rating, or of a conductor in excess of its rated ampacity to the degree that, when persisted for a sufficient length of time will damage or dangerously overheat the equipment or wiring. A fault, such as a short circuit or a ground fault, is not an overload.

3.33 OVERVOLTAGE – Any voltage that exceeds its rated or intended value.

3.34 PENDANT – A portable call initiation station which may be handheld, body worn, or attached to a person's clothing.

3.35 PORTABLE EQUIPMENT – Equipment that is intended to be moved from one location to another while being carried by one or more persons.

3.36 POWER SUPPLY – A unit that is used to condition the power for a emergency call system.

3.37 RESET/CANCELED – A means by which to acknowledge the attending to a call for assistance or the act of returning the emergency call system to a normal quiescent state.

3.38 RESIDENT AREA – A portion of the facility that includes dwelling units for residents and the specific group of staff dedicated to those residences.

3.39 SECONDARY POWER – An alternate power source to power the emergency call system during power outages. Secondary power often utilizes rechargeable batteries. See Battery, Standby, 3.5.

3.40 STATIONARY – A cord-connected product intended to be located in a dedicated space.

3.41 SUPERVISION – The electronic means of verifying that the call initiation and call notification devices are functioning.

3.42 SUPPLEMENTARY DEVICE – Any device that does not affect the fundamental operation of the system, and is not evaluated as a fundamental device.

3.43 SUPPLEMENTARY OPERATION – An operation that is adjunct to the fundamental operation, that failure of such will have no effect on the fundamental operation of the ECS.

3.44 WET AREA – Resident or community areas that are commonly wet while individuals are present. These include standing fluids on the floor or the drenching of the work area where the fluids would likely come in contact with any individual present in the area. Areas that are routinely made wet by housekeeping procedures and incidental spills are not considered "wet".

3.45 WIRED SYSTEM – See Hard-Wired System 3.27.

3.46 WIRELESS SYSTEM – Call initiation and call notification devices are connected using, at least in part, low-power radio frequency signaling.

CONSTRUCTION

4 General

4.1 Except where indicated otherwise, the construction requirements specified in this standard shall apply to equipment that performs emergency call system fundamental operations.

4.2 Isolation shall be provided (see the Abnormal Tests, Section 34) between any equipment, such as CRTs, printers, pocket page, telephone, and similar devices, and circuits extending into the resident care area stations so that, in the event of a breakdown between primary and secondary windings, the high-voltage does not appear on the resident circuits and the sum of leakage currents from the emergency call system and supplementary equipment does not exceed the limits of the Leakage Current Test, Section 28. The isolation shall be provided by physical separation, the use of optical isolators, or equivalent means.

4.3 Products that currently meet all the requirements of the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1 or the Standard for Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements, UL 62368-1, fulfill the requirements of Table 4.1.

Table 4.1
Construction safety requirements met by compliance with UL 60950-1 or UL 62368-1

Requirements	Paragraph(s)
Enclosures – sheet metal	5.3.1 – 5.3.6
Enclosures – non-metallic	5.4.1 – 5.4.5
Enclosures – ventilating openings involving perforated sheet metal and/or expanded metal mesh	5.5.5
Enclosures – covers	5.6.1 – 5.6.4
Enclosures – observation opening covers	5.7.1 – 5.7.4
Electric Shock	6.1 – 6.4
Corrosion Protection	7.1, 7.2
Field wiring system connections – general	8.1.1, 8.1.2
Field wiring system connections – terminals	8.2.1.1, 8.2.2.2
Field wiring system connections – equipment grounding connection	8.5.1 – 8.5.3
Field wiring system connections – supply connections	8.6.1.1 – 8.6.2.2
Field wiring system connections – grounded supply connector connection	8.7.1, 8.7.2
Field wiring system connections – compartments	8.8.1
Field wiring system connections – strain relief	8.9.1

Table 4.1 Continued on Next Page

Table 4.1 Continued

Requirements	Paragraph(s)
Internal wiring	9.1.1 – 9.5.6
Bonding for ground	10.1 – 10.9
Components – printed-wiring boards	11.1.1
Components – coil windings	11.2.1, 11.2.2
Components – switches	11.3.1
Components – lamp holders and lamps	11.4.1 – 11.4.4
Components – connectors and receptacles	11.6.1
Components – current carrying parts	11.9.1, 11.9.2
Components – insulating material	11.10.1 – 11.10.6
Components – mounting of parts	11.11.1 – 11.11.4
Components – operating mechanisms	11.12.1 – 11.12.5
Spacings	14.1 – 14.5

5 Enclosures

5.1 General

5.1.1 Emergency call equipment shall be formed and assembled so that it has the strength and rigidity necessary to resist the abuses expected in service without:

a) Impairing its operation,

b) Total or partial collapse with resulting reduction of spacings,

c) Loosening or displacement of parts, or

d) Other serious defects.

5.1.2 All electrical parts of emergency call equipment shall be enclosed to reduce the chance of contact with uninsulated live parts. Functional openings, such as on receptacles and jacks, shall not be enclosed.

5.1.3 An enclosure shall have means for mounting. The means for mounting shall be accessible without disassembling any operating part of the unit. Removal of a completely assembled panel to mount the enclosure is not considered to be disassembly of an operating part.

5.1.4 A compartment enclosing electrical parts shall not be open to the floor or other support on which the unit rests.

5.1.5 An enclosure intended for recessed mounting and having a panel intended to be flush with the surface of a wall shall have no nonfunctional openings.

5.1.6 If a backbox is required but not provided with the unit, the minimum dimensions of the backbox in which the unit is intended to be mounted, as well as the minimum spacings from current-carrying parts of the unit to internal dead metal parts of the backbox, shall be specified in the installation instructions. The instructions shall specify the model number or minimum dimensions of custom backboxes intended to be used in the system.

5.2 Cast metal

5.2.1 The thickness of cast metal for an enclosure shall be as specified in Table 5.1.

Exception: Cast metal having a thickness 1/32 inch (0.8 mm) less than that indicated in Table 5.1 is to be used only if the surface under consideration is curved, ribbed, or otherwise reinforced, or if the shape or size of the surface is such that equivalent mechanical strength to an enclosure of the thickness specified in the table is provided.

Table 5.1
Minimum thicknesses for cast-metal electrical enclosures

Use, or dimensions of area involved	Die-cast metal,		Cast metal of other than the die-cast type,	
	inch	(mm)	inch	(mm)
Area of 24 square inches (155 cm^2) or less and having no dimension greater than 6 inches (152 mm)	1/16	1.6	1/8	3.2
Area greater than 24 square inches or having any dimension greater than 6 inches	3/32	2.4	1/8	3.2
At a threaded conduit hole	1/4	6.4	1/4	6.4
At an unthreaded conduit hole	1/8	3.2	1/8	3.2

5.2.2 When threads for the connection of conduit are tapped all the way through a hole in an enclosure wall, or when an equivalent construction is employed, there shall be at least 3-1/2 threads but no more than five threads in the metal, and the construction shall permit a standard conduit bushing to be attached.

5.2.3 When threads for the connection of conduit are tapped part way through a hole in an enclosure wall, there shall be at least five full threads in the metal, and there shall be a conduit stop having smooth, rounded edges for the protection of the conductors. The conduit stop shall have an inside diameter equal to that specified for a standard conduit bushing of the appropriate size.

5.3 Sheet metal

5.3.1 The thickness of sheet metal employed for the enclosure of emergency call equipment shall be as specified in Table 5.2.

Exception: Sheet metal of two gage sizes less in thickness is not prohibited when the surface under consideration is curved, ribbed, or otherwise reinforced, or when the shape or size of the surface is such that equivalent mechanical strength to an enclosure of the thickness specified in the table is provided.

Table 5.2
Minimum thicknesses for sheet metal enclosures

Maximum enclosure dimensions				Minimum thicknesses								
				Steel						Brass or aluminum,		
Any linear dimension,		Area of any surface,		Zinc-coated,			Uncoated,					
inches	(mm)	inches^2	(cm^2)	inch	(mm)	GSG	inch	(mm)	MSG	inch	(mm)	AWG
12	305	90	584	0.035	0.86	20	0.032	0.81	20	0.045	1.14	16
24	610	360	2322	0.045	1.14	18	0.042	1.07	18	0.058	1.47	14
48	1219	1200	7742	0.056	1.42	16	0.053	1.35	16	0.075	1.91	12
60	1524	1500	9678	0.070	1.78	14	0.067	1.70	14	0.095	2.41	10
Over 60	1524	Over 1500	9678	0.097	2.46	12	0.093	2.36	12	0.122	3.10	8

5.3.2 At any point where conduit or metal-clad cable is to be attached, sheet metal shall be of such thickness or shall be so formed or reinforced that it will be equivalent in strength to any of the following:

a) Uncoated flat steel not less than 0.032 inch (0.81 mm) thick,

b) Galvanized steel not less than 0.034 inch (0.86 mm) thick, or

c) Nonferrous metal not less than 0.045 inch (1.14 mm) thick,

and the construction shall permit a standard conduit bushing to be attached.

5.3.3 A plate or plug for an unused conduit opening or other hole in the ultimate enclosure, for a hole having a 1-3/8-inch (34.9-mm) maximum dimension, shall not be less than 0.027 inch (0.66 mm) thick when steel, or 0.032 inch (0.81 mm) thick when nonferrous metal.

5.3.4 A closure for a hole larger than 1-3/8 inch (34.9 mm) shall have a thickness equal to that required for the ultimate enclosure or a standard knockout seal shall be used. Such plates or plugs shall be securely mounted.

5.3.5 A knockout in a sheet metal enclosure shall be secured but shall be capable of being removed without undue deformation of the enclosure.

5.3.6 A knockout shall be provided with a flat surrounding surface for seating of a conduit bushing, and shall be located so that installation of a bushing at any knockout used during installation shall not result in spacings between uninsulated live parts and the bushing of less than those required in this standard.

5.4 Nonmetallic

5.4.1 An enclosure, or parts of an enclosure, of nonmetallic material shall have the mechanical strength and durability and be formed so that operating parts are protected against damage. The enclosure parts shall resist the abuses encountered during installation and use. The mechanical strength shall be at least equivalent to a sheet metal enclosure of the minimum thickness specified in Table 5.2. See also the Polymeric Materials Tests, Section 36.

5.4.2 Polymeric materials used for an enclosure shall comply with the following requirements:

a) Enclosures containing parts involving a risk of fire: flammability rating of 5V; or flammability rating of V-0 and compliance with the 5-inch Flame Test as described in 36.4.1 – 36.4.6.

b) Enclosures containing Class 2 and/or Class 3 circuits with a voltage not exceeding 30 volts AC, 42.2 volts peak, or 60 volts DC: flammability rating of V-2 or better; or flammability rating of HB, and compliance with the 3/4-inch Flame Test as described in 36.3.1 – 36.3.6.

c) Enclosures containing circuits powered by batteries or with energy limited to 15 watts: flammability rating of HB or better.

5.4.3 The continuity of the grounding system of the equipment shall not rely on the dimensional integrity of the nonmetallic material.

5.4.4 If wood is used as the overall enclosure of equipment employed as part of a emergency call system, such as a bedside table, the current-carrying components shall be mounted on a metal chassis, box, plate, or similar mounting surface. All exposed live parts shall be totally enclosed and shall be inaccessible except for external user controls.

5.4.5 The thickness of the wood referenced in 5.4.4 shall be 1/4 inch (6.4 mm) minimum at the points of protection for current-carrying parts.

5.5 Ventilating openings

5.5.1 When ventilating openings are provided on an enclosure intended for recessed mounting with a front cover panel flush with the surface of the wall, the openings shall be on the front cover panel. When ventilating openings are provided on a surface-mounted enclosure, they shall be on the sides or front of the enclosure, or both.

5.5.2 Ventilating openings in an enclosure housing equipment other than that within reach of a resident or person touching a resident shall be of such size and shape that no opening will permit passage of a rod having a diameter of 0.197 inch (5.0 mm). The ventilating openings include perforated holes, louvers, and openings protected by means of wire screening, expanded metal, or perforated covers.

5.5.3 Ventilating openings in an enclosure housing equipment that is intended to be installed within reach of a resident or a person touching a resident shall be of such size and shape that no opening permits passage of a rod having a diameter of 5/64 inch (2.0 mm).

5.5.4 An enclosure that houses fuses or any other overload protective device, and that is provided with ventilating openings, shall provide protection against the emission of flame or molten metal.

5.5.5 Perforated sheet metal and sheet metal employed for expanded-metal mesh shall be at least:

a) 0.046 inch (1.14 mm) thick if zinc-coated or 0.042 inch (1.07 mm) thick if not zinc-coated if the mesh openings or perforations are 1/2 square inch (320 mm^2) or less in area and

b) 0.084 inch (2.13 mm) thick if zinc-coated, or 0.080 inch (2.03 mm) thick if not zinc-coated if the mesh openings or perforations are larger than 1/2 square inch.

Exception: If the indentation of a guard or enclosure wall does not alter the clearance between uninsulated live parts and grounded metal so as to affect the performance adversely or reduce spacings below the minimum values specified in Spacings, Section 14, the thickness shall not be less than 0.021 inch (0.53 mm) expanded metal mesh [0.024 inch (0.61 mm) if zinc coated] when:

a) The exposed mesh on any one side or surface of the device so protected has an area of no more than 72 square inches (464 cm^2) and has no dimension greater than 12 inches (305 mm) or

b) The width of an opening so protected is not greater than 3-1/2 inches (90 mm).