STANDARDS UPDATE NOTICE (SUN)
ISSUED: June 6, 2023

STANDARD INFORMATION

Amendment 1: See updated Effective Date in blue below.

Standard: UL 539
Standard ID: Single and Multiple Station Heat Alarms [UL 539:2022 Ed.8]
Previous Standard ID: Single and Multiple Station Heat Alarms [UL 539:2017 Ed.7+R:22May2018]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: ~~**June 23, 2024**~~ **February 18, 2028**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

Note: The 8th edition of UL 529 is harmonized with the 1st edition of ULC 589.

Overview of Changes:

- Requirements for the Evaluation of Reduced Spacings on Printed-Wiring Boards
- New requirements for heat alarms for use in unconditioned areas
- New stability test for eutectic heat alarms
- Revisions to Manufacturer's Published Instructions
- Revised requirements for internal wiring, field wiring, grounding, metal and nonmetallic enclosures
- New requirements for batteries
- Addition of multiple new tests

Specific details of new/revised requirements are found in table below

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.

STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
		Additions to existing requirements are <u>underlined</u> and deletions are shown ~~lined out~~ below.
9		***New section added;*** **Batteries** When a battery or set of batteries is used as the main source of power of a single or multiple station heat alarm, it shall comply to the requirements of the Battery Tests, Section 66. See standard for details.
11	Info	**Calibration**
11.2		A calibration means is considered to be not accessible or apparent when it is not showing, not exposed to manipulation by conventional tools, or not readily displaced. The complete concealment of conventional tool-engaging means in a screw, such as a slot and a recessed head, by the use of solder or brazing material <u>is considered to prevent manipulation if the calibration means cannot be changed by gripping with conventional tools and engagement or manipulation is prevented.</u>
18	Info	**Servicing and Maintenance Protection**
18.1	Info	**General**
18.1.2		***New clause added;*** Manual switching devices may be located or oriented with respect to uninsulated live parts or hazardous moving parts so that manipulation of the mechanism can be accomplished in the normal direction of access if uninsulated live parts or hazardous moving parts are not located in front (in the direction of access) of the mechanism, or not located within 150 mm (5.9 in) of any side or behind the mechanism, unless guarded.
18.1.3		***New clause added;*** In determining compliance with 18.1.2 only uninsulated live parts in circuits above 30 Vrms shall be considered.
18.1.5		***New clause added;*** Other arrangements of location of components and/or guarding shall be also acceptable where electrical components are accessible for service as indicated by 16.1, Remote accessories.

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19	Info	**Enclosure**
19.4	Info	**Nonmetallic enclosures**
19.4.3		Polymeric materials used for an enclosure shall comply with the following requirements: a) Enclosures containing parts including a risk of fire – minimum flammability rating of 5VA or V-0 and compliance with the Flame Test 127 mm (5 in) as described in 60.3.1 – 60.3.6. b) Enclosures containing power limited circuits with a voltage not exceeding 30 volts AC, 42.4 volts-peak, or 60 volts DC – minimum flammability rating of: 1) V-2, or 2) HB and successful completion with the Flame test – 19-mm (3/4-in), as described in 60.2.1 – 60.2.6; c) Enclosures containing circuits with a voltage not exceeding 30 volts AC, 42.4 volts-peak, or 60 volts DC – minimum flammability rating of HB and compliance with the Flame Test 19 mm (3/4 in), as described in 60.2.1 – 60.2.6. d) Enclosures containing circuits powered by batteries with energy limited to 15 watts – minimum flammability rating of HB.
19.4.4		***New clause added;*** For 19.4.3, Flammability ratings are defined in the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94.
19.5	Info	**Ventilating openings**
19.5.1		Ventilating openings in an enclosure including holes, louvers, and openings protected by means of wire screening, expanded metal, or perforated covers, shall be of such size or shape that no opening will permit passage of a rod having a diameter of 3.6 mm (9/64 in) for circuits greater than 30 V rms (42.4 V peak). An enclosure for a fuse(s) or other overload protective device provided with ventilating openings shall afford adequate protection against the emission of flame or molten metal. Openings provided for the cleaning of internal parts shall be arranged to prevent damage to functional internal components during such cleaning operations. For units equipped with a cover, the requirements of this paragraph apply with the cover open for circuits greater than 30 V rms (42.4 V peak).
21	Info	**Field Wiring**
21.3		***New section added;*** **Field-wiring terminals (general)** A field-wiring terminal to which field-wiring connections are made shall comply with the requirements in 21.3.2 – 21.3.5. See standard for details.

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21.4		***New section added;*** **Special field-wiring terminals (qualified application)** Any of the following terminal configurations are suitable for connection of field wiring when all of the conditions in 21.4.2 are met: See standard for details.
21.6		***New section added;*** **Grounding terminals and leads** An equipment-grounding terminal or lead shall be provided for a heat alarm intended for connection to an energy source greater than 30 volts rms by means other than a metal enclosed wiring system. See standard for details.
21.7	Info	**Power supply cord**
21.7.4		***New clause added;*** Where a flexible cord passes through an opening in a wall, barrier, or enclosing case, the edges of the hole shall be smooth and rounded, without burrs, fins, or sharp edges which may damage the cord jacket. The cord as connected to the heat alarm shall comply with Strain Relief Test, Section 65.
22	Info	**Internal Wiring**
22.3	Info	**Splices**
22.3.1		All splices and connections shall be mechanically secured and bonded electrically. Tack soldering of components is permitted where the construction precludes mechanical security only when 5 samples resist a pull-force of 8.9 N (2 lbf) applied for 3 s and the connection is subjected to 100 % inspection and testing with the same pull force by the manufacturer.
22.5	Info	**Bonding for grounding**
22.5.1		An exposed non-current-carrying metal part of a heat alarm operating at more than 30 volts rms that is liable to become energized, shall be reliably bonded to the point of connection of the field-equipment grounding terminal or lead, if provided or required, and to the metal surrounding the knockout, hole, or bushing provided for field power- supply connections. This requirement also applies to a heat alarm equipped with auxiliary function contacts rated at more than 30 volts rms.
23	Info	**Electrical Components**
23.5	Info	**Printed-wiring boards**
23.5.2		***New clause added;*** All printed-wiring boards shall have a minimum flammability rating of V-2, rated for direct support of current-carrying parts, and be suitable for the soldering process used.

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		Exception: On printed-wiring boards having a flammability classification of V-0 in accordance with CSA C22.2 No. 0.17, Evaluation of Polymeric Materials (in Canada), the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94 (in the United States) spacings (other than spacings to dead metal traces, between primary and secondary circuits, and at field wiring terminals) shall not be specified between traces of different potential connected in the same circuit when: a) The spacings are adequate to comply with the requirements in 69, Evaluation of reduced spacings on printed-wiring boards; or b) An analysis of the circuit indicates that no more than 12.5 mA of current is available between short-circuited traces having reduced spacings.
24	Info	**Spacings**
24.2		***New section added;*** **Determination of Installation Spacings** The sensitivity of a heat alarm is to be expressed in terms of spacing limitations. Spacing limitations refer to the maximum distance permitted between devices mounted on smooth ceilings. See standard for details.
26	Info	**Test Voltages**
26.1		***New section added;*** Unless otherwise specified, the test voltage for each test shall be as indicated in Table 26.1, at rated frequency. See standard for details.
27		***New section added;*** **Normal Operation Test** An alarm shall operate for all conditions of its intended performance when energized from a source of rated voltage (or mechanical power, as applicable), under all conditions covered both in the installation instructions and in any supplementary information provided by the manufacturer. See standard for details.
28		***New section added;*** **Electrical Supervision Test (Electrically-operated Only)** A single station heat alarm shall be electrically supervised so that failure of a limited life component, open in an externally connected alarm circuit, or ground fault on any externally connected wiring which prevents operation for an alarm signal from the alarm shall result in an audible trouble signal. See standard for details.

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29	Info	**Oven Test**
29.9		***New clause added;*** The preparation for test is to consist of mounting the device on the small removable screen base of 6.4 mm (1/4 in) hardware cloth formed to a height where the temperature sensing element is midway between the top of the chamber and the guide vane. The sample under test is to be positioned in the air stream so that there is no obstruction between the guide vane and sensing element. A spring-wound device is to be mounted with the sensing element in a horizontal position. The test sample is to remain in the oven at least 5 min prior to starting each test run.
29.10		***New clause added;*** The heating coils are to be preheated for 10 – 20 s prior to starting the test. The fan controlling the air flow is to be turned on and its speed adjusted to produce the required velocity. The temperatures are to be read every 10 s. The two variable autotransformers are to be adjusted as needed to obtain the desired rate of temperature rise. Normal oven temperatures at the start of the test are to be 29.4 – 32.2 °C (85 – 90 °F). A deviation of ±4.2 °C (±7.5 °F) is permitted from Figure 29.1 during buildup.
30		***New section added;*** **Stability Test (Electrically-operated Only)** Two heat alarms shall be subjected to the test specified in (a) – (c). Different alarms may be employed for each test. During conditions (b) and (c), there shall not be false alarms. See standard for details.
31		***New section added;*** **Determination of Stability Test for Mechanical Heat Alarms** A heat alarm using both eutectic solder and copper within the construction of the releasing mechanism where the two dissimilar metals are in contact with each other shall operate for its intended signaling performance after being subjected to the stability test. The releasing mechanism is defined as the components that cause the contacts to operate as the eutectic solder melts. See standard for details.
33		***New clause added;*** **Rate-of-Rise Operation Test** Heat alarms that operate on the rate-of-rise principle shall be calibrated so that the devices will function at the rate of rise for which they are intended, but shall not operate when subjected to a rate of temperature rise of 6.7 °C (12 °F) per minute

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		or less until a temperature of at least 54 °C (130 °F) is reached [starting from a temperature of 29.4 to 32.2 °C (85 to 90 °F)]. See standard for details.
35	Info	**Corrosion Tests**
35.2		***New clause added;*** The sensitivity of a heat alarm operating on the rate-of-rise principle, after subjected to corrosive atmospheres, shall not show a variation of more than 50 % from the value obtained in the Rate-of-Rise Operation Test, Section 33 on as-received samples. For mechanically-operated heat alarms with an energized power source, no false operation shall occur following the exposure to the corrosive atmospheres or at a temperature rise of 6.7 °C (12 °F) per min or less until a temperature of at least 54 °C (130 °F) is reached [starting from a temperature of 29.4 °C to 32.2 °C (85 °F to 90 °F)].
35.5		Moist Hydrogen Sulfide-Air Mixture Exposure – Two samples are to be exposed to a moist hydrogen sulfide-air mixture in a closed glass chamber for a period of 10 days. On the second through fourth and on the seventh through tenth day of exposure, the chambers are to be purged of gases from the previous day and an amount of hydrogen sulfide equivalent to 0.1 % of the volume of the chamber is to be introduced. On the fifth and sixth days of the exposure period, the chamber is to remain closed and there is not to be purging or introduction of gas. A small amount of water (10 ml/0.003 m3 of chamber volume) is to be maintained in the bottom of the chamber for humidity. The concentration of hydrogen sulfide by volume in air saturated with water vapor at room temperature shall be 1000 ±50 ppm (parts per million).
35.6		Moist Carbon Dioxide-Sulfur Dioxide-Air Mixture Exposure – Two samples are to be exposed to a moist carbon dioxide-sulfur dioxide-air mixture in a closed glass chamber for period of 10 days. On the second through fourth and on the seventh through tenth days of exposure, the chamber is to be purged of gases from the previous day and an amount of carbon dioxide equivalent to 1.0 % of the volume of the chamber, plus an amount of sulfur dioxide equivalent to 0.5 % of the volume of the chamber is to be added. On the fifth and sixth days of the exposure period, the chamber is to remain closed and there is not to be purging or introduction of gas. A small amount of water (10 ml/0.003 m3 of chamber volume) is to be maintained in the bottom of the chamber for humidity. The concentration of sulfur dioxide by volume in air saturated with water vapor at room temperature shall be 5000 ±250 ppm.
40	Info	**Low Temperature Exposure Test**
40.3		***New clause added;*** Following the 24 h of exposure, the heat alarms are to be transitioned from the low temperature environment to the test environment defined in 40.1 within 30 s. The heat alarms may produce an alarm signal during this transition. Samples that

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		produce an alarm signal during transition shall be allowed to remain in ambient condition until the alarm is reset and the tests required in 38.1 can be conducted.
41		***New section added;*** **Survivability Test** Two samples of the heat alarm shall be exposed to a temperature of 121 ±2 °C (250 ±4 °F) for a period of 4 min. See standard for details.
42	Info	**Audibility Test (Canada and U.S.)**
42.2		***New clause added;*** **Sound output measurement (Canada)** The signal format of a low frequency alarm shall conform to the description in Section 45, Low Frequency Alarm Signal Format. See standard for details.
43	Info	**Alarm Duration Test**
43.1		***New clause added;*** An alarm sounding appliance of an alarm powered by a primary or secondary battery that has been discharged to the trouble level condition shall provide the equivalent of 85 dBA minimum at 3.05 m (10 ft) for 1 min of continuous alarm operation and shall provide at least 82 dBA up to 4 min of alarm operation.
43.3		To determine compliance with 43.1, a measurement shall be made under the following conditions. The ambient noise level is to be at least 10 dB below the measured level produced by the signaling appliance. The alarm is to be mounted 302 mm (1 ft) from the microphone placed in a direct line with the alarm. The alarm is then to be energized in the alarm condition and the sound output is to be measured at 1-min intervals, using a sound level meter employing the A-weighting network.
44	Info	**Supplementary Remote Sounding Appliances**
44.3		***New clause added;*** If the marking specified in 44.2 is applied to the alarm, the sound output shall not be less than 75 dBA.
46	Info	**Jarring Test**
46.2		The alarm and any associated equipment are to be mounted in a position of intended use, see Figure 46.1, to the center of a 1.8 by 1.2 m (6 by 4 ft), nominal 19.1 mm (3/4 in) thick plywood board which is secured in place at four corners. A 100 by 100 mm ±10 % (3.94 by 3.94 in ±10 %) steel plate, 3.2 mm ±10 % (1/8 in ±10 %) thick shall be rigidly secured to the center of the reverse side of the board.

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51	Info	**Circuit Measurement Test (Electrically-operated Heat Alarms Only)**
51.2	Info	**Battery trouble voltage determination**
51.2.3		To determine compliance with 51.2.1 each of three alarms is to be connected in series with a variable regulated direct current power supply and a variable resistor as illustrated in Figure 51.1. The trouble level is to be determined by the following steps: d) Internal Resistance Increase With Constant Terminal Voltage – The voltage of the power supply is to be set at the battery rated voltage (terminal voltage of new battery under normal standby current drain) and the resistance increased from zero ohms until the heat alarm trouble signal is obtained. The rate of resistance change prior to the trouble point shall be reduced to a value required to eliminate any error due to any time lag in the trouble circuit of the heat alarm. e) Terminal Voltage Decrease With Constant Internal Resistance – With the variable resistance set at zero ohms, the power supply voltage is to be decreased until the heat alarm trouble signal is obtained. The rate of voltage change prior to the trouble point shall be reduced to a value required to eliminate any error due to any time lag in the trouble circuit of the smoke alarm. f) Variable Internal Resistance With Variable Terminal Voltage – The test of (a) is to be repeated with the power supply voltage set to values equal to the 25 %, 50 %, and 75 % points of the voltage range determined in (b).
54	Info	**Transient Tests (Electrically-operated Heat Alarms Only)**
54.1	Info	**General**
54.1.1		Two electrically-operated heat alarms shall be subjected to the tests specified in 54.2 – 54.7 while energized from a source of supply in accordance with Test Voltages, 26, and connected to the device(s) intended to be used with the alarm. The alarms a) Shall operate for their intended signaling performance, b) Shall not initiate an alarm signal, and c) Shall not initiate a trouble signal.
54.1.2		Alarms using a primary battery as a power supply are to be subjected to 54.4, Extraneous transients, only. When an alarm is intended for multiple-station connection, the transient tests are to be first conducted with an individual heat alarm, and secondly with two interconnected heat alarms. The interconnecting wiring shall not exceed 305 mm (12 in).
54.1.3		***New clause added;*** Different heat alarms are to be used for each test. The heat alarms shall not false alarm for more than 1 second.

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54.3	Info	**Internally induced transients**
54.3.1		The alarm is to be energized in the standby condition while connected to a source of supply in accordance with Test Voltages, Section 26. The supply is to be interrupted a total of 500 cycles for 1 second at a rate of not more than 6 cycles/min; following the test, the alarm is to be operated: a) For its intended signaling performance, and b) The response of the alarm shall not show a time variation of more than 50 % from the value obtained in the Oven Test, 29.2, the Rate-of-Rise Operation Test, Section 33, or both (as applicable), on as-received samples.
54.4	Info	**Extraneous transients**
54.4.2		Two single and two sets of multiple station heat alarms are to be energized from a source of rated voltage and frequency and subjected to transients generated from the following devices located 305 mm (1 ft) from the alarm, interconnecting wires, or both. The time of application for the condition specified in (a) is to be at least 2 min. The conditions specified in (c), (d), and (e) are to be applied for 10 cycles, each application of 2 s duration, except the last application shall be of a 2-min duration. Near the end of the last cycle, an abnormal amount of heat is to be introduced onto the heat sensor to determine whether the unit is operational for heat with the transient applied. b) Energization and transmission of random voice message of five separate transmitter-receiver units (cellular phones) in turn, and operating in the following nominal frequencies: 1) 27 megahertz, 2) 150 megahertz, 3) 450 megahertz, 4) 866 megahertz, 5) 910 megahertz, and 6) 5.8 gigahertz.
54.6		***New section added;*** **Surge Immunity Test (Combination Wave)** The alarm shall be subjected to the Surge Immunity Test without demonstrating, either during or after testing, any of the following: See standard for details.
54.7		***New section added;*** **Surge Current Test** Each of three previously untested representative devices of the alarm are to be subjected to the Surge Current Test without demonstrating, either during or after testing, any of the following: See standard for details.

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54.8		***New section added;*** **Supply Line (Ring Wave Surge Voltage) Transients** An alarm intended to be powered from commercial AC power shall be subject to supply line transients induced directly between the power supply circuit conductors of the alarm under test. See standard for details.
55	Info	**Static Discharge Test**
55.1		The components of an alarm shall be shielded so that its operation is not adversely affected when subjected to static electric discharges. The intended performance of an alarm shall not be impaired, or a false alarm obtained, when the alarm is subjected to static electric discharges. Operation of the trouble circuit during this test shall not be considered a malfunction, when the subsequent intended operation is not affected. The test is to be conducted in an ambient temperature of 23 ±3 °C (73.4 ±5 °F) at a relative humidity of 10 ±5 % and a barometric pressure of not less than 700 mm of mercury (193.5 kPa). The alarm is permitted to sound for 5 seconds or less during the test.
55.2		Each of two alarms, is to be mounted on the underside of an 18.1-mm (3/4-in) thick plywood panel in its intended mounting position and connected to a source of supply in accordance with Test Voltages, 26. When an alarm is intended to be installed on a metal back box, the box is to be connected to earth ground. A 250 picofarad low leakage capacitor, rated 10,000 volts DC, is to be connected to two high voltage, hazardous-voltage insulated leads, 0.9 m (3 ft) long, stripped 25.4 mm (1 in) at each end. A 1500 ohm resistor is to be inserted in series with one lead. The end of each lead is to be attached to a 12.7-mm (1/2-in) diameter metal test probe with a spherical end mounted on an insulating rod. The capacitor is to be charged by touching the ends of the test leads to a source of 10,000 volts DC for at least 2 seconds for each discharge. One probe is to be first touched to the alarm and the other probe then touched to earth ground. An electrostatic voltmeter is to be employed to measure the voltage and is to be removed prior to conducting the discharge.
55.3		Ten discharges are to be applied to different points on the exposed surface of the alarm, recharging the capacitors for each discharge. Five discharges are to be made with one lead connected to earth ground and the other lead probed on the alarm surface followed by five discharges with the polarity reversed. For an alarm intended to be serviced by the consumer, ten additional discharges are to be applied on all internal parts that are able to be contacted during servicing. Discharges inside the heat alarm are not to be applied when the alarm is not intended to be serviced in the field and is marked to be returned to the factory for servicing.

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56	Info	**Abnormal Operation Test (Electrically-operated Heat Alarms Only)**
56.3		In determining that an alarm complies with the requirement with respect to circuit-fault conditions, the fault condition is to be maintained continuously until constant temperatures are attained, or until burnout occurs, when the fault does not result in the operation of an overload protective device. Shorting of the secondary of the power supply transformer and shorting of a limited-life electrolytic capacitor represents typical fault conditions. The shorting of an electrolytic capacitor(s) and operation in the alarm condition for more than 1 hour represents typical abnormal conditions. See 30.4, Component failure and 67.3, Burnout test.
59	Info	**Dielectric Voltage-Withstand Test (Electrically-operated Heat Alarms Only)**
59.2		***New clause added;*** Exposed dead-metal parts are non-current-carrying metal parts that are capable of becoming energized and are accessible from outside of the enclosure of a product.
59.3		***New clause added;*** For the application of a potential between live parts of circuits operating at different potentials or frequencies, the voltage is to be the applicable value specified in 57.1 (a), (b), or (c), based on the highest voltage of the circuits under test. Electrical connections between the circuits are to be disconnected before the test potential is applied.
59.5		The test potential shall be obtained from any convenient source having sufficient capacity to maintain the specified voltage. The output voltage of the test apparatus is to be monitored. The method of applying the test voltage is to be such that there are no transient voltages that result in instantaneous voltage being applied to the circuit exceeding 105 % of the peak value of the specified test voltage. The applied potential is to be: a) Increased from 0 V at a uniform rate so as to arrive at the specified test potential in approximately 5 s; and then b) Maintained at the test potential for 1 min without an indication of a breakdown. Manual or automatic control of the rate of rise is not prohibited.
60	Info	**Tests of Thermoplastic Materials**
60.1	Info	**Accelerated air-oven aging test**
60.1.1		There shall not be warping that impairs intended operation or exposes hazardous-voltage uninsulated current-carrying parts when representative samples of a polymeric material are in a circulating-air oven for the number of days associated with the test temperature per the equation below, and at a relative humidity of 0 – 10 %.

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		$$t_{\text{test-time}} = t_{\text{real-time}} / 2^{(T_{\text{oven}} - T_{\text{installation}}) / 10}$$ Where treal time = 257 days, Toven = oven temperature (70 °C minimum) Tinstallation = maximum installation temperature (as specified by the manufacturer) For example, for a heat alarm with a maximum installation ambient temperature of 38 °C (100 °F), tested at an oven temperature of 90 °C (194 °F), the calculation below would apply: ttest-time = 257/2(90-38)/10 ttest-time = 7 days
62	Info	**Endurance Test**
62.1	Info	**Mechanically-operated alarms**
62.1.1		***New clause added;*** There shall not be mechanical malfunction of a spring wound-type heat alarm and the unit shall operate as intended and comply with the requirements of the Oven Test, Section 29, following 100 cycles of operation at a rate of not less than once per hour.
65	Info	**Strain Relief Test**
65.3		***New section added;*** **Special field-wiring terminals** To determine suitability as a field-wiring connection in compliance with 21.4, (special field wiring connections) representative samples shall comply with all of the tests specified in 65.2 and 65.3. See standard for details.
68	Info	**Conformal Coatings on Printed-Wiring Boards**
	Info	**General**
68.1.1		***New clause added;*** Conformal coatings are for use only on printed wiring boards where the acceptability of the combination has been investigated for flammability in accordance with: a) In Canada: CSA C22.2 No. 0.17, Evaluation of Properties of Polymeric Materials, and the dielectric property after environmental, humidity, and thermal

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		conditioning in accordance with CSA C22.2 No. 0.17, Evaluation of Properties of Polymeric Materials. b) In the United States: The Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, and the dielectric property after environmental, humidity, and thermal conditioning in accordance with the Standard for Polymeric Materials – Industrial Laminates, Filament Wound Tubing, Vulcanized Fibre, and Materials Used in Printed Wiring Boards, UL 746E.
69		***New section added;*** **Evaluation of Reduced Spacings on Printed-Wiring Boards** In accordance with the exception of 24.1.1, printed-wiring board traces of different potential having reduced spacings shall comply with: See standard for details.
70	Info	***New section added;*** **Heat Alarms for Use in Unconditioned Areas** A heat alarm intended for use in unconditioned areas such as garages and attics shall comply with the requirements specified in Sections 70.2 – 70.5 in addition to the requirements specified in all other sections of this standard unless specifically noted. See standard for details.
71		***New section added;*** **Manufacturing and Production Tests** To verify compliance with these requirements in production, the manufacturer is to provide the necessary production control, inspection, and tests. See standard for details.
	Info	**INSTRUCTIONS**
72	Info	***New section added;*** **General** Each unit shall be provided with the following manufacturer's published instructions that shall include the following: See standard for details.