

Standard Information

Standard Number: CSA C22.2 No. 24

Standard Name: Temperature-indicating and –regulating equipment

Standard Edition and Issue Date: 9th Edition Dated January 1, 2015

Date of Previous Revision to Standard: 8th Edition Reaffirmed 2013

Effective Date of New/Revised Requirements

Effective Date (see Schedule below): **May 1, 2017**

Impact, Overview, Fees and Action Required

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

Overview of Changes: This edition incorporated requirements for functional safety referenced to CSA standard C22.2 No. 0.8, for electronic, limit and safety controls. Specific details of new/revised requirements are found in table below.

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).

Fees: So that production of products bearing the Listing Mark will not be interrupted, between now and the Effective Date, a quote will be issued for the Applicant to work with their local Intertek Lab to determine the necessary test program, sampling requirement and needed construction details and/or updated marking/instruction details.

Client Action Required:

Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.

Description of New/Revised Technical Requirements

Clause	Verdict	Comment
1	Info	Scope
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined-out below.</i>
1.2	Info	This Standard applies to electrical control equipment for air conditioning, heating, lighting, cooling, and refrigeration, <u>cooking appliances, safety controls, and other similar appliance controls.</u>
1.3		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined-out below.</i> This Standard does not apply to dimmers and extra-low-voltage equipment other than safety controls and room thermostats with heat anticipators.
5	Info	Construction
5.4		Parts containing liquid metal <i>Reference to mercury was deleted, as mercury will no longer be acceptable in components.</i>
5.5	Info	Operating mechanism and controls involving electronics
5.5.3	Info	Electronic controls
5.5.3.3		<i>New clause added;</i> An electronic or solid-state circuit used in a limiting or other safety function shall be evaluated under conditions of actual service as declared to determine whether it complies with all applicable requirements and is otherwise suitable for its intended application.
5.5.4		<i>New section added;</i> Evaluation of safety controls <i>Further clarification of safety functions implemented through Electronics. Includes software evaluation.</i>
5.5.5		<i>New section added;</i> Safety control classification <i>Control class classifications added with reference to CSA C22.2 No.0.8, and EMC immunity test conditions.</i>
5.5.6		<i>New clause added;</i> Circuit interfacing with safety controls <i>Requirement added to prevent the override of the safety protective functions</i>
5.10	Info	Wiring
5.10.15		<i>New clause added;</i> Plugs and receptacles shall be of the grounding type and conform to CSA C22.2 No. 42 unless they are of the Class II double-insulated type.

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Clause	Verdict	Comment
5.10.16		<i>New clause added;</i> Flexible cords and cables shall meet the requirements of CSA C22.2 No. 49. Equipment and lead wires shall meet the requirements of CSA C22.2 No. 127.
5.11		<i>Additions to existing requirements are <u>underlined</u> below.</i> Transformers Transformers intended for supplying power to extra-low-voltage circuits shall have an isolated secondary winding or windings. <u>Transformers shall meet the requirements of CSA C22.2 No. 66.1, CSA C22.2 No. 66.2, and CSA C22.2 No. 66.3.</u> Note: <i>This Clause is not intended to prohibit the bonding of one side of the secondary circuit.</i>
5.13	Info	Suppressors and isolators
5.13.2		<i>New clause added;</i> Optical devices Optical isolators and similar devices used to provide electrical isolation shall meet the requirements for such components in CSA Component Acceptance Service No. 5A. The circuit in which the component is located shall be subjected to the abnormal test specified in Clause 7.26 and the dielectric strength test specified in Clause 7.10 to ensure that the required isolation is maintained.
5.22		<i>New section added;</i> Power supplies
5.22.1		A power supply shall meet the requirements of a) CSA C22.2 No. 107.1 for use in other than controlled environments; b) CAN/CSA-C22.2 No. 223 for extra-low voltage for household, telecommunication, and motoroperated equipment applications, provided that there is no accessible metal component in the final signal device. If there are accessible metal parts, the power supply shall be the doubleinsulated type; or c) CAN/CSA-C22.2 No. 60950-1 for use in controlled environments. Power supplies used in controlled environments in accordance with CAN/CSA-C22.2 No. 60950-1 shall meet a pollution degree 3 or higher and an overvoltage category of III or higher.
5.22.2		In addition to the requirements referenced in Clause 5.22.1, an integrated switching power supply designed for use with a specific control model shall comply with the requirements of this Standard and, as a minimum, with the following requirements of CSA C22.2 No. 107.1: a) the general construction requirements (Clause 4); and b) the applicable abnormal operation tests (Clause 6.6).
5.22.3		Electronic components in the primary and secondary circuits that could cause a hazardous condition shall be investigated. Each component shall be subjected to open- and short-circuit tests, conducted one test at a time. See Clause 7.27.3.1.

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5.23		<p><i>New clause added;</i></p> <p>Motors</p> <p>Motors shall comply with the applicable requirements of CSA C22.2 No. 77 and CSA C22.2 No. 100. Motors shall be provided with thermal protection, impedance protection, or another form of protection to comply with the locked rotor requirements of CSA C22.2 No. 77.</p>
5.24		<p><i>New clause added;</i></p> <p>Telecommunication network equipment</p> <p>Equipment that can be connected to a telecommunication network shall meet the construction and test requirements of CAN/CSA-C22.2 No. 60950-1, Clause 6.4, for protection against overvoltage from power line crosses. See also Clause 6.5.4 of CAN/CSA-C22.2 No. 60950-1 for additional requirements.</p>
5.25		<p><i>New clause added;</i></p> <p>Communication applications</p> <p>The components and accessories used in communication applications shall meet the requirements specified in the following standards:</p> <ul style="list-style-type: none"> a) CAN/CSA-C22.2 No.182.4; b) CAN/CSA-C22.2 No.226; and c) C22.2 No. 233.
5.26		<p><i>New clause added;</i></p> <p>Temperature controls provided with a ground fault circuit interrupter</p> <p>Temperature controls provided with a ground fault circuit interrupter (GFCI) used in underfloor heating and similar applications are considered combination-type controls. The GFCI shall meet the requirements of CAN/CSA-C22.2 No. 144.1.</p> <p>Such combination devices shall be evaluated for compliance with the following requirements:</p> <ul style="list-style-type: none"> a) The temperature control shall not undermine the safety function of the GFCI in any operational mode. b) The device shall meet one of the following requirements: <ul style="list-style-type: none"> i) each device shall have separate, dedicated output circuits to control the load and to control the GFCI; or ii) a feedback circuit that ensures the functionality of the GFCI shall be maintained as required for a supervisory circuit. See CAN/CSA-C22.2 No.144.1, Clause 5.15. c) If electronics are involved in controlling the safety functions described in Items a) and b), the device shall be evaluated in accordance with the requirements for a Class B control in CSA C22.2 No. 0.8.

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5.27		<i>New section added;</i> Electronic gas/air ratio controls
5.27.1		Electronic gas/air ratio controls (GARCs) shall comply with the requirements of this Standard, including Annex A.
5.27.2		Electronic gas/air ratio controls shall be of the closed-loop type.
5.27.3		Electronic gas/air ratio controls as installed shall comply with the requirements of CSA B149.3.
5.28		<i>New clause added;</i> Thermal cut-offs Thermal cut-offs (or thermal links) shall meet the requirements of CSA C22.2 No. 209 or CAN/CSA-E60691.
5.29		<i>New clause added;</i> Thermistors Thermistors shall meet the requirements of CAN/CSA-E60730-1, Annex J.
5.30		<i>New section added;</i> Room thermostats
5.30.1		Room thermostats incorporating solid-state devices to control the load shall meet the short-circuit test requirements of Clause 7.11.5.
5.30.2		Electronic-type room thermostats shall meet the surge immunity test requirements of Clause 7.25.
5.31		<i>New clause added;</i> Solar domestic hot water applications Temperature controls used in solar domestic hot water applications shall meet the calibration requirements in Table 6. For further information, see CAN/CSA-F379.1.
6	Info	Marking
6.1 (m)		<i>New sub-clause added;</i> <i>Marking shall include the Software version number for safety controls involving software evaluation</i>
7	Info	Tests
7.7	Info	Overload
7.7.21		<i>New clause added;</i> <i>Added test requirement for controls provided with manual actions</i>
7.16	Info	Damper motors
7.16.4		<i>New clause added;</i> Damp actuators shall comply with a minimum 6000 cycle endurance test (see Clause 7.9) or as declared for the end application. This test shall be conducted at the declared extreme ambient temperatures for maximum torque conditions.

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7.21	Info	Parts containing liquid metal
7.21.4		<i>New clause added;</i> Sodium potassium shall be contained in the switch body or control enclosure. There shall be no resulting risk of fire.
7.21.5		<i>New clause added;</i> Components that contain mercury shall not be acceptable.
7.25	Info	Surge immunity test
7.25.1		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i> A surge-controlled circuit as specified in Clauses 4.17.7.2 and 4.17.7.3 shall withstand without breakdown a single 1.2 x 50 µs full-wave impulse with a crest value of 5.0 kV (see ANSI/IEEE Standard 4). The transient voltage surge shall not exceed 300% of the peak working voltage or 300 V, whichever is greater, and the equipment shall be operational upon completion of the test. <u>A surge-controlled circuit as specified in Clause 5.17.7 shall withstand, without breakdown, the surge immunity test requirements of CSA C22.2 No. 0.8, Clause 6.3.7. If there are no surge suppression components involved, the test shall be conducted only at the highest level.</u>
7.25.2		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i> The equipment shall be connected to a single-phase source of supply operating at rated voltage with the output of the impulse generator connected across the equipment. <u>Upon completion of the test, the equipment shall be operational as intended, perform the functions as declared, and comply with the dielectric strength test in Clause 7.10.</u>
7.26		<i>New section added;</i> Electrical fast transient/burst immunity test New test added when a control interfaces with a remote device.
7.27		<i>New section added;</i> Abnormal testing Abnormal test requirements included.
7.28		<i>New clause added;</i> Push/pull-and-turn controls Additional Test for push/pull-and-turn controls
7.29		<i>New section added;</i> Leakage current Leakage current test for cord connected equipment



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11		<i>New section added;</i> Tests for single-operation devices New testing added for single-operation devices. The requirements were previously listed in CSA C22.2 No. 209.
Appendix A		Normative. New for electronic gas/air ratio control to be used with gas burners, and gas burning appliances. Additional tests and including functional safety evaluation.
		CUSTOMERS PLEASE NOTE: This Table and column "Verdict" can be used in determining how your current or future production is or will be in compliance with new/revised requirements.