

STANDARD INFORMATION

Standard: UL 891 / CSA C22.2 No. 244

Standard ID:

Switchboards [UL 891:2019 Ed.12+R:21Mar2025]

Switchboards [CSA C22.2#244:2019 Ed.2+U1]

Previous Standard ID:

Switchboards [UL 891:2019 Ed.12]

Switchboards [CSA C22.2#244:2019 Ed.2]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **March 21, 2027**

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 Reports not updated to this version by the effective date above will be withdrawn.

Overview of Changes:

- Revision of Requirements for Multiple Source Switchboards
- Addition of Requirements for Forced-Air Cooling for Switchboards
- Modification of Requirements for Emergency Circuits
- Revisions to Requirements for Service Equipment Use
- Addition of Requirements for Dielectric Testing with a Range of Source Frequencies
- Addition of Requirements for Panelboards Mounted in a Face-Up Position
- Addition of Requirements for Connection of Devices Within Annex G
- Revision of Temperature Stabilization Requirements

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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
<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>		
6	Info	Information to be given regarding the assembly
6.2	Info	Markings
6.2.1	Info	General
6.2.1.2		A switchboard section or separate switchboard interior shall be marked with: c) the electrical characteristics. (See clause 5). Both supply and section ratings shall be included, if different. If all phases and neutral are not the same, ratings of each shall be marked or indicated on a wiring diagram. 4) Current – Current shall be expressed as the ampere rating followed by A or Ampere(s). When forced cooling is provided, both the natural cooled ampere rating and the force-cooled ampere rating shall be marked. The method of load reduction for force-cooled assemblies shall also be marked on the switchboard.
6.2.4	Info	Emergency circuits
6.2.4.1		<u>(Not for the United States)</u> Other than as allowed in 8.6.11.13(c) for an automatic transfer switch, a tap, circuit, section, or switchboard shall not be marked for emergency use.
		New clause added:
6.2.4.2		<u>(Not for Canada)</u> A switchboard section constructed in accordance with 8.6.11.13 may be marked “Emergency Transfer Switch Section,” or equivalent.
		New clause added:
6.2.4.3		<u>(Not for Canada)</u> A switchboard section that includes emergency circuits and that is supplied with a common bus having overcurrent protection, [reference 8.6.11.13(d)(ii)], shall be marked “Emergency system overcurrent devices must be selectively coordinated in accordance with Article 700 of the NEC,” or equivalent.
6.3	Info	Instructions for installation, operation and maintenance
6.3.4	Info	Installation instructions
6.3.4.4	Info	Multiple source switchboard
6.3.4.4.2		New clauses added:
6.3.4.4.3		A switchboard provided with connections marked for use with one or more electric power production sources operating in parallel with a primary source of electricity shall:
6.3.4.4.4		
6.3.4.4.5		
6.3.4.4.6		
6.3.4.4.7		See standard for details.



CLAUSE	VERDICT	COMMENT
8	Info	Design and construction
8.1	Info	Mechanical design
8.1.11	Info	Service equipment use (not for Canada)
		<i>New clause added;</i>
		Switchboard section or interior marked for service equipment use shall be provided with both overcurrent protection and disconnecting means for all incoming conductors and shall be constructed in accordance with 8.1.11.1(a) or 8.1.11.1(b).
		a) Single Disconnect Construction – A switchboard with a single service disconnect marked for service equipment use shall be: 1) Constructed so that all ungrounded load conductors can be disconnected from the source of supply by the operation of one disconnect device and 2) Constructed in accordance with 8.1.11.6.
8.1.11.1		Switchboards using this construction shall be marked as required by 6.2.2.1(a)(1) or 6.2.2.1(b)(1).
		b) Multiple-Disconnect Construction – A switchboard with multiple service disconnects marked for service equipment use shall be: 1) constructed so that all ungrounded load conductors can be disconnected from the source of supply by the operation of not more than six disconnect devices; and 2) constructed so that no more than one service disconnect device is located in any vertical switchboard section; and 3) constructed in accordance with 8.1.11.6.
		<i>New section added;</i>
8.1.11.6		Switchboards, or vertical switchboard sections, marked as being suitable for use as service equipment, shall be constructed so that with every service disconnect in the off position, uninsulated ungrounded live parts on the supply side of a service disconnect are protected against inadvertent contact by persons while servicing any field connected load terminal, including a neutral load terminal, a branch circuit equipment grounding terminal, or the neutral disconnect link.
		See standard for details.



CLAUSE	VERDICT	COMMENT
8.1.15	Info	Equipment on supply side of service disconnect (not for Canada) Except for the following, equipment shall not be connected to the supply side of the service disconnecting means: <ul style="list-style-type: none">a) meters, <u>meter sockets, or meter disconnect switches</u> nominally rated not in excess of 1 000 V located in the switchboard;b) instrument transformers (current and potential), high-impedance shunts, Type 1 surge-protective devices, and load management devices;c) <u>load management devices if overcurrent protection is provided</u>cd) control circuits of power operable service disconnecting means, <u>including control circuits of optional standby power systems</u>, if suitable overcurrent protection and disconnecting means are provided, see 8.1.11.1.1;d) Ground-fault protection systems or Type 2 surge-protective devices, if suitable overcurrent protection and disconnecting means are provided, see 8.1.11.1.1; ande) taps used to supply load management devices, circuits for stand-by power systems, fire pump equipment, and fire and sprinkler alarms;g) <u>interconnected electric power production sources, such as solar photovoltaic, wind, energy storage or fuel cell systems;</u>h) <u>taps for communications equipment under the exclusive control of the service utility if overcurrent protection and disconnecting means are provided. A disconnecting means is not required if the equipment is part of a meter socket, such that access can only be gained with the meter removed; and</u>i) <u>meter-mounted transfer switches rated 1 000 volts or less, capable of transferring the load served.</u>
8.2	Info	Enclosure and degree of protection
8.2.1	Info	Framework and enclosure
8.2.1.3	Info	Ventilation <i>New clause added;</i>
8.2.1.3.9		If equipment is supplied with forced cooling means, it shall be equipped with monitoring equipment to determine that the cooling operation remains functional.
		<i>New clause added;</i>
8.2.1.3.10		The equipment shall be marked and tested with two current ratings (see 6.2.1.2 and 9.2.2.1): <ul style="list-style-type: none">a) force-cooled rating; andb) natural cooled.
		<i>New clause added;</i>
8.2.1.3.11		The event of a forced cooling system failure, the equipment shall provide the means to automatically reduce the load to its natural cooled rating or less.



CLAUSE	VERDICT	COMMENT
<i>New clause added;</i>		
8.2.1.3.12		The means of load reduction shall be marked on the switchboard, as required by 6.2.1.2.
8.6	Info	Switching devices and components installed in assemblies
8.6.5	Info	Multiple source switchboards
		If a switchboard is intended to parallel different sources, synchronizing equipment shall be provided. <u>integral to the switchboard</u> . <u>Compliance shall be accomplished by one of the following means:</u>
		<u>a) (Not for Canada) Synchronization equipment, integral to the switchboard, that complies with the requirements in Reference Item No. 21, Annex B; or</u>
		<u>b) Synchronization equipment, integral to the switchboard, that complies with 8.6.5.6;</u>
8.6.5.2		<u>c) Synchronization equipment, separate from the switchboard, and the switchboard is marked in accordance with 6.3.4.4.1; or</u>
		<u>d) (Not for Canada) Synchronization equipment, separate from the switchboard, with the synchronization equipment integral to the power production source, and the switchboard is marked in accordance with 6.3.4.4.2.</u>
<u>NOTE: (Not for Canada) Synchronization equipment evaluated to the requirements in Reference Item No. 21, Annex B shall comply with the requirements in Reference Item No. 22, Annex B.</u>		
<i>New clauses added;</i>		
8.6.5.6		In a switchboard intended for parallel source operation and provided with integral synchronization equipment in accordance with 8.6.5.2(b), the synchronization equipment shall:
8.6.5.7		
8.6.5.8		
8.6.5.9		
		See standard for details.
8.6.9	Info	Panelboards
8.6.9.3	Info	(Not for Canada) Panelboards shall not be mounted in the face-up position.
<i>New clause added;</i>		
8.6.9.3.1		Panelboards installed in equipment identified as a Commercial Appliance Outlet Center shall be permitted to include panelboards mounted in the face-up position so long as the assembly additionally complies with requirements noted in Reference Item No. 25 in Annex B.



CLAUSE	VERDICT	COMMENT
8.6.11	Info	Circuit breakers and switching devices An automatic transfer switch marked for connection to an emergency system may be located in a switchboard section under the following conditions: <ul style="list-style-type: none">a) An open-type device shall be located in a space as covered in 8.1.1.2 <u>and installed in accordance with</u> the installation instructions of the device.b) Overcurrent protection shall be provided for control wiring that is intended to leave the switchboard section to supply a remote test switch or pilot light.c) Markings in accordance with 6.2.4 shall be provided.d) A barrier, as covered in 8.7.1.1 and 8.7.1.2.1, shall be provided to completely separate field-installed emergency circuit wiring and devices from non-emergency circuit wiring and devices that are located in the same switchboard section. <u>(Not for Canada) The transfer switch and emergency circuits are located in a separate vertical switchboard section that does not contain any wiring associated with non-emergency loads. This separate vertical section may share a common bus with other vertical sections when the common bus complies with one of the following:</u><ul style="list-style-type: none">1) <u>The bus is not supplied with overcurrent protection at the source or</u>2) <u>The bus is supplied with overcurrent protection at the source that is capable of being selectively coordinated with the downstream overcurrent devices of the nonemergency systems and the switchboard is marked in accordance with 6.2.4.2.</u>e) <u>(Not for the United States) A barrier, as covered in 8.7.1.1 and 8.7.1.2.1, shall be provided to completely separate field- installed emergency circuit wiring and devices from non-emergency circuit wiring and devices that are located in the same switchboard section.</u>f) <u>(Not for the United States) A barrier is not required within a compartment containing a transfer switch if the only wiring is that connected to the transfer switch.</u>
8.6.11.13		
9	Info	Test specifications
9.2	Info	Type tests
9.2.2	Info	Temperature test During the test the switchboard section shall be mounted or supported as in service and operated under conditions approximating those of intended operation. The test shall be made with fuses installed in fuseholders. Currents shall be as shown in 9.2.2.7. <u>Equipment marked with a forced cooling rating shall be tested:</u> <ul style="list-style-type: none">a) <u>At the continuous current based on the forced cooling rating, with the forced cooling system operating; and</u>b) <u>At the continuous current based on the natural cooled rating, with the forced cooling system not operating.</u>
9.2.2.1		



CLAUSE	VERDICT	COMMENT
<i>New clause added;</i>		
9.2.2.15		<p>The test shall be continued until all temperatures measured on the switchboard are stable. A temperature is considered to be stable when three successive readings taken at intervals of not less than 15 minute show a change of no more than 1.0 °C (1.8 °F) between any of the three readings (1st to 2nd, 2nd to 3rd, or 1st to 3rd). The thermocouples and related instruments are to be accurate and calibrated.</p>
9.2.4	Info	Short circuit
9.2.4.1	Info	General
9.2.4.1.5	Info	Branch line and load bus maximum voltage
<p>In the case of an individually mounted device, a maximum voltage test need not be made if a test has been made on the device in an enclosure, and if:</p> <ul style="list-style-type: none">a) the enclosure in the switchboard has equal or greater volume than the test enclosure;b) the distance from an arcing part to the nearest live part or grounded metal surface in the switchboard is equal to or greater than in the test enclosure; andc) the hinges and latch or screws in the switchboard construction are equal to or stronger than those in the test enclosure, or the equivalent;<u>d) the conductors between the switchboard bus and the switch or circuit breaker terminals are the same type of conductor rated for use with the device;</u><u>e) the routing of the insulated conductor meets the requirements in 8.8.1.8; and</u><u>f) the conductor length is 305 mm (12 inches) or less or is braced every 152 mm (6 inches) with rope as specified in G5.1.</u>		
9.2.4.1.5.1.1	1A	<i>New clause added;</i> <p>In the case of a switchboard section or interior consisting of a single switch or circuit breaker, a maximum voltage test need not be made if:</p> <ul style="list-style-type: none">a) the short-circuit current rating of such a switchboard is not greater than the interrupting rating of the switch or circuit breaker;b) the section has provision only for field connection directly to the terminal of the switch or circuit breaker;c) the section or interior is supplied with covers secured by screws or a combination of screws and hinges, or the equivalent;d) the conductors between the switchboard bus and the switch or circuit breaker terminals are the same type of conductor rated for use with the device;e) the routing of the insulated conductor meets the requirements in 8.8.1.8; andf) the conductor length is 305 mm (12 inches) or less or is braced every 152 mm (6 inches) with rope as specified in G5.1.



CLAUSE	VERDICT	COMMENT
Annex G	Info	Maximum 100 000 Ampere Short-Circuit Current Rating Without Short-Circuit Test
G3	Info	Construction
		<i>New section added;</i>
		Control, and metering connections
G3.4		Control, and metering devices shall be connected by insulated conductors by the termination means provided with the device. The routing of the insulated conductor shall:
		See standard for details.