C22.2 No. 331-17

CSA Group

Flat cable systems

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CSA Group

Standards Update Service

C22.2 No. 331-17
January 2017

Title: *Flat cable systems*

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C22.2 No. 331-17
Flat cable systems

Published in January 2017 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3

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or call toll-free 1-800-463-6727 or 416-747-4044.

ISBN 978-1-4883-0702-7

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Preface

This is the first edition of CSA C22.2 No. 331, *Flat cable systems*. It is one of a series of Standards issued by CSA Group under Part II of the *Canadian Electrical Code.*

For general information on the Standards of the *Canadian Electrical Code, Part II*, see the Preface of CAN/CSA-C22.2 No. 0.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Integrated Committee on Wiring Devices, under the jurisdiction of the Technical Committee on Wiring Products and the Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the Technical Committee.

Interpretations: The Strategic Steering Committee on Requirements for Electrical Safety has provided the following direction for the interpretation of standards under its jurisdiction: "The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant CSA committee interpretation has not already been published, CSA Group's procedures for interpretation shall be followed to determine the intended safety principle."

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*

4) *To submit a request for interpretation of this Standard, please send the following information to* ***inquiries@csagroup.org*** *and include "Request for interpretation" in the subject line:*

a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*

b) *provide an explanation of circumstances surrounding the actual field condition; and*

c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at* ***standardsactivities.csa.ca****.*

5) *This Standard is subject to review within five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*

a) *Standard designation (number);*

b) *relevant clause, table, and/or figure number;*

c) *wording of the proposed change; and*

d) *rationale for the change.*

C22.2 No. 331-17
Flat cable systems

1 Scope

1.1
This Standard applies to flat cable systems for indoor use, in non-hazardous locations, intended for installation on branch circuits of not more than 600 V 30 A ac between conductors in accordance with CSA C22.1, *Canadian Electrical Code, Part I*.

Note: *See Rule 12-1614 of the* Canadian Electrical Code, Part I *for additional requirements on flat cable systems.*

1.2
This Standard applies to the following flat cable system components:

a) flat cable Type FCC;
b) flat cable fittings;
c) metal surface raceways; and
d) metal surface raceway fittings.

1.3
This Standard does not apply to flat cable systems with connectors intended for installation into equipment (e.g., ribbon cables with PCB mount connectors).

1.4
In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications
This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA Group

C22.1-15
Canadian Electrical Code, Part I

CAN/CSA-C22.2 No. 0-10 (R2015)
General requirements — Canadian Electrical Code, Part II

CAN/CSA-C22.2 No. 0.4-04 (R2013)
Bonding of electrical equipment

CAN/CSA-C22.2 No. 18.3
Conduit, tubing, and cable fittings

C22.2 No. 42-10 (R2015)
General use receptacles, attachment plugs, and similar wiring devices

C22.2 No. 49-14
Flexible cords and cables

C22.2 No. 62-93 (R2013)
Surface raceway systems

C22.2 No. 65-13
Wire connectors

C22.2 No. 75-14
Thermoplastic insulated wires and cables

C22.2 No. 182.3-16
Special use attachment plugs, receptacles, and connectors

C22.2 No. 2556-15
Wire and cable test methods

3 Definitions

The following definitions shall apply in this Standard:

Feed tap — a device used to connect a small power load to a flat cable system.
Note: *Examples of a small power load include luminaires and small appliances.*

Power tap — a device used to connect a flat cable system to a branch circuit.

4 General requirements

General requirements applicable to this Standard are given in CAN/CSA-C22.2 No. 0.

5 Construction

5.1 Flat cable

5.1.1 General

Flat cable shall be

a) constructed of two to five conductors formed integrally with an insulating material web; and
b) specifically designed for field installation in metal surface raceways.

5.1.2 Size

Flat cable shall have

a) conductors of size No. 10 AWG;
b) 65 to 104 strands, depending on the application; and
c) a maximum strand lay length of 75 mm.

5.1.3 Insulation

5.1.3.1 Insulation material

Flat cable conductors shall be insulated. The insulation material shall

a) be polyvinyl chloride (PVC);
b) comply with the requirements of the flat cable test in Clause 7.1; and
c) comply with the requirements of the flat cable and tap test in Clause 7.2.

5.1.3.2 Insulation thickness

The minimum thickness of conductor insulation is shown in Table 1.

Table 1
Minimum conductor insulation thickness
(See Clause 5.1.3.2)

Type of conductor	Minimum average thickness (mm)	Minimum thickness at any point (mm)
Current-carrying	1.52	1.09
Non-current carrying	1.22	0.38

5.1.3.3 Extruded insulation

The average and minimum thickness of extruded insulation at any point shall be in accordance with the average thickness and minimum thickness measuring methods specified in CSA C22.2 No. 2556.

5.2 Flat cable fittings

5.2.1

Flat cable fittings shall comply with the requirements of the flat cable fitting test in Clause 7.3.

Note: *Examples of flat cable fittings include power taps, feed taps, and cord-ended feed taps.*