CSA Group

C22.2 No. 239-17

Control and instrumentation cables

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Preface

This is the fourth edition of CSA C22.2 No. 239, *Control and instrumentation cables*, one of a series of Standards issued under the *Canadian Electrical Code, Part II*. It supersedes the previous editions, published in 2009, 1997, and 1991.

The main changes in this edition include

a) Clause 7.1, which specifies that the marking is to be printed, embossed, or embedded on the inner jacket of an armoured cable at intervals of not more than 1 m or on a marker tape; and
b) the construction of metal clad-power, control, and signal cable (MC-PCS) is acceptable in this Standard as type ACIC (i.e., an inner jacket under the armour is not mandatory).

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 Control, Instrument, Communication, and Marine Cables, 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 committee interpretation has not already been published, CSA 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. 239-17
Control and instrumentation cables

1 Scope

1.1
This Standard applies to multiple-conductor control and instrumentation cables (including thermocouple cables and thermocouple extension cables) having a voltage rating not exceeding 1000 V and intended for installation in accordance with the *Canadian Electrical Code, Part I*.

Note: *The designations for such cables are "CIC" for unarmoured cables and "ACIC" for armoured cables.*

1.2
This Standard applies to cables rated 1000 V, 600 V, 300 V, and 150 V, and to temperature ratings up to 105 °C. This Standard also includes specific requirements for high-temperature control and instrumentation cables rated 125 to 250 °C.

1.3
This Standard applies to multiple-conductor thermoplastic or thermoset-insulated assemblies, shielded or unshielded, twisted or cabled, paired, two conductors parallel or grouped into units, jacketed or unjacketed, sheathed or unsheathed, armoured or unarmoured, and any combinations thereof.

1.4
This Standard includes specific requirements for halogen-free limited-smoke control and instrumentation cables.

1.5
This Standard permits the inclusion of additional components, such as optical fiber members and communications wire used for installation purposes only. No requirements for such components are specified.

1.6
This Standard does not apply to cables intended for internal wiring of electrical equipment, e.g., switchboard and equipment wire, or to cables that undergo repeated flexing.

1.7
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

C22.2 No. 0.3-09 (R2014)
Test methods for electrical wires and cables

C22.2 No. 38-14
Thermoset-insulated wires and cables

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

C22.2 No. 127-15
Equipment and lead wires

C22.2 No. 230-09 (R2014)
Tray cables

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

C68.3-97 (withdrawn)
Shielded and concentric neutral power cables rated 5–46 kV

ASTM International (American Society for Testing and Materials)

A411-08 (2013)
Standard Specification for Zinc-Coated (Galvanized) Low-Carbon Steel Armor Wire

B3-13
Standard Specification for Soft or Annealed Copper Wire

B8-11
Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

B33-10 (2014)
Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

