



**CSA
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C22.2 No. 286-17

Industrial control panels and assemblies

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Contents

Technical Committee on Industrial Products	3
Integrated Committee on Industrial Control	5
Preface	7
1 Scope	9
2 Reference publications	10
3 Definitions	11
4 Construction requirements	12
4.1 General	12
4.2 Enclosure	12
4.2.1 General	12
4.2.2 Openings in enclosures	13
4.2.3 Enclosure thermal insulation	14
4.3 Grounding and bonding	15
4.3.1 General	15
4.3.2 Bonding of polymeric enclosures	16
4.4 Field wiring terminations	17
4.5 Wire bending space and wiring space	18
4.5.1 Wire bending space	18
4.5.2 Wiring space	19
4.6 Internal wiring	19
4.7 Installation of components	20
4.8 Protection for industrial control panels and assemblies	22
4.8.1 General	22
4.8.2 Transformers	23
4.9 Supplementary protection	24
4.10 Disconnecting means	25
4.11 Instantaneous trip breakers	27
4.12 Temperature	27
4.13 Assembly short-circuit current ratings	28
4.13.1 Primary circuits	28
4.13.2 Secondary circuits	28
4.14 Electrical spacings	29
5 Markings	31
6 Specific application requirements	35
6.1 Service entrance equipment	35
6.2 Electric heating controllers	37
6.3 Use of intrinsic safety barriers	37
6.4 Oil and gas burning	39
6.5 Compressor controllers	39

6.6 Motor control centres 39

7 Testing 40

7.1 General 40

7.2 Temperature 40

7.3 Dielectric strength 42

7.4 Resistance to impact for observation openings 44

Annex A (normative) — French translations of cautions, warnings, and safety instructions 61

Annex B (informative) — Examples of wiring space and wire-bending space 64

Annex C (informative) — Calculating available fault current 65

Annex D (informative) — Guidelines for the use of supplementary protectors 72

Annex E (informative) — Production line dielectric strength testing 80

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Preface

This is the second edition of C22.2 No. 286, *Industrial control panels and assemblies*, one of a series of Standards issued by CSA Group under Part II of the *Canadian Electrical Code, Part I*. It supersedes the previous edition published in 2015.

This edition incorporates a new clause for electrical spacings and a new clause for testing requirements that addresses temperature, dielectric strength, and impact testing. Table 11 has been significantly expanded and new Tables 16 through 20 have been added. In addition, numerous edits have been performed throughout the document to provide additional information and to clarify certain requirements.

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

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 Industrial Control under the jurisdiction of the Technical Committee on Industrial 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’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 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. 286-17

Industrial control panels and assemblies

1 Scope

1.1

This Standard applies to industrial control panels and assemblies rated at not more than 1500 V, intended to be installed and used in non-hazardous locations in accordance with the rules of the *Canadian Electrical Code, Part I*.

Notes:

- 1) *Examples of industrial control panels and assemblies covered by this Standard include motor control panels, process control equipment panels, heating panels, programmable control panels, heating and cooling equipment control panels, etc.*
- 2) *The term “control” as used throughout this Standard applies to both starters and controllers.*
- 3) *Electrical instruments that can be included as part of control equipment such as meters, are not covered by this Standard.*

1.2

The industrial control panels and assemblies covered by this Standard are intended for use in an ambient temperature of 0 to 40 °C. Additional investigation of the equipment will be required when equipment is to be used in an ambient temperature outside of this range.

1.3

This Standard does not apply to equipment or modifications to equipment covered by other CSA Standards, such as:

- a) power supplies;
- b) automatic transfer switches;
- c) elevator equipment;
- d) enclosed switches;
- e) switchgear;
- f) line isolation monitors;
- g) panelboards and custom panelboards;
- h) hazardous location equipment;
- i) hydro-massage equipment;
- j) power factor correction capacitor banks;
- k) fire pump controllers;
- l) assemblies of equipment intended solely for the distribution of power; and
- m) motor control centre sections.

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 editions listed below.

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. 0.17-00 (R2013)

Evaluation of properties of polymeric materials

C22.2 No. 0.19-10 (R2015)

Requirements for service entrance equipment

CAN/CSA-C22.2 No. 4-16

Enclosed and dead-front switches

C22.2 No. 5-13

Molded-case circuit breakers, molded-case switches and circuit-breaker enclosures

C22.2 No. 14-13

Industrial control equipment

CAN/CSA-C22.2 No. 94.1-15

Enclosures for electrical equipment, non-environmental considerations

C22.2 No. 65-13

Wire connectors

CAN/CSA-C22.2 No. 157-92 (R2012)

Intrinsically safe and non-incendive equipment for use in hazardous locations

C22.2 No. 235-04 (R2013)

Supplementary protectors