CSA Group

CSA C22.2 No. 0.8:19
National Standard of Canada

Safety functions incorporating electronic technology

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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 to judge its suitability for their particular purpose.

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Preface

This is the fourth edition of CSA C22.2 No. 0.8, *Safety functions incorporating electronic technology*, one of a series of Standards issued by the CSA Group under Part II of the *Canadian Electrical Code*. It supersedes the previous editions published in 2012, 2009, and 1986.

Changes to this edition include

a) update of requirements to be more general in alignment with the IEC 60730-1 series;
b) use of the term "define safe state" for consistency with the IEC 60730-1 series;
c) adjustments to definitions for consistency with IEC standards;
d) addition of requirements for the security of software updates; and
e) revision of requirements for clarity.

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

This Standard was prepared by the Subcommittee on Safety Functions Incorporating Electronic Technology, under the jurisdiction of the Technical Committee on General Requirements, CE Code, Part II and the Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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.*

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Safety functions incorporating electronic technology

1 Scope

1.1
This Standard applies to products and component devices where the electronics technology handles the operational logic including the safety features. This Standard applies to the following configurations:

a) safety control function(s) implemented in hardware only; and

b) safety control function(s) implemented in some combinations of hardware and software.

Note: *Clauses that are identified by an asterisk define a simplified path for hardware-only designs. For reference, these clauses are listed in Table 2.*

1.2
The scope of this Standard includes the sensors and actuators that are associated with the safety control.

1.3
The requirements in this Standard apply to products where failure in either the hardware or software, or any associated devices, can lead to a hazard.

1.4
This Standard prescribes minimum requirements for the documentation necessary to evaluate and confirm that the equipment meets the safety requirements as specified in this Standard.

1.5
This Standard applies to a product identified under a relevant product standard and where the purpose of the product, along with its features and operational role, can be described.

Note: *An understanding of the specific end-use environment and any risks associated with the product is essential for this Standard to apply.*

1.6
This Standard does not cover general-purpose applications or products where the end-application or the safety requirements for the product are not known or cannot be described, such as for a general-purpose programmable logic controller (PLC).

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.

