



IEC 61010-2-201

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INTERNATIONAL STANDARD



**Safety requirements for electrical equipment for measurement, control, and
laboratory use –
Part 2-201: Particular requirements for control equipment**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-201: Particular requirements for control equipment

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

International Standard IEC 61010-2-201 has been prepared by IEC technical committee 65: Industrial-process measurement, control and automation.

The text of this standard is based on the following documents:

FDIS	Report on voting
65/652/FDIS	65/657/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This second edition cancels and replaces the first edition published in 2013. This edition constitutes a technical revision.

This second edition includes the following significant technical changes with respect to the previous edition;

- a) clarify, change, delete definitions which were causing confusion,
- b) change and clarify the temperature testing methodology,
- c) change documentation methodologies allowed,
- d) change some TERMINAL markings,
- e) add clarity to some of the informative annexes,
- f) add Annex E with changes,
- g) add Annexes AA – FF.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-201 is intended to be used in conjunction with IEC 61010-1. It was established on the basis of the third edition (2010) of that standard. Consideration may be given to future editions of, or amendments to, IEC 61010-1.

This Part 2-201 supplements or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into the IEC standard: *Particular requirements for control equipment*.

Where a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. Where this part states “addition”, “modification”, “replacement”, or “deletion”, the relevant requirement, test specification or NOTE in Part 1 should be adapted accordingly.

In this standard, the following print types are used:

- requirements and definitions: in roman type;
- NOTES: in smaller roman type;
- *conformity and tests: in italic type*;
- terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS.

A list of all parts in the IEC 61010 series, published under the general title *Safety requirements for electrical equipment for measurement, control and laboratory use*, can be found on the IEC website.

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- reconfirmed,
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- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

IEC 61010-2-2xx documents are a ~~planned~~ series of standards on **safety of** industrial-process measurement, control and automation equipment.

This part specifies the complete safety **related** requirements **and related tests** for control equipment (e.g. programmable controller (PLC), the components of distributed control systems (**DCS**), I/O devices, human machine interface (HMI)).

Safety terms of general use are defined in IEC 61010-1. More specific terms are defined in each part **of IEC 61010**.

~~This part incorporates the safety related requirements of Programmable Controllers.~~

~~Annex DD provides a cross reference between clauses of this standard and those of IEC 61010-1 or IEC 61131-2:2007.~~

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-201: Particular requirements for control equipment

1 Scope and object

This clause of Part 1 is applicable, except as follows.

1.1.1 Equipment included in scope

Replacement:

- This part of IEC 61010 specifies safety requirements and related verification tests for **any product performing the function of control equipment**~~of the following types which and/or their associated peripherals~~. In addition, these products have as their intended use the command and control of machines, automated manufacturing and industrial processes, e.g. discrete and continuous control. **Some equipment examples are: programmable logic controller (PLC);**
- programmable **automation** controller (~~PLC and~~ **PAC**);
- ~~the components of~~ distributed control systems (DCS);
- ~~the components of~~ remote I/O ~~systems~~;
- industrial PC (computers) **and panel PC**;
- programming and debugging tools (PADTs);
- **displays and** human-machine interfaces (HMI);
- ~~any product performing the function of control equipment and/or their associated peripherals;~~
- **positioners.**

Components of the above named equipment and in the scope of this standard are:

- (auxiliary) stand-alone power supplies;
- peripherals such as digital and analogue I/O, remote-I/O;
- industrial network equipment.

Control equipment and their associated peripherals are intended to be used in an industrial environment and may be provided as OPEN or ENCLOSED EQUIPMENT.

NOTE 1 Control equipment intended also for use in other environments or for other purposes (example: for use in building installations to control light or other electrical installations, or for use on cars, trains or ships) can have additional conformity requirements defined by the safety standard(s) for these applications. These requirements can involve as example: insulation, spacings and power restrictions.

NOTE 2 Computing devices and similar equipment within the scope of IEC 60950 (planned to be replaced by IEC 62368) and conforming to its requirements are considered to be suitable for use with control equipment within the scope of this standard. However, some of the requirements of IEC 60950 for resistance to moisture and liquids are less stringent than those in IEC 61010-1:2010, 5.4.4 second paragraph.

Control equipment covered in this standard is intended for use in OVERVOLTAGE CATEGORY II, **III and IV** (IEC 60664-1) in low-voltage installations, where the **RATED** equipment supply voltage does not exceed AC. 1 000 V r.m.s. (50/60 Hz), or DC ~~1 500~~ **1 000** V.

~~NOTE 3 If equipment in the scope of this part is applied to overvoltage category III and IV installations, then the requirements of Annex K of Part 1 apply.~~

The requirements of ISO/IEC Guide 51 and IEC Guide 104, as they relate to this part of IEC 61010, are incorporated herein.

1.1.2 Equipment excluded from scope

Replacement:

This standard does not deal with aspects of the overall automated system, e.g. a complete assembly line. Control equipment (e.g. DCS and PLC), their application program and their associated peripherals are considered as components (components in this context are items which perform no useful function by themselves) of an overall automated system.

Since control equipment (e.g. DCS and PLC) are component devices, safety considerations for the overall automated system including installation and application are beyond the scope of this standard. Refer to IEC 60364 series of standards or applicable national/local regulations for electrical installation and guidelines.

1.2.1 Aspects included in scope

Replacement:

The purpose of the requirements of this standard is to ensure that all HAZARDS to the OPERATOR, SERVICE PERSONNEL and the surrounding area are reduced to a tolerable level.

NOTE 1 By using the terms "OPERATOR" and "SERVICE PERSONNEL" this standard considers the perception of HAZARDS depending on training and skills. Annex AA gives a general approach in this regard.

Requirements for protection against particular types of HAZARD are given in Clauses 6 to 17, as follows:

- a) electric shock or burn (see Clause 6);
- b) mechanical HAZARDS (see Clauses 7 and 8);
- c) spread of fire from the control equipment (see Clause 9);
- d) excessive temperature (see Clause 10);
- e) effects of fluids and fluid pressure (see Clause 11);
- f) effects of radiation, including lasers sources, and sonic and ultrasonic pressure (see Clause 12);
- g) liberated gases, explosion and implosion (see Clause 13);

~~Requirements for protection against hazards~~

- h) arising from REASONABLY FORESEEABLE MISUSE and ergonomic factors ~~are specified in~~ (see Clause 16);
- i) RISK assessment for HAZARDS or environments not fully covered above ~~is specified in~~ (see Clause 17).

NOTE 2 Attention is drawn to the existence of additional requirements regarding the health and safety of labour forces.

1.2.2 Aspects excluded from scope

Replacement:

This standard does not cover:

- a) reliability, functionality, performance, or other properties of the control equipment not related to safety;
- b) mechanical or climatic requirements for operation, transport or storage;
- c) EMC requirements (see e.g. IEC 61326 or IEC 61131-2);

- d) protective measures for explosive atmospheres (see e.g. IEC 60079 series);
- e) functional safety (see e.g. IEC 61508, IEC 61131-6).

2 Normative references

This clause of Part 1 is applicable, except as follows.

Addition:

~~IEC 60068-2-31:2008, Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens~~

IEC 60384-14:~~2005~~, Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains

IEC 60664-1:~~2007~~, Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests

IEC 60695-2-11:~~2000~~, Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)

IEC 60695-11-3, Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods

IEC 60947-5-1:~~2003~~, Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices

~~IEC 60947-7-1:2009, Low-voltage switchgear and controlgear – Part 7-1: Ancillary equipment – Terminal blocks for copper conductors~~

IEC 61010-1:2010, Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements

IEC 61010-2-030, Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for testing and measuring circuits

IEC 61051-2:~~1994~~, Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors

IEC 61643-21, Low voltage surge protective devices – Part 21: Surge protective devices connected to telecommunications and signalling networks – Performance requirements and testing methods

IEC 61643-311, Components for low-voltage surge protective devices – Part 311: Performance requirements and test circuits for gas discharge tubes (GDT)

IEC 61643-321, Components for low-voltage surge protective devices – Part 321: Specifications for avalanche breakdown diode (ABD)

IEC 61643-331, Components for low-voltage surge protective devices – Part 331: Specification for metal oxide varistors (MOV)

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Safety requirements for electrical equipment for measurement, control, and laboratory use –

Part 2-201: Particular requirements for control equipment

Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire –

Partie 2-201: Exigences particulières pour les équipements de commande

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-201: Particular requirements for control equipment

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INTRODUCTION

IEC 61010-2-2xx documents are a series of standards on safety of industrial-process measurement, control and automation equipment.

This part specifies the complete safety related requirements and related tests for control equipment (e.g. programmable controller (PLC), the components of distributed control systems (DCS), I/O devices, human machine interface (HMI)).

Safety terms of general use are defined in IEC 61010-1. More specific terms are defined in each part of IEC 61010.

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-201: Particular requirements for control equipment

1 Scope and object

This clause of Part 1 is applicable, except as follows.

1.1.1 Equipment included in scope

Replacement:

- This part of IEC 61010 specifies safety requirements and related verification tests for any product performing the function of control equipment and/or their associated peripherals. In addition, these products have as their intended use the command and control of machines, automated manufacturing and industrial processes, e.g. discrete and continuous control. Some equipment examples are: programmable logic controller (PLC);
- programmable automation controller (PAC);
- distributed control systems (DCS);
- remote I/O;
- industrial PC (computers) and panel PC;
- programming and debugging tools (PADTs);
- displays and human-machine interfaces (HMI);
- positioners.

Components of the above named equipment and in the scope of this standard are:

- (auxiliary) stand-alone power supplies;
- peripherals such as digital and analogue I/O, remote-I/O;
- industrial network equipment.

Control equipment and their associated peripherals are intended to be used in an industrial environment and may be provided as OPEN or ENCLOSED EQUIPMENT.

NOTE 1 Control equipment intended also for use in other environments or for other purposes (example: for use in building installations to control light or other electrical installations, or for use on cars, trains or ships) can have additional conformity requirements defined by the safety standard(s) for these applications. These requirements can involve as example: insulation, spacings and power restrictions.

NOTE 2 Computing devices and similar equipment within the scope of IEC 60950 (planned to be replaced by IEC 62368) and conforming to its requirements are considered to be suitable for use with control equipment within the scope of this standard. However, some of the requirements of IEC 60950 for resistance to moisture and liquids are less stringent than those in IEC 61010-1:2010, 5.4.4 second paragraph.

Control equipment covered in this standard is intended for use in OVERVOLTAGE CATEGORY II, III and IV (IEC 60664-1) in low-voltage installations, where the RATED equipment supply voltage does not exceed AC 1 000 V r.m.s. (50/60 Hz), or DC 1 000 V.

The requirements of ISO/IEC Guide 51 and IEC Guide 104, as they relate to this part of IEC 61010, are incorporated herein.

1.1.2 Equipment excluded from scope

Replacement:

This standard does not deal with aspects of the overall automated system, e.g. a complete assembly line. Control equipment (e.g. DCS and PLC), their application program and their associated peripherals are considered as components (components in this context are items which perform no useful function by themselves) of an overall automated system.

Since control equipment (e.g. DCS and PLC) are component devices, safety considerations for the overall automated system including installation and application are beyond the scope of this standard. Refer to IEC 60364 series of standards or applicable national/local regulations for electrical installation and guidelines.

1.2.1 Aspects included in scope

Replacement:

The purpose of the requirements of this standard is to ensure that all HAZARDS to the OPERATOR, SERVICE PERSONNEL and the surrounding area are reduced to a tolerable level.

NOTE 1 By using the terms "OPERATOR" and "SERVICE PERSONNEL" this standard considers the perception of HAZARDS depending on training and skills. Annex AA gives a general approach in this regard.

Requirements for protection against particular types of HAZARD are given in Clauses 6 to 17, as follows:

- a) electric shock or burn (see Clause 6);
- b) mechanical HAZARDS (see Clauses 7 and 8);
- c) spread of fire from the control equipment (see Clause 9);
- d) excessive temperature (see Clause 10);
- e) effects of fluids and fluid pressure (see Clause 11);
- f) effects of radiation, including lasers sources, and sonic and ultrasonic pressure (see Clause 12);
- g) liberated gases, explosion and implosion (see Clause 13);
- h) arising from REASONABLY FORESEEABLE MISUSE and ergonomic factors are specified in (see Clause 16);
- i) RISK assessment for HAZARDS or environments not fully covered above (see Clause 17).

NOTE 2 Attention is drawn to the existence of additional requirements regarding the health and safety of labour forces.

1.2.2 Aspects excluded from scope

Replacement:

This standard does not cover:

- a) reliability, functionality, performance, or other properties of the control equipment not related to safety;
- b) mechanical or climatic requirements for operation, transport or storage;
- c) EMC requirements (see e.g. IEC 61326 or IEC 61131-2);
- d) protective measures for explosive atmospheres (see e.g. IEC 60079 series);
- e) functional safety (see e.g. IEC 61508, IEC 61131-6).

2 Normative references

This clause of Part 1 is applicable, except as follows.

Addition:

IEC 60384-14, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-11-3, *Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods*

IEC 60947-5-1, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61010-2-030, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for testing and measuring circuits*

IEC 61051-2, *Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors*

IEC 61643-21, *Low voltage surge protective devices – Part 21: Surge protective devices connected to telecommunications and signalling networks – Performance requirements and testing methods*

IEC 61643-311, *Components for low-voltage surge protective devices – Part 311: Performance requirements and test circuits for gas discharge tubes (GDT)*

IEC 61643-321, *Components for low-voltage surge protective devices – Part 321: Specifications for avalanche breakdown diode (ABD)*

IEC 61643-331, *Components for low-voltage surge protective devices – Part 331: Specification for metal oxide varistors (MOV)*

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

**EXIGENCES DE SÉCURITÉ POUR APPAREILS ÉLECTRIQUES
DE MESURAGE, DE RÉGULATION ET DE LABORATOIRE –****Partie 2-201: Exigences particulières pour les équipements de commande****AVANT-PROPOS**

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La Norme internationale IEC 61010-2-201 a été établie par le comité d'études 65 de l'IEC: Mesure, commande et automation dans les processus industriels.

Le texte de cette norme est issu des documents suivants:

FDIS	Rapport de vote
65/652/FDIS	65/657/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

Cette deuxième édition annule et remplace la première édition parue en 2013. Cette édition constitue une révision technique.

Cette deuxième édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) clarification, modification et suppression des définitions sources de confusion,
- b) modification et clarification de la méthode d'essai des températures,
- c) modification des méthodologies de documentation admises,
- d) modification de quelques marquages de BORNES,
- e) clarification de certaines annexes informatives,
- f) ajout de l'Annexe E qui a elle-même fait l'objet de modifications,
- g) ajout des Annexes AA à FF.

Cette publication a été rédigée selon les Directives ISO/IEC, Partie 2.

La présente Partie 2-201 est destinée à être utilisée conjointement avec l'IEC 61010-1. Elle a été établie sur la base de la troisième édition (2010) de cette norme. Les éditions ou amendements futurs de l'IEC 61010-1 peuvent également être pris en considération.

La présente Partie 2-201 complète ou modifie les articles correspondants de l'IEC 61010-1, de façon à transformer cette publication en norme IEC: *Exigences particulières pour les équipements de commande*.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette Partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente partie spécifie "addition", "modification", "remplacement" ou "suppression", il convient d'adapter l'exigence, la spécification d'essai ou la NOTE concernée de la Partie 1 en conséquence.

Dans la présente norme, les caractères d'imprimerie suivants sont employés:

- exigences et définitions: caractères romains;
- NOTES: petits caractères romains;
- *conformité et essais: caractères italiques*;
- termes utilisés dans l'ensemble de la présente norme, qui ont été définis à l'Article 3:
PETITES MAJUSCULES EN CARACTERES ROMAINS.

Une liste de toutes les parties de la série IEC 61010, publiées sous le titre général *Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de cette publication ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "<http://webstore.iec.ch>" dans les données relatives à la publication recherchée. A cette date, la publication sera

- reconduite,
- supprimée,
- remplacée par une édition révisée, ou
- amendée.

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INTRODUCTION

Les documents IEC 61010-2-2xx forment une série de normes relatives à la sécurité des appareils de mesure, de régulation et d'automatisation des processus industriels.

La présente partie spécifie l'ensemble des exigences et essais de sécurité relatifs aux équipements de commande (p. ex.: automates programmables), aux composants des systèmes à commande répartie, aux appareils d'E/S et à l'interface homme/machine (IHM).

Les termes de sécurité d'usage général sont définis dans l'IEC 61010-1. Les termes plus spécifiques sont définis dans chaque partie de l'IEC 61010.

EXIGENCES DE SÉCURITÉ POUR APPAREILS ÉLECTRIQUES DE MESURAGE, DE RÉGULATION ET DE LABORATOIRE –

Partie 2-201: Exigences particulières pour les équipements de commande

1 Domaine d'application et objet

L'article de la Partie 1 s'applique avec les exceptions suivantes.

1.1.1 Appareils inclus dans le domaine d'application

Remplacement:

- La présente partie de l'IEC 61010 spécifie les exigences de sécurité et les essais de vérification associés pour les produits remplissant la fonction d'équipements de commande et/ou leurs périphériques associés. L'utilisation prévue de ces produits consiste à contrôler et commander les machines, les processus industriels et de fabrication automatisés, par exemple par le biais d'un contrôle discret et continu. Les équipements suivants en sont des exemples: les automates programmables (PLC, Programmable Logic Controller);
- les contrôleurs d'automatisation programmables (PAC, Programmable Automation Controller);
- les systèmes à commande répartie (DCS, Distributed Control Systems);
- les systèmes d'E/S déportés;
- les ordinateurs (individuels) industriels et combinés PC-écran;
- les outils de programmation et de débogage (PADT, Programming and Debugging Tools);
- les affichages et les interfaces homme/machine (IHM);
- les positionneurs.

Les composants des équipements susmentionnés et relevant du domaine d'application de la présente norme sont:

- les alimentations autonomes (auxiliaires);
- les périphériques tels que les E/S numériques et analogiques, ainsi que les E/S déportés;
- les équipements de réseau industriels.

Les équipements de commande et leurs périphériques associés sont conçus pour être utilisés dans un environnement industriel et peuvent être fournis sous la forme d'EQUIPEMENTS OUVERTS ou SOUS ENVELOPPE.

NOTE 1 Les équipements de commande également conçus pour être utilisés dans d'autres environnements ou à d'autres fins (p. ex.: au sein de bâtiments pour commander l'éclairage ou d'autres installations électriques ou à bord de voitures, trains ou bateaux) peuvent faire l'objet d'exigences de conformité supplémentaires définies par la ou les normes de sécurité applicables à ces applications. Ces exigences peuvent concerner, par exemple, l'isolation, les espacements et les restrictions de puissance.

NOTE 2 Les calculateurs et équipements analogues relevant du domaine d'application de l'IEC 60950 (destiné à être remplacé par l'IEC 62368) et satisfaisant à ses exigences sont réputés être aptes à l'utilisation avec les équipements de commande relevant du domaine d'application de la présente norme. Cependant, certaines des exigences de l'IEC 60950 relative à la tenue à l'humidité et aux liquides sont moins sévères que celles de l'IEC 61010-1:2010, 5.4.4, deuxième alinéa.

Les équipements de commande couverts par la présente norme sont destinés à être utilisés dans des installations à basse tension de CATEGORIE DE SURTENSION II, III et IV (IEC 60664-1),

où la tension d'alimentation ASSIGNEE des équipements ne dépasse pas 1 000 V efficace en courant alternatif (50/60 Hz) ou 1 000 V en courant continu.

Les exigences du Guide ISO/IEC 51 et du Guide IEC 104, en rapport avec la présente partie de l'IEC 61010, sont intégrées au présent document.

1.1.2 Appareils exclus du domaine d'application

Remplacement:

La présente norme ne traite pas des aspects du système automatisé global, par exemple une chaîne de montage complète. Les équipements de commande (p. ex.: systèmes à commande distribuée et automates programmables), leurs programmes d'application et leurs périphériques associés sont considérés comme des composants (les composants dans ce contexte sont des éléments qui n'accomplissent aucune fonction utile) d'un système automatisé global.

Etant donné que les équipements de commande (p. ex.: systèmes à commande répartie et automates programmables) sont des appareils de type composants, les considérations relatives à la sécurité du système automatisé global portant sur l'installation et l'application ne relèvent pas du domaine d'application de la présente norme. Se reporter à la série IEC 60364 ou aux règlements nationaux/locaux applicables pour l'installation électrique et les lignes directrices.

1.2.1 Aspects inclus dans le domaine d'application

Remplacement:

Les exigences de la présente norme ont pour objet d'assurer que tous les DANGERS pour l'OPERATEUR, le PERSONNEL D'ENTRETIEN et la zone environnante soient réduits à un niveau acceptable.

NOTE 1 En utilisant les termes "OPERATEUR" et "PERSONNEL D'ENTRETIEN", la présente norme prend en compte la perception des DANGERS en fonction de la formation et des compétences. L'Annexe AA propose une approche générale à cet égard.

Les exigences relatives à la protection contre des types particuliers de DANGERS sont données aux Articles 6 à 17, comme suit:

- a) les chocs électriques ou brûlures (voir Article 6);
- b) les DANGERS mécaniques (voir Articles 7 et 8);
- c) la propagation du feu issu des équipements de commande (voir Article 9);
- d) une température excessive (voir Article 10);
- e) les effets des fluides et de la pression des fluides (voir Article 11);
- f) les effets des radiations, y compris les sources laser, et de la pression acoustique et ultrasonique (voir Article 12);
- g) les émissions de gaz, les explosions et les implosions (voir Article 13);
- h) les dangers résultant d'un mauvais usage raisonnablement prévisible et des facteurs ergonomiques spécifiés (voir Article 16);
- i) une appréciation du RISQUE pour les DANGERS ou environnements qui ne sont pas entièrement couverts ci-dessus (voir Article 17).

NOTE 2 L'attention est attirée sur l'existence d'exigences supplémentaires concernant la santé et la sécurité des personnels.

1.2.2 Aspects exclus du domaine d'application

Remplacement:

La présente norme ne couvre pas:

- a) la fiabilité, les fonctionnalités, les performances, ni les autres propriétés de l'équipement de commande qui ne sont pas liées à la sécurité;
- b) les exigences mécaniques ou climatiques relatives à l'exploitation, au transport ou à l'entreposage;
- c) les exigences relatives à la CEM (p. ex.: IEC 61326 ou IEC 61131-2);
- d) les mesures de protection relatives aux atmosphères explosives (p. ex.: série IEC 60079);
- e) la sécurité fonctionnelle (p. ex.: IEC 61508 ou IEC 61131-6).

2 Références normatives

L'article de la Partie 1 s'applique avec les exceptions suivantes.

Addition:

IEC 60384-14, *Condensateurs fixes utilisés dans les équipements électroniques – Partie 14: Spécification intermédiaire – Condensateurs fixes d'antiparasitage et raccordement à l'alimentation*

IEC 60664-1, *Coordination de l'isolement des matériels dans les systèmes (réseaux) à basse tension – Partie 1: Principes, exigences et essais*

IEC 60695-2-11, *Essais relatifs aux risques du feu – Partie 2-11: Essais au fil incandescent/chauffant – Méthode d'essai d'inflammabilité pour produits finis (GWEPT)*

IEC 60695-11-3, *Essais relatifs aux risques du feu – Partie 11-3: Flammes d'essai – Flammes de 500 W – Appareillage et méthodes d'essai de vérification*

IEC 60947-5-1, *Appareillage à basse tension – Partie 5-1: Appareils et éléments de commutation pour circuits de commande – Appareils électromécaniques pour circuits de commande*

IEC 61010-1:2010, *Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 1: Exigences générales*

IEC 61010-2-030, *Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 2-030: exigences particulières pour les circuits de test et de mesure*

IEC 61051-2, *Varistances utilisées dans les équipements électroniques – Partie 2: Spécification intermédiaire pour varistances pour limitations de surtensions transitoires*

IEC 61643-21, *Parafoudres basse tension – Partie 21: Parafoudres connectés aux réseaux de télécommunications – Prescriptions de fonctionnement et méthodes d'essais*

IEC 61643-311, *Composants pour parafoudres basse tension – Partie 311: Exigences de performance et circuits d'essai pour tubes à décharge de gaz (TDG)*

IEC 61643-321, *Composants pour parafoudres basse tension – Partie 321: Spécifications pour les diodes à avalanche (ABD)*

IEC 61643-331, *Composants pour parafoudres basse tension – Partie 331: Spécifications pour les varistances à oxyde métallique (MOV)*