Ohutusnõuded elektrilistele mõõtmis-, juhtimis- ja laboratooriumiseadmetele. Osa 2-201: Erinõuded juhtimisseadmetele

Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-201: Particular requirements for control quipment (IEC 61010-2-201:2013)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61010-2-201:2013 sisaldab Euroopa standardi EN 61010-2-201:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 61010-2-201:2013 consists of the English text of the European standard EN 61010-2-201:2013.
Standard on kinnitatud Eesti Standardikeskuse 31.05.2013 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.05.2013 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 10.05.2013.	Date of Availability of the European standard text 10.05.2013.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 13.110, 17.020, 19.020, 25.040.40

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61010-2-201

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ICS 13.110; 17.020; 19.020; 25.040.40

English version

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

(IEC 61010-2-201:2013)

Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire -
Partie 2-201: Exigences particulières pour les équipements de commande
(CEI 61010-2-201:2013)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 2-201: Besondere Anforderungen für Steuer- und Regelgeräte
(IEC 61010-2-201:2013)

This European Standard was approved by CENELEC on 2013-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 61010-2-201:2013 E

Foreword

The text of document 65/515/FDIS, future edition 1 of IEC 61010-2-201, prepared by IEC TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61010-2-201:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-01-01
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-04-01

This Part 2-201 is intended to be used in conjunction with EN 61010-1:2010. Consideration may be given to future editions of, or amendments to, EN 61010-1.

This Part 2-201 supplements or modifies the corresponding clauses in EN 61010-1 so as to convert that publication into the European 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 61010-2-201:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60079 series	NOTE	Harmonised in EN 60079 series.
IEC 60364 series	NOTE	Harmonised in HD 60364 series.
IEC 60364-4-41	NOTE	Harmonised as HD 60364-4-41.
IEC 60664-5:2007	NOTE	Harmonised as EN 60664-5:2007 (not modified).
IEC 60715:1981 + A1:1995	NOTE	Harmonised as EN 60715:2001 (not modified).
IEC 60721-2-3:1987	NOTE	Harmonised as HD 478.2.3 S1:1990 (not modified).
IEC 61131-2:2007	NOTE	Harmonised as EN 61131-2:2007 (not modified).
IEC 61131-6:2012	NOTE	Harmonised as EN 61131-6:2012 (not modified).
IEC 61140:2001	NOTE	Harmonised as EN 61140:2002 (not modified).
IEC 61326 series	NOTE	Harmonised in EN 61326 series.

IEC 61508 series	NOTE	Harmonised in EN 61508 series.
IEC 61643 series	NOTE	Harmonised in EN 61643 series.
IEC 61643-21	NOTE	Harmonised as EN 61643-21.
IEC 61643-311	NOTE	Harmonised as EN 61643-311.
IEC 61643-321	NOTE	Harmonised as EN 61643-321.
IEC 61643-331	NOTE	Harmonised as EN 61643-331.
IEC 61800 series	NOTE	Harmonised in EN 61800 series.
IEC 62133:2002	NOTE	Harmonised as EN 62133:2003 (not modified).
IEC 62368 series	NOTE	Harmonised in EN 62368 series.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Addition *to Annex ZA of EN 61010-1:2010:*

Publication	Year	Title	EN/HD	Year
IEC 60068-2-31	2008	Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	2008
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	EN 60384-14	2005
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60695-2-11 + corr. January	2000 2001	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	2001
IEC 60947-5-1	2003	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices	EN 60947-5-1 + corr. July	2004 2005
IEC 60947-7-1	2009	Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	EN 60947-7-1	2009
IEC 61010-1 + corr. May	2010 2011	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements	EN 61010-1	2010
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	EN 61010-2-030	-
IEC 61051-2	1991	Varistors for use in electronic equipment - Part 2: Sectional specification for surge suppression varistors	-	-

CONTENTS

INTRODUCTION

This IEC 61010-2-201 document constitutes Part 2-201 of a planned series of standards on industrial-process measurement, control and automation equipment.

This part specifies the complete safety requirements for control equipment (e.g. programmable controller (PLC)), the components of Distributed Control Systems, 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.

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 control equipment of the following types:

– Programmable controllers (PLC and PAC);
– the components of Distributed Control Systems (DCS);
– the components of remote I/O – systems;
– industrial PC (computers) and Programming and Debugging Tools (PADTs);
– Human-Machine Interfaces (HMI);
– any product performing the function of control equipment and/or their associated peripherals,

which have as their intended use the control and command of machines, automated manufacturing and industrial processes, e.g. discrete and continuous control.

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 (IEC 60664-1) in low-voltage installations, where the rated equipment supply voltage does not exceed a.c. 1 000 V r.m.s. (50/60 Hz), or d.c. 1 500 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, 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 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 13, 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 arising from reasonably foreseeable misuse and ergonomic factors are specified in Clause 16.

Risk assessment for hazards or environments not fully covered above is specified in Clause 17.

NOTE 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 or IEC 61131-6).

2 Normative references

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

Addition of the following references to the list:

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*

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 61051-2:1991, *Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors*

3 Terms and definitions

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

Additional terms and definitions:

3.101

enclosed equipment
equipment which includes an enclosure, having safety capability, or combination of an enclosure, having safety capability, and installation provisions enclosing on all sides, with the possible exception of its mounting surface, to prevent personnel from accidentally touching hazardous live, hot or moving parts contained therein and meeting requirements of mechanical strength, flammability, and stability (where applicable)

Note 1 to entry: Examples are portable and hand-held equipment.

Note 2 to entry: This definition is related to IEC 60050-441:1990, 441-12-02.

3.102
enclosure
housing affording the type and degree of protection suitable for the intended application