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ELEKTRILISED AUTOMAATJUHTIMISSEADMED. OSA 1: ÜLDNÕUDED

Automatic electrical controls - Part 1: General requirements (IEC 60730-1:2022)

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60730-1:2024 +A11:2024 sisaldab Euroopa standardi EN IEC 60730-1:2024 ja selle muudatuse A11:2024 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60730-1:2024+A11:2024 consists of the English text of the European standard EN IEC 60730-1:2024 and its amendment A11:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.10.2024, muudatus A11 25.10.2024.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 25.10.2024, for A11 25.10.2024.
Muudatusega A11 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A11] [A11]. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags [A11] [A11]. The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 97.120

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60730-1 + A11

October 2024, October 2024

ICS 97.120

Supersedes EN 60730-1:2016; EN 60730-1:2016/A1:2019; EN 60730-1:2016/A2:2022; EN 60730-1:2016/prAA:2022

English Version

Automatic electrical controls - Part 1: General requirements (IEC 60730-1:2022)

Dispositifs de commande électrique automatiques - Partie 1: Exigences générales (IEC 60730-1:2022)

Automatische elektrische Regel- und Steuergeräte - Teil 1: Allgemeine Anforderungen (IEC 60730-1:2022)

This European Standard was approved by CENELEC on 2024-01-31. Amendment A11 was approved by CENELEC on 2024-01-31. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard and its Amendment A11 exist 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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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60730-1:2024 E
+ EN IEC 60730-1:2024/A11:2024 E

European foreword

The text of document 72/1307/FDIS, future edition 6 of IEC 60730-1, prepared by IEC/TC 72 "Automatic electrical controls" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60730-1:2024.

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) 2025-04-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) –

This document supersedes EN 60730-1:2016 and all of its amendments and corrigenda (if any).

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

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60730-1:2022 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 standard indicated:

IEC 60990:2016	NOTE	Approved as EN 60990:2016 (not modified)
IEC 60243-1	NOTE	Approved as EN 60243-1
IEC 60669-1	NOTE	Approved as EN 60669-1
IEC 60730-2-5	NOTE	Approved as EN 60730-2-5
IEC 60998-2-1	NOTE	Approved as EN 60998-2-1
IEC 61000-6-7:2014	NOTE	Approved as EN 61000-6-7:2015 (not modified)
IEC 61032:1997	NOTE	Approved as EN 61032:1998 (not modified)
IEC 61058-1-1	NOTE	Approved as EN 61058-1-1
IEC 61140:2016	NOTE	Approved as EN 61140:2016 (not modified)
IEC 61508-3:2010	NOTE	Approved as EN 61508-3:2010 (not modified)
IEC 61508-7:2010	NOTE	Approved as EN 61508-7:2010 (not modified)

IEC 61810-1	NOTE	Approved as EN 61810-1
IEC 63044-3	NOTE	Approved as EN IEC 63044-3
IEC 63044-5-1:2017	NOTE	Approved as EN IEC 63044-5-1:2019 (not modified)
ISO 62:2008	NOTE	Approved as EN ISO 62:2008 (not modified)
ISO 75-1	NOTE	Approved as EN ISO 75-1
ISO 178:2019	NOTE	Approved as EN ISO 178:2019 (not modified)
ISO 527-1:2019	NOTE	Approved as EN ISO 527-1:2019 (not modified)
ISO 16484-2	NOTE	Approved as EN ISO 16484-2

A11 Amendment A11 European foreword

This document (EN IEC 60730-1:2024/A11:2024) has been prepared by Technical Committee CLC/TC 72 “Automatic controls for household use”, the secretariat of which is held by BSI.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2025-04-25
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	—*

* No date of withdrawal (dow) has been given pending the updating of all the Parts 2 to align with EN IEC 60730-1:2024. The applicable date of withdrawal is given in each part 2. It is intended the dow for this Part 1 will be fixed once all the Parts 2 have been updated.

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This document is read in conjunction with appropriate Part 2 for a particular type of control, or for controls for particular applications. This document can also be applied, so far as reasonable, to controls not mentioned in a Part 2, and to controls designed on new principles, in which case additional requirements can be necessary.

Subclauses which are additional to those in IEC 60730-1:2022 are numbered 601, 602 etc. New annexes are labelled ZA, ZB etc.

Special national conditions causing a deviation from this document are listed in Annex ZB (normative).

National deviations from this document are listed in Annex ZC (informative).

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website. A11

IEC 60730-1

Edition 6.0 2022-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Automatic electrical controls – Part 1: General requirements

Dispositifs de commande électrique automatiques – Partie 1: Exigences générales

IEC 60730-1:2022-09(en-fr)

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IEC 60730-1

Edition 6.0 2022-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Automatic electrical controls – Part 1: General requirements

Dispositifs de commande électrique automatiques – Partie 1: Exigences générales

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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AUTOMATIC ELECTRICAL CONTROLS –

Part 1: General requirements

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.
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IEC 60730-1 has been prepared by IEC technical committee 72: Automatic electrical controls. It is an International Standard.

This sixth edition cancels and replaces the fifth edition published in 2013, Amendment 1:2015 and Amendment 2:2020. This edition constitutes a technical revision.

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

a)	Structure of the main clauses	The clauses of the standard are grouped into two sections of requirements, where • the first section consists of the Clauses 5 to 13 that, in general, addresses the construction of the product. It is noted that certain construction requirements may have verification requirements integrated within the clause to facilitate usage of the standard, and • the second section consists of Clauses 14 to 26 that addresses the verification requirements;
b)	Scope	Relocated and deleted clauses to better reflect the products covered under the part 1 and for easier reading;
c)	Normative references	Updated references;
d)	Terms and definitions	Revised text in certain clauses and relocated relevant Clause H.3 subclauses into Clause 3;
e)	General requirements	General structure of the standard explained along with a figure to depict the intent;
f)	General notes on tests	Reduced sample size from 3 to 1, yet requiring analysis; order of tests more flexible; relocation of battery requirements from Annex V;
g)	Rating	Deleted – covered under the scope;
h)	Classification	Deleted – covered under information;
i)	Information	Updated Table 1 to reflect entries from the classification clause, and all cross-references;
j)	Protection against electric shock	Revised Clause 8 to include Clause H.8 and Clause V.8 subclauses, revised clauses as appropriate to distinguish between a live part and a hazardous live part;
k)	Provision for protective earthing	
l)	Construction requirements	One Y1 capacitor allowed; relocated relevant requirements of Clause H.11 and Clause V.11 into Subclause 9.2.5 and Subclause 9.13.4.4 respectively;
m)	Moisture and dust	Relocated IP table from classification to Clause 14; updated references;
n)	Manufacturing deviation and drift	All clauses moved to Annex H since the requirements pertain to functional safety of controls;
o)	EMC-Emissions	Moved Clause H.23 into Clause 23;
p)	EMC-Immunity	New EMC requirements (performance) for all controls except incorporated/integrated controls with Class A control functions. Products intended for HBES/BACS are also subjected to these requirements;
q)	Fault assessment on electronic circuits	Fault assessment moved from Annex H to Clause 13; deleted test abnormal voltage for electronic disconnection;

r)	Annex H	Relocated all relevant requirements for electronics to the respective clauses within the body of the standard and retained requirements related to functional safety in this annex;
s)	Annex T	Revised clauses for clarity in Annex P;
t)	Annex U	Removed, the necessity of the annex was not seen anymore;
u)	Annex V	Included in the main part of the standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
72/1307/FDIS	72/1320/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at https//www.iec.ch/publications.

A list of all parts of the IEC 60730 series, under the general title: *Automatic electrical controls*, can be found on the IEC website.

In the development of a fully international standard to cover automatic electrical controls, it has been necessary to take into consideration the differing requirements resulting from practical experience in various parts of the world and to recognize the variation in national electrical systems and wiring rules.

The "in some countries" clauses have been moved to the regional respectively national differences in Annex Q to Annex T.

It is envisaged that in the next edition of this document, it will be found possible to remove those differences that are covered by new IEC standards now being prepared by other technical committees.

This part 1 is to be used in conjunction with the appropriate part 2 for a particular type of control, or for controls for particular applications. This part 1 may also be applied, so far as reasonable, to controls not mentioned in a part 2, and to controls designed on new principles, in which cases additional requirements may be considered to be necessary.

Where, for a particular clause or subclause, the text of part 2 indicates:

Addition: the part 1 text applies with the additional requirement indicated in a part 2;

Modification: the part 1 text applies with a minor change as indicated in a part 2;

Replacement: the part 2 text contains a change which replaces the part 1 text in its entirety.

Where no change is necessary, the part 2 indicates that the relevant clause or subclause applies.

NOTE In this document the following print types are used:

– Requirements proper: in roman type;

– *Test specifications: in italic type;*

– Explanatory matter: in smaller roman type;

– Defined terms: **bold type**.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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AUTOMATIC ELECTRICAL CONTROLS –

Part 1: General requirements

1 Scope

This document applies to automatic electrical controls

- for use in, on, or in association with equipment for household appliance and similar use;

NOTE 1 Throughout this document, the word "equipment" means "appliance and equipment".

- for building automation within the scope of ISO 16484 series and IEC 63044 series (HBES/BACS);

EXAMPLE 1 Independently mounted water valves, controls in smart grid systems and controls for building automation systems within the scope of ISO 16484-2.

- for equipment that is used by the public, such as equipment intended to be used in shops, offices, hospitals, farms and commercial and industrial applications;

EXAMPLE 2 Controls for commercial catering, heating and air-conditioning equipment.

- that are **smart enabled controls**;

EXAMPLE 3 Smart grid control, remote interfaces/control of energy-consuming equipment including computer or smart phone.

- that are AC or DC powered controls with a rated voltage not exceeding 690 V AC or 600 V DC where the DC source is provided by primary or secondary batteries;
- used in, on, or in association with equipment that use electricity, gas, oil, solid fuel, solar thermal energy, etc., or a combination thereof;
- utilized as part of a control system or controls which are mechanically integral with multifunctional controls having non-electrical outputs;
- using NTC or **PTC thermistors** and to discrete **thermistors**, requirements for which are contained in Annex J;
- that are mechanically or electrically operated, responsive to or controlling such characteristics as temperature, pressure, passage of time, humidity, light, electrostatic effects, flow, or liquid level, current, voltage, acceleration, or combinations thereof;
- as well as manual controls when such are electrically and/or mechanically integral with automatic controls.

NOTE 2 Requirements for manually actuated mechanical switches not forming part of an automatic control are contained in IEC 61058-1-1.

This document applies to

– the inherent safety of automatic electrical controls, and

– functional safety of automatic electrical controls and safety related systems,

– controls where the performance (for example the effect of EMC phenomena) of the product can impair the overall safety and performance of the controlled system,

– the operating values, operating times, and operating sequences where such are associated with equipment safety.

This document specifies the requirements for construction, operation and testing of automatic electrical controls used in, on, or in association with an equipment.

This document does not

- apply to automatic **electronic controls** intended exclusively for industrial process applications unless explicitly mentioned in the relevant part 2 or the equipment standard. However, this document can be applied to evaluate automatic electrical controls intended specifically for industrial applications in cases where no relevant safety standard exists.
- take into account the response value of an automatic action of a control, if such a response value is dependent upon the method of mounting the control in the equipment. Where a response value is of significant purpose for the protection of the user, or surroundings, the value defined in the appropriate equipment standard or as determined by the manufacturer will apply.
- address the integrity of the output signal to the network devices, such as interoperability with other devices unless it has been evaluated as part of the control system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

IEC 60065:2014, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60099-1:1991, *Surge arresters – Part 1: Non-linear resistor type gapped surge arresters for a.c. systems*[1]

IEC 60112:2020, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60127 (all parts), *Miniature fuses*

IEC 60227-1, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 60245-1, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 60269 (all parts), *Low-voltage fuses*

IEC 60335-1:2020, *Household and similar electrical appliances – Safety – Part 1: General requirements*

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*

[1] Withdrawn.

IEC 60384-16, *Fixed capacitors for use in electronic equipment – Part 16: Sectional specification – Fixed metallized polypropylene film dielectric DC capacitors*

IEC 60384-17, *Fixed capacitors for use in electronic equipment – Part 17: Sectional specification – Fixed metallized polypropylene film dielectric AC and pulse capacitors*

IEC 60417, *Graphical symbols for use on equipment*

IEC 60423, *Conduit systems for cable management – Outside diameters of conduits for electrical installations and threads for conduits and fittings*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60539 (all parts), *Directly heated negative temperature coefficient thermistors*

IEC 60664-1:2007[2], *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC TR 60664-2 (all parts), *Insulation coordination for equipment within low-voltage systems*

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 60695-2-10, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 60738 (all parts), *Thermistors – Directly heated positive temperature coefficient*

IEC 60747-5-5, *Semiconductor devices – Part 5-5: Optoelectronic devices – Photocouplers*

IEC 60884-1, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

IEC 60884-2-5:2017, *Plugs and socket-outlets for household and similar purposes – Part 2-5: Particular requirements for adaptors*

IEC 60998-2-2, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

[2] Withdrawn.

IEC 60998-2-3, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-3: Particular requirements for connecting devices as separate entities with insulation-piercing clamping units*

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)*

IEC 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 61000-3-3, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection*

IEC 61000-3-11, *Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current ≤ 75 A and subject to conditional connection*

IEC 61000-3-12, *Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤ 75 A per phase*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*
IEC 61000-4-5:2014/AMD1:2017

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with current up to 16 A per phase*

IEC 61000-4-13:2002, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests*
IEC 61000-4-13:2002 /AMD1:2009
IEC 61000-4-13:2002 /AMD2:2015

IEC 61000-4-20, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

IEC 61000-4-21, *Electromagnetic compatibility (EMC) – Part 4-21: Testing and measurement techniques – Reverberation chamber test methods*

IEC 61000-4-22, *Electromagnetic compatibility (EMC) – Part 4-22: Testing and measurement techniques – Radiated emissions and immunity measurements in fully anechoic rooms (FARs)*

IEC 61000-4-28, *Electromagnetic compatibility (EMC) – Part 4-28: Testing and measurement techniques – Variation of power frequency, immunity test for equipment with input current not exceeding 16A per phase*

IEC 61000-6-1:2016, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments*

IEC 61000-6-2:2016, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments*

IEC 61000-6-3:2020, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for equipment in residential environments*

IEC 61000-6-4:2018, *Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments*

IEC 61051-1, *Varistors for use in electronic equipment – Part 1: Generic specification*

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

IEC 61051-2-2, *Varistors for use in electronic equipment – Part 2: Blank detail specification for zinc oxide surge suppression varistors. Assessment level E*

IEC 61210, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

IEC 61249 (all parts), *Materials for printed boards and other interconnecting structures*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and combinations thereof − Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers for general applications*

IEC 61558-2-16, *Safety of transformers, reactors, power supply units and combinations thereof − Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units for general applications*

IEC 61810-3, *Electromechanical elementary relays – Part 3: Replays with forcibly guided (mechanically linked) contacts*

IEC 62151, *Safety of equipment electrically connected to a telecommunication network*

IEC 62319 (all parts), *Polymeric thermistors – Directly heated positive step function temperature coefficient*

IEC 62326 (all parts), *Printed boards*

IEC 62368-1, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

IEC 63044 (all parts), *Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS)*

CISPR 11, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*

CISPR 14-1:2020, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission*

CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment – Emission* requirements
CISPR 32:2015/AMD1:2019

ISO 4046-4:2016, *Paper, board, pulps and related terms − Vocabulary − Part 4: Paper and board grades and converted products*

ISO 7637-2:2011, *Road vehicles – Electrical disturbances from conduction and coupling – Part 2: Electrical transient conduction along supply lines only*

ISO 7637-3:2016, *Road vehicles – Electrical disturbances from conduction and coupling – Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

ISO 16484 (all parts), *Building automation and control systems (BACS)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

NOTE Where the terms "voltage" and "current" are used, they imply the RMS values, unless otherwise specified.

3.1 Definitions relating to ratings, voltages, currents, frequencies, and wattages

3.1.1
rated voltage, current, frequency or wattage
voltage, current, frequency or wattage assigned to a **control** by the manufacturer

Note 1 to entry: For three phase supply, the **rated voltage** is the line-to-line voltage.

3.1.2
rated voltage, current, frequency or wattage range
voltage, current, frequency or wattage ranges assigned to the **control** by the manufacturer and expressed by lower and upper values

3.1.3
working voltage
highest RMS value of the AC or DC voltage across any particular insulation which can occur when the equipment is supplied at **rated voltage**

Note 1 to entry: **Transient overvoltages** are disregarded.

Note 2 to entry: Open-circuit conditions and normal operating conditions are taken into account.