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Automatic electrical controls for household and similar use - Part 1: General requirements

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<input checked="" type="checkbox"/> Safety Sécurité	<input type="checkbox"/> EMC CEM	<input type="checkbox"/> Environment Environnement	<input type="checkbox"/> Quality assurance Assurance qualité

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Titre : Projet de l'amendement 2 à la CEI 60730-1, Ed. 3: Dispositifs de commande électriques à usage domestique et analogue - Partie 1: Règles générales

Title : Draft amendment 1 to IEC 60730-1, Ed. 3: Automatic electrical controls for household and similar use - Part 1: General requirements

Note d'introduction

Ce document incorpore 72/555/CD et 72/565/CC de la CEI 60730-1 A2 Ed3 pour amender l'Annexe J ainsi que les documents 72/579/CD et 72/599/CC de la CEI 60730-1 A2 f5 Ed3 pour incorporer les exigences SELV/PELV

Introductory note

This document incorporates 72/555/CD and 72/565/CC from IEC 60730-1 A2 Ed 3 to amend Annex J as well as the documents 72/579/CD and 72/599/CC from IEC 60730-1 A2 f5 Ed 3 to incorporate SELV/PELV requirements.

ATTENTION

**CDV soumis en parallèle au vote (CEI)
et à l'enquête (CENELEC)**

ATTENTION

Parallel IEC CDV/CENELEC Enquiry

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FOREWORD

This amendment has been prepared by IEC technical committee 72: Automatic controls for household use.

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

CDV	Report on Voting
72/XXX/CDV	72/XXX/RVC

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

This amendment is based on 60730-1, Edition 3 (1999) and its amendment 1 (2003).

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 200X. At this date, the publication will be:

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

Page 3

CONTENTS

Replace the existing title of Clause 21 by the following new title:

21 Fire hazard testing

Page 15

1.5 Normative references

Modify the existing references as follows:

IEC 60038:1997, *IEC standard voltages*

IEC 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60099-1:1999, *Surge arresters – Part 1: Non-linear resistor type gapped arresters for a.c. systems*

IEC 60112:2003, *Method for determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60127-1:2002, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60216-1:2001, *Electrical insulating materials – Properties of thermal endurance – Part 1: Ageing procedures and evaluation of test results*

IEC 60227-1:1998, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V – Part 1: General requirements*

IEC 60245-1:2003, *Rubber insulated cables – Rated voltages up to and including 450/750V – Part 1: General requirements*

Page 17

Modify the existing references as follows:

IEC 60249-1:1993, *Base materials for printed circuits – Part 1: Test methods*

IEC 60269-1:1998, *Low-voltage fuses – Part 1: General requirements*

IEC 60326-2:1990, *Printed boards – Part 2: Test methods*

IEC 60335-1:2001, *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60384-14, 1995, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic suppression and connection to the supply mains*

IEC 60384-16:1992, *Fixed capacitors for use in electronic equipment – Part 16: Sectional specification – Fixed metallized polypropylene film dielectric d.c. capacitors*

Add, to the existing list, the following references:

IEC 60417:2002, *Graphical symbols for use on equipment*

Modify the existing references as follows:

IEC 60529:1999, *Degrees of protection provided by enclosures (IP code)*

Delete, from the existing list, the following reference:

IEC 60536:1976, *Classification of electrical and electronic equipment with regard to protection against electric shock*

Modify the existing references as follows:

IEC 60539-1:2002, *Directly heated negative temperature coefficient thermistors – Part 1: General specifications*

IEC 60664-1:2002, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:2003, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60065:2001, *Audio, video and similar electronic apparatus - Safety requirements*

Delete, from the existing list, the following reference:

IEC 60695-2-1/1:1994, Fire hazard testing – Part 2: Test methods – Section 1/Sheet 1: Glow-wire end-product test and guidance

Add, to the existing list, the following references:

IEC 60695-2-10:2000, Fire Hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure

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 60695-2-12:2000, Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-wire flammability test method for materials

IEC 60695-2-13:2000, Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignitability test method for materials

IEC 60695-11-10:2003, Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods

IEC 60695-11-20:2003, Fire hazard testing - Part 11-20: Test flames - 500 W flame test methods

Delete, from the existing list, the following reference:

IEC 60707:1981, Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source

Modify the existing references as follows:

IEC 60998-2-2:2002, 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

Delete, from the existing list, the following reference:

IEC 61000 (all parts), Electromagnetic compatibility (EMC)

Modify the existing references as follows:

IEC 61000-3-2:2001, Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

Page 19

Modify the existing references as follows:

IEC 61000-3-3:2001: Electromagnetic compatibility (EMC) – Part 3: Limits – Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current ≤ 16 A

IEC 61000-4-2:2000, Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test. Basic EMC publication.

IEC 61000-4-3:2002, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4:2001, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 4 : Electrical fast transient/burst immunity test. Basic EMC Publication*

IEC 61000-4-5:2000, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 5: Surge immunity test*

IEC 61000-4-6:2003, *Electromagnetic compatibility (EMC) – Part 4-6, Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8:2000, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 8 – Power frequency magnetic field immunity test. Basic EMC Publication*

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measuring techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-4-28:2002, *Electromagnetic compatibility (EMC) – Part 4-28: Testing and measurements techniques – Variation of power frequency, immunity test*

IEC 61058-1:2000, *Switches for appliances – Part 1: General requirements*

Add, to the existing list, the following references:

IEC 61140:2001, *Protection against electric shock - Common aspects for installation and equipment*

IEC 61201:1992, *Extra-low voltage (ELV) - Limit values*

IEC 61558-2-17:1997, *Safety of power transformers, power supply units and similar - Part 2: Particular requirements for transformers for switch mode power supplies*

Modify the existing references as follows:

CISPR 14-1:2002, *Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission*

CISPR 22:2003, *Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement*

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

Replace, on page 21, after definition 2.1.3, the following definitions:

2.1.4

extra-low voltage (ELV)

nominal voltage not exceeding 50 V between conductors and between conductors and earth, or for three-phase connection not exceeding 50 V between line conductors and 29 V between line conductors and neutral

NOTE These values were derived from IEC 60335, 3.4.1.

2.1.5

safety extra-low voltage

nominal voltage for use in a SELV-system or PELV-system between conductors and between conductors and earth, not exceeding 42 V between conductors, or in the case of three-phase circuits, not exceeding 24 V between conductors and neutral, the no-load voltage of the circuit not exceeding 50 V and 29 V, respectively, and which when obtained from higher voltage is provided by a safety isolating transformer or a converter with separate windings providing equivalent insulation as stated in IEC 61558-2-6 and IEC 61558-2-17

The voltage limits are based on the assumption that the safety isolating transformer is supplied at its rated voltage. In Canada and the USA, the limit for safety extra-low voltage is 30 V.

Also see 2.1.20 SELV system and 2.1.21 PELV system.

Page 21

2.1.7

same polarity

Replace the existing text with "Void".

2.1.8

opposite polarity

Replace the existing text with "Void".

Add, on page 23, after definition 2.1.13, the following new definitions:

2.1.14

exposed-conductive-part

conductive part of equipment, which can be touched and which is not normally live, but which can become live when basic insulation fails [IEV 195-06-10]

A conductive part of a control which can only become live through contact with an exposed-conductive-part which has become live, is not considered to be an exposed-conductive-part itself.

2.1.15

(conductive) screen

(conductive) shield (US)

conductive part that encloses or separates electric circuits and/or conductors

[IEV 195-02-38]

2.1.16

(electrically) protective screen

(electrically) protective shield (US)

conductive screen used to separate an electric circuit and/or conductors from hazardous-live-parts

[IEV 195-06-17]

2.1.17

(electrically) protective screening

(electrically) protective shielding (US)

separation of electric circuits and conductors from hazardous live parts by an electrically protective screen (shield) connected to the protective-equipotential-bonding system and intended to provide protection against electric shock

[IEV 195-06-18]

NOTE The phrase "permanently and reliably connected to an earthing terminal" is synonymous with "bonded".

2.1.18

simple separation

separation between circuits or between a circuit and earth by means of basic insulation

[IEC 61140, definition 3.23]

2.1.19

(electrically) protective separation

separation of one electric circuit from another by means of:

- double insulation, or
- basic insulation and electrically protective screening (shielding), or
- reinforced insulation

[IEV 195-06-19]

2.1.20

SELV system

an electrical system in which the voltage cannot exceed ELV:

- under normal conditions, and
- under single-fault conditions, including earth faults in other circuits

[IEC 61140, definition 3.26.1]

2.1.21

PELV system

an electrical system in which the voltage cannot exceed ELV:

- under normal conditions, and
- under single-fault conditions, except earth faults in other circuits

[IEC 61140, definition 3.26.2]

Page 37

2.7 Definitions relating to protection against electric shock

2.7.4

Replace the second note with the following:

Class I controls may have parts with double insulation or parts that provide protection against electric shock by SELV or PELV.

2.7.5

Replace the existing note with the following two notes:

Class II controls may have parts that provide protection against electric shock by use of SELV.

Class II controls cannot have parts that provide protection against electric shock by use of PELV, as such circuits require connection to an earthing terminal.

2.7.6

Replace the existing definition with the following new definition:

Control relying on limitation of voltage to ELV values as provision against electric shock for basic protection and:

- with no provision for fault protection;
- which for supply are only connected to a SELV-system or a PELV-system, to form part of that system;

- where internal circuits do not operate at a higher level than ELV;
- where in case of a single fault within the control no steady state touch voltage may appear or be generated exceeding ELV level; and
- not provided with a means of connection for a protective conductor.

Add, on page 41, after definition 2.7.14, the following new definitions:

2.7.15

equipotential bonding

provision of electric connections between conductive parts, intended to achieve equipotentiality [IEV 195-01-10]

The effectiveness of the equipotential bonding depends on the frequency of the current in the bonding.

Equipotential bonding is used to connect any conductive part of a building not forming part of the electrical installation and liable to introduce an electrical potential, generally the electric potential of the local earth (extraneous-conductive part) and any conductive part of controls or equipment or components in the installation which can be touched and which is not normally live but which can become live when basic insulation fails (exposed-conductive part) to a main equipotential bonding terminal in the form of a bar, in order to bring these parts to the same potential. Parts to be connected to the equipotential bonding system include e.g. protective conductors, PE conductors, PEN conductors earthing conductors, protective earthing terminals of controls or equipment, all conductive parts in a building (e.g. metal tubing for water (drinking and waste), metallic bathtubs, the central heating system piping, any internal gas tubing (which is also required to be isolated from external gas tubing), earth connectors for antennas and telecommunication systems, all metal parts of the building used for construction like mats and iron, and conductors for lightning protection and depending on the installation system, the earth electrode. Requirements for equipotential bonding can be found in the IEC standards for the installation of buildings. These may be relevant for the installation of controls which consist of several component-parts (e.g. sensors, actors, central control element, interface elements) connected in parallel to or via the fixed installation of the building.

2.7.15.1

protective-equipotential-bonding

equipotential bonding for purposes of safety (protection against electric shock)

[IEV 195-01-15, modified]

Functional equipotential bonding is defined in [IEV 195-01-16].

Add, on page 47, after definition 2.9.14, the following new definitions:

2.9.15

equipotential bonding terminal

terminal provided on equipment or on a device and intended for the electrical connection with the equipotential bonding system [IEV 195-02-32]

2.9.16

protective bonding terminal

terminal intended for protective-equipotential-bonding purposes

Examples are a protective screen- or PE-terminal of a control or equipment.

2.9.17

protective conductor (symbol PE)

conductor provided for purposes of safety (protection against electric shock)

[IEV 195-02-09, modified]