SLOVENSKI STANDARD
SIST EN 60730-1:2001/A16:2007

01-november-2007

Avtomatske elektriļ ne krmilne naprave za uporabo v gospodinjstvu in za podobno uporabo - 1. del: Sploġne zahteve

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

Automatische elektrische Regel- und Steuergeräte für den Hausgebrauch und ähnliche Anwendungen - Teil 1: Allgemeine Anforderungen

Dispositifs de commande électrique automatiques à usage domestique et analogue - Partie 1: Regles générales

Ta slovenski standard je istoveten z: **EN 60730-1:2000/A16:2007**

ICS:

97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

SIST EN 60730-1:2001/A16:2007 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60730-1/A16

April 2007

ICS 33.160.20

English version

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

Dispositifs de commande électrique automatiques à usage domestique et analogue - Partie 1: Règles générales

Automatische elektrische Regel- und Steuergeräte für den Hausgebrauch und ähnliche Anwendungen - Teil 1: Allgemeine Anforderungen

This amendment A16 modifies the European Standard EN 60730-1:2000; it was approved by CENELEC on 2006-11-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this 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 Central Secretariat or to any CENELEC member.

This amendment 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60730-1:2000/A16:2007 E

Foreword

This amendment to the European Standard EN 60730-1:2000 was prepared by the Technical Committee CENELEC TC 72, Automatic controls for household use.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A16 to EN 60730-1:2000 on 2006-11-01.

The following dates were fixed:

– latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-11-01
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2010-06-01

1 Scope and normative references

1.5 Normative references

Add after IEC 61000-4-11:1994:

IEC 61000-4-20:2003, *Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

Annex ZA

Add:

Publication	Year	Title	EN/HD	Year
IEC 61000-4-20	2003	Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	EN 61000-4-20	2003

Add the following annexes:

Annex ZF
(normative)

EMC immunity for controls

ZF.1 Electromagnetic compatibility (EMC) requirements – Immunity

The tests of this annex apply to **operating controls** of **Type 1 action** intended to be used as "**free standing controls, independently mounted and/or in-line cord controls**" for EMC immunity instead of H.26.

NOTE 1 This annex may be made applicable to incorporated and/or integrated controls if so requested by their manufacturer.

NOTE 2 For EMC emission, H.23 applies.

Table ZF.1 - EMC Test Frame Work for controls

EMC Test Frame Work for controls					
Type 2 action				**Type 1 action**	
Protective controls		**Operating controls**		**Operating controls**	
Incorporated and integrated controls	Free standing controls, independently mounted and/or in-line cord controls	Incorporated and integrated controls	Free standing controls, independently mounted and/or in-line cord controls	Incorporated and integrated controls	**Free standing controls, independently mounted and/or in-line cord controls**
	EMC Directive applies		**EMC Directive applies**		**EMC Directive applies**
Apparatus for incorporation in final apparatus	Final apparatus for final use	Apparatus for incorporation in final apparatus	Final apparatus for final use	Apparatus for incorporation in final apparatus	Final apparatus for final use
Required test see Part 1 and relevant Part 2 of EN 60730	Required test see Part 1 and relevant Part 2 of EN 60730	Required test see Part 1 and relevant Part 2 of EN 60730	Required test see Part 1 and relevant Part 2 of EN 60730	Required test see Part 1 and relevant Part 2 of EN 60730	**Required test see Annex ZF ZF.4 to ZF.9**
Applicable test **level 2 and 3** of EN 61000-4-x	Applicable test **level 2 and 3** of EN 61000-4-x	Applicable test **level 2** of EN 61000-4-x	Applicable test **level 2** of EN 61000-4-x	Applicable test **level 2** of EN 61000-4-x	Applicable test **level see Annex ZF.2**
Compliance see relevant Part 2	Compliance see relevant Part 2	Compliance see relevant Part 2	Compliance see relevant Part 2	Compliance see relevant Part 2	**Compliance see Annex ZF.3**

ZF.2 Classification of the control

Table ZF.2 - Classification and test overview

Control declaration	Installation and environmental condition									
	ESD		**Radiated EMF field**			**Burst**	**Surge**	**Conducted disturbance**	**Power magnetic field**	**Voltage dips & interruption**
	Environmental class EN 61000-4-2		Environmental class EN 61000-4-3 [d]			Environment class EN 61000-4-4	Installation class [c] EN 61000-4-5	Environment class EN 61000-4-6	Environment class EN 61000-4-8	Environment class EN 61000-4-11
EMC level	Level 2	Level 3	Level 2	Level 2	Level 1	Level 2	Class 2	Level 2	Level 2	Class 2
Residential [a]	contact dis-charge	air dis-charge	<1,0 GHz	1,4 … 2,0 GHz	2,0 … 2,7 GHz	protected	power and signal cables are well separated		well protected	
EMC level	Level 2	Level 3	Level 3	Level 2	Level 1	Level 3	Class 3	Level 3	Level 4	Class 3
Industrial [b]	contact dis-charge	air dis-charge	<1,0 GHz	1,4 … 2,0 GHz	2,0 … 2,7 GHz	typical industrial	power and signal cables run in parallel		typical industrial	

[a] Residential: Controls are restricted for the use only in residential, commercial and light industrial environment (EN 61000-6-1).

[b] Industrial: In addition to residential controls are also suitable for industrial environment (EN 61000-6-2)

[c] Installation classes: EN 60730-1, Annex R.

[d] EN 61000-4-20 may be used for small EUT's as defined in EN 61000-4-20 subclause 6.1.

ZF.2.1 Information

Additional items to Table 7.2:

Table ZF.2.1 - Information

Information	Clause or Subclause	Method
80 According to the electromagnetic environment of one of the two EMC levels	ZF.2	X
81 EUT to be tested without primary protection, Table ZF.4 note a)	ZF.4	X
82 Cable length up to or equal 30 meters, Table ZF.4 note b)	ZF.4	X
83 Data line length < 10 meters, Table ZF.4 note c)	ZF.4	X
84 Test level (= protection level when upstream protection is not in place), Table ZF.4 note d)	ZF.4	X
85 Data line length up to and including 3 meters, Table ZF.5.1	ZF.5.1	X
86 Applicable of test and frequency, Table ZF.8	ZF.8	X

ZF.3 Evaluation of compliance

The compliance criteria are given in Table ZF.3 and are based on the operating conditions and the functional specification of the control during and after the test.

Number of test samples: minimum one sample

After the test the control shall meet the requirements of Clause 8, 17.5 and Clause 20. If, as a result of the application of the tests defined in this annex, the control becomes dangerous or unsafe, the control shall be deemed to have failed the test.

Table ZF.3 - Compliance criteria

Operating conditions	Compliance criteria		
	A	B	C
Digital inputs/outputs	No deviation on input readings. No deviation on output settings. (no change of state)	No deviation on input readings. No deviation on output settings. (no change of state)	Any error, such as a change of state, destruction of data, and loss of a connection is permitted, provided the initial state is restored automatically after the test - Automatic recovery after the test [b]
Analogue inputs/outputs	Deviation as declared in the final product specification is permitted [a]	Deviation is permitted during test	
Display, Monitor	Operation must be possible at reasonable comfort	Deviation is permitted (e.g. display fault, such as flickering)	
Local operator override / switching	No deviation	Deviation is permitted for analogue values No change of state for digital values	
Communication ports	No deviation detectable by the user. The reduced data transfer rate must be reasonable for the control operation	Deviation is permitted. Loss of communication during the test. Automatic recovery after the test.	

[a] The permissible deviation is with respect to the value without electromagnetic interference. This means that any basic deviation is ignored.

[b] This compliance criteria is based on the fact that the control operation in the end user application will be unsupervised.

ZF.4 Surge immunity test

The control is mounted as specified in 4.1.1, supplied at rated voltage and operated at representative operating conditions. It is tested in accordance with EN 61000-4-5.

The severity levels for the declared installation class are specified in Table ZF.4.

Repetition rate: maximum 1/min

Polarity: positive (+) and negative (-)

Number of pulses: at least five pulses for each polarity are applied at selected points

Phase angle: 0°, 90°, 180° and 270° versus the phase angle of the ac line voltage to the equipment under test, with a tolerance of +/- 10°

NOTE Most protectors in common use have low average power capabilities, even though their peak power or peak energy handling can deal with high currents. Therefore the maximum repetition rate (the time between two surges and the recovery time) depends on the built-in protection devices of the EUT.

Table ZF.4 - Test levels for voltage surges

Control declaration	Test levels kV											
	AC power supply and AC I/O directly connected to mains network		**AC power supply and AC I/O not directly connected to mains network**		**DC power supply and DC I/O directly connected thereto**		**Unsymmetrical operated circuits/lines [c]**		**Symmetrical operated circuits/lines [c]**		**Shielded I/O and shielded communication lines**	
	Coupling mode		Coupling mode		Coupling mode		Coupling mode		Coupling mode		Coupling mode	
EMC Level	line to line	line to earth	line to line	line to earth	line to line	line to earth	line to line	line to earth	line to line	line to earth	line to line	line to earth
Residential	0,5	1,0	NA	NA	NA	NA	0,5	1,0	NA	1,0	NA	0,5
Industrial	1,0	2,0	1,0[d]	2,0[a d]	0,5[e]	0,5[e]	1,0[b]	2,0[a b]	NA	2,0[a b]	NA	2,0[b]

[a] Normally tested with primary protection unless declared otherwise by the manufacturer (Table ZF.2.1 requirement 81).

[b] The test level shall be lowered to the next lower one if the cable length is shorter or equal to 30 m. (Table ZF.2.1 requirement 82).

[c] This test is not applicable to interconnection cables used as data lines and a length of up to 10 m. (Table ZF.2.1 requirement 83).

[d] If protection is specified upstream from the EUT, the test level should correspond to the protection level when the protection is not in place (Table ZF.2.1 requirement 84).

[e] Not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging. Apparatus with a DC power input port intended for use with an AC–DC power adaptor shall be tested on the AC power input of the AC–DC power adaptor specified by the manufacturer or, where none is so specified, using a typical AC–DC power adaptor. DC ports, which are not intended to be connected to a DC distribution network are treated as signal ports.

Compliance criteria: B (see Table ZF.3)