ICS 97.120 SLOVENSKÁ TECHNICKÁ NORMA August 2015

| STN | **Automatické elektrické riadiace zariadenia pre domácnosť a na podobné účely. Časť 2-5: Osobitné požiadavky na automatické elektrické riadiace systémy horákov.** | **STN EN 60730-2-5**<br><br>36 1950 |
|---|---|---|

Automatic electrical controls - Part 2-5: Particular requirements for automatic electrical burner control systems

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/15

Obsahuje: EN 60730-2-5:2015, IEC 60730-2-5:2013

Oznámením tejto normy sa od 17.11.2017 ruší
STN EN 60730-2-5 (36 1950) zo septembra 2003

**121094**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 60730-2-5

February 2015

ICS 97.120

Supersedes EN 60730-2-5:2002

English Version

# Automatic electrical controls - Part 2-5: Particular requirements for automatic electrical burner control systems (IEC 60730-2-5:2013 , modified)

Dispositifs de commande électrique automatiques - Partie 2-5: Exigences particulières pour les systèmes de commande électrique automatiques des brûleurs (IEC 60730-2-5:2013 , modifiée)

Automatische elektrische Regel- und Steuergeräte für den Hausgebrauch und ähnliche Anwendungen - Teil 2-5: Besondere Anforderungen an automatische elektrische Brenner-Steuerungs- und Überwachungssysteme (IEC 60730-2-5:2013 , modifiziert)

This European Standard was approved by CENELEC on 2014-11-17. 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.

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 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.

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


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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

This document (EN 60730-2-5:2015) consists of the text of IEC 60730-2-5:2013 prepared by IEC/TC 72 "Automatic electrical controls", together with the common modifications prepared by CLC/TC 72 "Automatic controls for household use".

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) | 2015-08-27 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2017-11-17 |

This document supersedes EN 60730-2-5:2002.

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 document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

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 60730-2-5:2013 was approved by CENELEC as a European Standard with agreed common modifications.

### COMMON MODIFICATIONS

**Foreword** **Delete**

### 2 Definitions

2.3.127 **Delete** Note 1 to entry.

### 6 Classification

6.11 **Replace** the text of the addition by the following:

The minimum value is 250 000 automatic cycles.

## 15 Manufacturing deviation and drift

15.7 Delete the note.

## 17 Endurance

17.16.102.1 a) **Delete** the note.

## Annexes

### Annex H

**H.26.10** **Delete** up to and included H.26.10.5.101.6 and **replace** by “Void”:

**H.26.11.103** **Delete** Note 2.

**Table H.21** In Note 7, **delete** the last sentence of the modification “In Canada and in the USA, the nominal cycle is 100 000.”.

**H.27.1.2.3** **Delete** the text: **“**The modification applies to the French text only.”

**Add** Annexes ZA, ZB, ZC and ZZ as follows.

## 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 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

**This annex of EN 60730-1:2011 is applicable except as follows:**

**Addition:**

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60068-2-6 | - | Environmental testing<br>Part 2-6: Tests - Test Fc: Vibration (sinusoidal) | EN 60068-2-6 | - |
| IEC 61643-11 | - | Low-voltage surge protective devices<br>Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods | EN 61643-11 | - |

# Annex ZB
(normative)

## Special national conditions

This annex of EN 60730-1:2011 is applicable.

There are no special conditions (snc) causing a deviation from this European Standard other than those listed in Annex ZB to EN 60730-1:2011.

# Annex ZC
(informative)

# A-deviations

This annex of EN 60730-1:2011 is applicable except as follows:

**Addition:**

| **Clause** | **Deviation** |
|---|---|
| **Annex H** | **Austria**: Bundesgesetzblatt 19. Verordnung: Luftreinhalteverordnung 1989 (LVR-K 1989, air clean keeping decree for vessel equipment), last valid modification Nov. 4, 1997 by 324. Verordnung: Änderung der Luftreinhalteverordnung für Kesselanlagen 1989 (modification of LVR-K 1989, air clean keeping decree for vessel equipment):<br><br>§ 8(1) Werden Dampfkesselanlagen mit Brennern ausgerüstet, die in den Anwendungsbereich nachstehender ÖNORMen fallen, so sind diese ÖNORMen verbindlich anzuwenden:<br><br>(Whenever steam boilers are equipped with burners concerned by the following standards, these standards have to be applied:)<br><br>- ÖNORM EN 267/1991: Atomizing oil burners of monobloc type-Testing;<br><br>- ÖNORM M 7540-1/1994: Atomizing oil burners of monobloc type for the heating fuels "fuel oil light", "fuel oil medium" and "fuel oil heavy" - Terminology, requirements, testing, marking of conformty;<br><br>- ÖNORM M 7445/1984: Forced-air gasburners;<br><br>- ÖNORM M 7445/1990: Fan-assisted gas burners with low NOx-emission; nitrogen oxide measurement." |

# Annex ZZ
(informative)

## Coverage of Essential Requirements of EU Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Article 1 of Annex I of the EC Directive EMC (2004/108/EC).

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

IEC 60730-2-5

Edition 4.0 2013-11

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Automatic electrical controls –
## Part 2-5: Particular requirements for automatic electrical burner control systems

**Dispositifs de commande électrique automatiques –**
**Partie 2-5: Exigences particulières pour les systèmes de commande électrique automatiques des brûleurs**

IEC 60730-2-5:2013

## About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

## About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

**Useful links:**

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,…).
It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

---

## A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

## A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

**Liens utiles:**

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,…).
Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

IEC 60730-2-5

Edition 4.0 2013-11

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Automatic electrical controls – Part 2-5: Particular requirements for automatic electrical burner control systems

## Dispositifs de commande électrique automatiques – Partie 2-5: Exigences particulières pour les systèmes de commande électrique automatiques des brûleurs

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE XA
CODE PRIX

ICS 97.120

ISBN 978-2-8322-1171-7

# CONTENTS

FOREWORD ..... 4
1 Scope and normative references ..... 6
2 Definitions ..... 7
3 General requirements ..... 14
4 General notes on tests ..... 14
5 Rating ..... 15
6 Classification ..... 15
7 Information ..... 17
8 Protection against electric shock ..... 20
9 Provision for protective earthing ..... 20
10 Terminals and terminations ..... 20
11 Constructional requirements ..... 21
12 Moisture and dust resistance ..... 27
13 Electric strength and insulation resistance ..... 27
14 Heating ..... 28
15 Manufacturing deviation and drift ..... 29
16 Environmental stress ..... 30
17 Endurance ..... 31
18 Mechanical strength ..... 34
19 Threaded parts and connections ..... 34
20 Creepage distances, clearances and distances through solid insulation ..... 34
21 Resistance to heat, fire and tracking ..... 34
22 Resistance to corrosion ..... 34
23 Electromagnetic compatibility (EMC) requirements – emission ..... 34
24 Components ..... 34
25 Normal operation ..... 34
26 Electromagnetic compatibility (EMC) requirements – immunity ..... 34
27 Abnormal operation ..... 35
28 Guidance on the use of electronic disconnection ..... 35
Annex H (normative) Requirements for electronic controls ..... 36
Annex J (normative) Requirements for controls using thermistors ..... 49
Annex BB (informative) Functional characteristics of burner control systems to be specified by the relevant appliance standards, as applicable ..... 50
Bibliography ..... 51

Figure 101 – Pulse spark generation ..... 20
Figure H.2 (H.26.5.4.2 of the previous version) – Voltage variation test ..... 39

Table 1 (7.2 of the previous edition) *(1 of 2)* ..... 18
Table H.1 (7.2 of the previous edition) ..... 36
Table H.101 – Voltage dips, short interruptions and voltage variations ..... 37

Table H.13 (Table H.26.5.4.2 of the previous edition) – Timing of short-term supply voltage variations ..... 38
Table H.102 – Test level for electrical fast transient burst ..... 41
Table H.103 – Peak voltages ..... 42
Table H.104 – Test levels for electrostatic discharge ..... 43
Table H.105 – Test levels for conducted disturbances on mains and I/O lines ..... 44
Table H.18 (Table H.26.12.3.1 of the previous edition) – Immunity to radiated electromagnetic fields ..... 45
Table BB.1 – Functional characteristics of burner control systems to be specified by the relevant appliance standards, as applicable ..... 50

INTERNATIONAL ELECTROTECHNICAL COMMISSION

# AUTOMATIC ELECTRICAL CONTROLS –

# Part 2-5: Particular requirements for automatic electrical burner control systems

## 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.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
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.

International Standard IEC 60730-2-5 has been prepared by IEC technical committee 72: Automatic electrical controls.

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

| FDIS | Report on voting |
|---|---|
| 72/922/FDIS | 72/929/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part 2-5 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the fourth edition (2010) of that publication. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

The title of IEC 60730-2-5 Ed. 4 has been updated to the title of IEC 60730-1 Ed. 5.0. However, IEC 60730-2-5 Ed. 4.0 has not been updated in accordance with the technical requirements in IEC 60730-1 Ed. 5.0.

This part 2-5 supplements or modifies the corresponding clauses in IEC 60730-1 so as to convert that publication into the IEC standard: Safety requirements for automatic electrical burner control systems.

Where this part 2-5 states "addition", "modification", or "replacement", the relevant requirement, test specification or explanatory matter in Part 1 should be adapted accordingly.

Where no change is necessary, this part 2-5 indicates that the relevant clause or subclause applies.

In the development of a fully international standard, 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” notes regarding differing national practices are contained in the following subclauses:

– 2.3.127
– 6.11
– 15.7
– 17.16.102.1
– H.26.11.103
– Table H.21, Note 7

In this publication:

1) The following print types are used:
   – Requirements proper: in roman type;
   – *Test specifications: in italic type;*
   – Explanatory matter; in small roman type;
   – Words defined in Clause 2: **bold**.
2) Subclauses, notes, tables and figures which are additional to those in Part 1 are numbered starting from 101, *additional* annexes are lettered AA, BB, etc.

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

The committee has decided that the contents of this publication 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
- amended.

# AUTOMATIC ELECTRICAL CONTROLS –

# Part 2-5: Particular requirements for automatic electrical burner control systems

## 1 Scope and normative references

This clause of Part 1 is applicable except as follows:

**1.1** *Replacement:*

This part of IEC 60730 applies to automatic electrical burner control systems for the **automatic control** of burners for oil, gas, coal or other combustibles for household and similar use including heating, air conditioning and similar use.

This part 2-5 is applicable to a complete burner control system and to a separate **programming unit**. This part 2-5 is also applicable to a separate electronic high-voltage **ignition source** and to a separate **flame detector**.

NOTE Separate **ignition devices** (electrodes, **pilot** burners, etc.) are not covered by this part 2-5 unless they are submitted as part of a burner control system. Requirements for separate ignition transformers are contained in IEC 60989.

Throughout this part 2-5, where it can be used unambiguously, the word "system" means "burner control system" and "systems" means "burner control systems".

Systems utilizing thermoelectric flame supervision are not covered by this part 2-5.

**1.1.1** This part 2-5 applies to the inherent safety, to the manufacturer's declared **operating values**, **operating times** and **operating sequences** where such are associated with burner safety and to the testing of automatic electrical burner control systems used in, on, or in association with, burners.

NOTE Requirements for specific **operating values**, **operating times** and **operating sequences** are given in the standards for appliances and equipment.

Systems for equipment not intended for normal household use, but which nevertheless may be used by the public, such as equipment intended to be used by laymen in shops, in light industry and on farms, are within the scope of this part 2-5.

This part 2-5 applies to systems using NTC or PTC thermistors, additional requirements for which are contained in Annex J.

This part 2-5 does not apply to systems designed exclusively for industrial applications.

**1.1.2** This part 2-5 applies to **manual controls** when such are electrically and/or mechanically integral with **automatic controls**.

NOTE Requirements for manual switches not forming part of an **automatic control** are contained in IEC 61058-1.

Throughout this part 2-5, the word "equipment" means "appliance and equipment".

**1.2** *Replacement:*

This part 2-5 applies to systems with a rated voltage not exceeding 660 V and with a rated current not exceeding 63 A.

**1.3** *Replacement:*

This part 2-5 does not 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 household equipment standard or as determined by the manufacturer applies.

NOTE This part 2-5 includes systems responsive to flame properties.

**1.4** *Replacement:*

This part 2-5 applies also to systems incorporating **electronic devices**, requirements for which are contained in Annex H.

**1.5 Normative references**

This clause of Part 1 is applicable except as follows:

*Addition:*

IEC 60068-2-6, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 61643-11, *Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and test methods*