IEC 60730-2-5

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Automatic electrical controls for household and similar use – Part 2-5: Particular requirements for automatic electrical burner control systems

Dispositifs de commande électrique automatiques à usage domestique et analogue – Partie 2-5: Règles particulières pour les systèmes de commande électrique automatiques des brûleurs

IEC 60730-2-5:2000+A1:2004+A2:2008

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AUTOMATIC ELECTRICAL CONTROLS FOR HOUSEHOLD AND SIMILAR USE –

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

This consolidated version of IEC 60730-2-5 consists of the third edition (2000) [documents 72/430/FDIS and 72/447/RVD], its amendment 1 (2004) [documents 72/632A/FDIS and 72/642/RVD] and its amendment 2 (2008) [documents 72/770/FDIS and 72/773/RVD].

The amendment 2 is based on 60730-2-5, Edition 3 (2000) and its Amendment 1 (2004).

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 3.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

This Part 2-5 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the third edition (1999) and Amendment 1 (2003) and Amendment 2 (2007) of that publication. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

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.26.10
– H.26.11.103
– Table H.27.1, Note 7
– H.27.1.3

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.
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.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result 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 FOR HOUSEHOLD AND SIMILAR USE –

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.

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.

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.

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.

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 60068-2-6:1995, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60127-1:2006, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60947-5-1:2003, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 60989:1991, *Separating transformers, autotransformers, variable transformers and reactors*

2 Definitions

This clause of part 1 is applicable except as follows:

2.2 Definitions of types of control according to purpose

Additional definitions:

2.2.101
burner control system
system which monitors the operation of fuel burners. It includes a programming unit, a flame detector and may include an ignition source and/or ignition device

The various functions of the system may be in one or more housings.

2.2.102
flame detector
device which provides the programming unit with a signal indicating the presence or absence of flame

It includes the flame sensor and may include an amplifier and a relay for signal transmission. The amplifier and relay may be in its own housing or combined with the programming unit.

2.2.103
flame sensor
device which senses the flame and provides the input signal to the flame detector amplifier

Examples are optical sensors and flame electrodes (flame rods).

2.2.104
ignition source
electrical or electronic system component which provides energy to an ignition device

It may be separated from or incorporated in the programming unit. Examples are ignition transformers and electronic high-voltage generators.

2.2.105
ignition device
device mounted on or adjacent to a burner for igniting fuel at the burner

Examples are pilot burners, spark electrodes and hot surface igniters.

2.2.106
programming unit
device which controls the burner operation in a declared sequence from start-up to shutdown within declared timings and in response to signals from regulating, limiting and monitoring devices

2.2.107
multitry system
system that allows more than one valve open period during its declared operating sequence

2.3 Definitions relating to the function of controls

2.3.30
T_{max}

Replace "switch head" *by* "burner control system."

Additional definitions:

2.3.101
automatic recycle
automatic repetition of the start-up procedure, without manual intervention, following loss of the supervised flame and subsequent fuel supply shutoff

2.3.102
controlled shutdown
de-energization of the fuel flow means as a result of the opening of a control loop by a control device such as a thermostat. The system returns to the start position

Controlled shutdown may include additional actions by the system.