



UL 60730-2-5

STANDARD FOR SAFETY

Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems

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UL Standard for Safety for Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems, UL 60730-2-5

Third Edition, Dated January 30, 2014

Summary of Topics

The revision of the preface of the Third Edition of UL 60730-2-5, the CSA Group and UL (binational) Safety Standard of Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems, is an editorial update. No changes in requirements are involved.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

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ANSI Z21.20-2014 • CAN/CSA-C22.2 No. 60730-2-5-14
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(IEC 60730-2-5:2000+A1:2004+A2:2008, MOD)



Underwriters Laboratories Inc.
UL 60730-2-5
Third Edition

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January 30, 2014

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This national standard is based on IEC 60730-2-5, edition 3.2 (2009), which is based on the third edition (2000), its amendment 1 (2004), and its amendment 2 (2008).



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Commitment for Amendments

This standard is issued jointly by the Canadian Standards Association (operating as “CSA Group”) and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to CSA Group or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of CSA Group and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue.

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Preface

This is the harmonized CSA Group and UL standard for particular requirements for Automatic Electrical Burner Control Systems. It is the first edition ANSI Z21.20 • CAN/CSA-C22.2 No. 60730-2-5 and the third edition of UL 60730-2-5. This edition of ANSI Z21.20 • CAN/CSA-C22.2 No. 60730-2-5 replaces the previous edition published in 2007 as ANSI Z21.20 • CSA C22.2 No. 199, *Automatic Electrical Controls for Household and Similar Use Part 2: Particular Requirements for Automatic Burner Ignition Systems and Components*. This edition of ANSI Z21.20 • CAN/CSA-C22.2 No. 60730-2-5 also replaces CAN/CSA-E730-2-5-94, *Automatic electrical controls for household and similar use – Part 2: Particular requirements for automatic electrical burner control systems* (adopted IEC 730-2-5:1990). This edition of UL 60730-2-5 supersedes the sixth edition of UL 372, *Automatic Electrical Controls for Household and Similar Use – Part 2-5: Particular Requirements for Burner Ignition Systems and Components*, and the fifth edition of UL 372, *Primary Safety Controls for Gas- and Oil-Fired Appliances*. This Standard is based on the Standard for Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems, IEC Publication 60730-2-5, edition 3.2: 2009. This harmonized standard has been jointly revised on September 30, 2019. For this purpose, CSA Group and UL are issuing revision pages dated September 30, 2019.

In Canada, for general information on the Standards of the Canadian Electrical Code, Part II, see the preface of CAN/CSA-C22.2 No. 0. In Canada, this Standard applies to equipment that is intended to be installed or used in accordance with CSA C22.1, the *Canadian Electrical Code, Part I*.

This harmonized standard was prepared by CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of Industry Associations, are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This Standard was reviewed by the CSA Joint Technical Subcommittee on Standards for Automatic Gas Controls, under the jurisdiction of the Committee on Performance and Installation of Gas Burning Appliances and Related Accessories, Z21/83, and the CSA Technical Committee on Gas Appliances and Related Accessories; it was also reviewed by the CSA Subcommittee on Automatic Controls for Household Use under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety. It has been formally approved by the Committee on Performance and Installation of Gas Burning Appliances, Z21/83, the CSA Technical Committee on Gas Appliances and Related Accessories, the Interprovincial Gas Advisory Council, and the CSA Technical Committee on Consumer and Commercial Products.

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of harmonization

This standard adopts the IEC text with national differences. This standard is published as an equivalent standard for CSA Group and UL. An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for

example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

All national differences from the IEC text are included in the CSA Group and UL versions of the standard. While the technical content is the same in each organization's version, the format and presentation may differ.

It is the intent and objective of the U.S. and Canadian SDOs and associated industries to avoid the use of single country deviations to the greatest extent possible and practical. Single country deviations should only be used as a last resort when all other options have been explored. Further this includes a commitment to review and reconsider any and all single country revisions at each revision cycle with the intent of finding solutions to remove the single country deviation in the spirit of binational harmonization. A list of work item requests will be recorded between revision cycles and by default removal of all single country deviations will be on the list for the next revision cycle.

Reasons for differences from IEC

National Differences from the IEC are being added in order to address regulatory and safety situations present in Canada and the U.S.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one literal interpretation has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

IEC Copyright

For CSA Group, the text, figures, and tables of International Electrotechnical Commission Publication 60730-2-5, Standard for Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems, edition 3.2, copyright 2009, are used in this standard with the consent of the International Electrotechnical Commission. The IEC Foreword is not a part of the requirements of this Standard but is included for information purposes only.

These materials are subject to copyright claims of IEC and UL. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of UL. All requests pertaining to the Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems IEC 60730-2-5 Standard should be submitted to UL.

NATIONAL DIFFERENCES

GENERAL

National Differences from the text of International Electrotechnical Commission (IEC) Publication 60730-2-5, Automatic Electrical Controls for Household and Similar Use, Part 2-5: Particular Requirements for Automatic Electrical Burner Control Systems copyright 2009 are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF 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.

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.

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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 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
- 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 SMALLER 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.

1.101DV DE Modification of the 7th paragraph after item (9) of the paragraph starting with "This Part 2-5 is intended to be used" by replacing it with the following paragraph:

This Part 2-5 is intended to be used in conjunction with UL 60730-1, edition 4 or CAN/CSA-E60730-1, edition 4. Requirements of this Part 2 Standard supplement or modify the requirements of UL 60730-1 and CAN/CSA-E60730-1. Where a particular sub-clause of UL 60730-1 and CAN/CSA-E60730-1 is not mentioned in this Part 2 Standard, that sub-clause applies as far as reasonable.

1.102DV DE Modification of Item (1) of the paragraph starting with, "In this publication"

– words in SMALL ROMAN CAPITALS in the text are defined in clause 2.

1.103DV DE Addition to the part 2:

The numbering system in the standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

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.

1.1DV.1 D2 Modification of 1.1 by adding the following text to the note:

Separate ignition devices (electrodes, pilot burners, etc.) are covered by this part 2-5 (Refer to Annex DVKK).

Requirements for separate ignition transformers are covered in Standard for Specialty Transformers, UL 506, and CSA C22.2 No. 13, Standard for Luminous Tube Signs, Oil and Gas Burner Ignition Equipment, Cold-Cathode Interior Lighting.

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.

1.1DV.2 D2 Modification of 1.1 by adding the following text:

Devices such as thermoelectric flame supervision, pilot burners, oxygen depletion safety shut-off systems (ODS), thermoelectric safety shut-off devices, fast-acting thermocouples, and other components are covered in Annex DVKK.

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.