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Date: 16 January 2025

Origin: International

Latest date for receipt of comments: 5 February 2025

Project No. 2021/03119

Responsible committee: CPL/72 Electrical control devices for household equipment and appliances

Interested committees:

Title: BS EN IEC 60730-2-25 Automatic electrical controls

Part 2-25: Particular requirements for current sensing controls

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



72/1475/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:
IEC 60730-2-25 ED1

DATE OF CIRCULATION:
2025-01-10

CLOSING DATE FOR COMMENTS:
2025-03-07

SUPERSEDES DOCUMENTS:
72/1245/NP, 72/1288/RVN

IEC TC 72 : AUTOMATIC ELECTRICAL CONTROLS		
SECRETARIAT: United States of America		SECRETARY: Ms Grace Roh
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 23,SC 23E		HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED: Safety		

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Automatic electrical controls -Part 2-25: Particular requirements for current sensing controls

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Automatic electrical controls –

Part 2-25: Particular requirements for current sensing controls

FOREWORD

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This version XXXX

International Standard IEC 60730-2-25 has been prepared by technical committee TC 72: Automatic electrical controls.

This edition includes alignment with the text of 60730-1 sixth edition.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-25 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of sixth edition (2022) of that publication. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

This Part 2-25 supplements or modifies the corresponding clauses in IEC 60730-1 so as to convert that publication into the IEC standard: Particular requirements for current sensing controls.

Where this Part 2-25 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 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.

This part of International Standard IEC 60730 has been prepared by IEC technical committee 72: Automatic electrical controls.

In this publication:

1) The following print types are used:

- Requirements proper: in roman type;
- *Test specifications: in italic type;*
- Notes; 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, published under the title *Automatic electrical controls* can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment 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.

A bilingual version of this publication may be issued at a later date.

AUTOMATIC ELECTRICAL CONTROLS -

Part 2-25: Particular requirements for current sensing controls

1 Scope

This clause of Part 1 is replaced by the following:

This document applies to automatic thermo-electro-mechanical **current sensing controls** intended to be incorporated or integrated into appliances. These products are designed to limit the load current below a certain value to prevent a potential hazard due to misapplication or overloading condition during user operation of the appliance. These products are:

- for use in, on, or in association with appliances for household and similar use that are not in fixed installation;

EXAMPLE 101 Controls for motor-operated appliances within the scope of IEC 60335 series.

- for assembly within the scope of IEC 60884-2-7;
- for equipment that is used by the public, such as equipment intended to be used in shops, offices, hospitals, farms, and the like;

NOTE 101 Throughout this document, the word "equipment" means "appliance and equipment".

EXAMPLE 102 Controls for commercial catering.

- used as supplementary overcurrent protection in appliances;

NOTE 103 These devices are not intended to replace fuses, circuit-breakers, etc.

- used in, on, or in association with equipment that use electricity.

This document applies to

- the inherent safety of automatic thermo-electro-mechanical **current sensing controls**, and
- functional safety of automatic thermo-electro-mechanical **current sensing controls**,
- the operating values, operating times, and operating sequences where such are associated with equipment safety.
- Thermo-electro-mechanical current sensing controls that incorporate manually actuated switches as part of its construction.

NOTE 104 Requirements for manually actuated mechanical switches not forming part of an automatic control are contained in IEC 61058 series. However mechanical switches that are part of the overload protection function are subjected to additional requirements for functional safety in conjunction with this document, specified in Annex H.

This document specifies the requirements for construction, operation and testing of incorporated or integrated thermo-electro-mechanical **current sensing controls** used in, on, or in association with an equipment.

NOTE 105 An example of such controls is **current sensing cut-out control**.

This document does not

- apply to electronic controls.
- 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 equipment standard or as determined by the manufacturer shall apply.

- apply to current sensing devices such as ground-fault circuit interrupters (GFCI), arc-fault circuit interrupters (AFCI), circuit breakers (CB), residual-current devices (RCDs).

Compared with fuses or circuit-breakers, **current sensing cut-out controls** have different functions in current protection, and they can't replace each other. Fuses are covered by IEC 60127 series or IEC 60269 series. Circuit breakers intended to provide protection against overcurrents are covered by IEC 60898-1.

NOTE 106 **Current sensing cut-out controls** are typically used to address overload situations that occur during user operation, rather than for the protection against systemic faults.

For more information about guide to the application of **current sensing cut-out controls** see Annex AA.

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

IEC 61058-1-1:2016, *Switches for appliances – Part 1-1: Requirements for mechanical switches*

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

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

3.1.1

rated voltage, current, frequency or wattage

Add the following note:

Note 101 to entry: See BB.1.2.

3.2 Definitions of types of control according to purpose

3.2.16

protective control

Add the following note:

Note 101 to entry: In general, a current sensing cut-out control is a protective control.

Addition definitions:

3.2.101

current sensing control

automatic control in which initiation is by the change of current and response is by the current and temperature characteristic of the bimetal or similar sensing element

3.2.101.1

current sensing cut-out control

current sensing control intended to keep a current below one particular value during abnormal operating conditions and which has no provision for setting by the user

Note 1 to entry: A current sensing cut-out control will provide a type 2 action.

3.3 Definitions relating to the function of controls

Addition definitions:

3.3.101

time-current operating characteristic (tripping characteristic)

a product characteristic with corresponding relation between input current and tripping time

Note 1 to entry: Unless otherwise specified, tripping time is the time interval from the instant at which the associated **tripping current** begins to flow in the **current sensing control** to the instant when this current is interrupted, measured at the ambient temperature conditions specified by the manufacturer. This may include room ambient temperature as specified in 4.3.1 or other ambient conditions based on the specific application. For controls incorporated into devices, the micro-environment temperature may vary and can be higher than the surrounding ambient temperature. Adjustments in **tripping time** may occur accordingly due to changes in the bimetal characteristic with temperature.

3.3.102

time-current zone (tripping zone)

a method of expressing **time-current operating characteristics** by drawing

3.3.105

tripping current

$\eta_i I_R$

the specified value of current which causes a **current sensing control** to operate within a specified time (conventional time) less than 1h

Note 1 to entry: η_i represents the magnification relationship with I_R .

Note 2 to entry: See BB.1.2.

3.4 Definitions relating to disconnection and interruption

Addition definitions:

3.4.101

current interrupting rating

the highest current, at rated voltage, that a **current sensing control** is intended to interrupt under standard test conditions

Note 1 to entry: The current **interrupting rating** is distinct from the maximum limiting current, under which the control is able to maintain normal functioning throughout its designed lifetime.

Note 2 to entry: It is recommended that the current **interrupting rating** be determined in conjunction with the I^2t characteristics (see Annex CC).

3.13 Miscellaneous definitions

Addition definitions:

3.13.101

I^2t

Joule integral

the integral of the square of the current over a given time interval:

$$I^2t = \int_{t_0}^{t_1} i^2 dt$$

Note 1 to entry: The energy in joules liberated in one ohm of resistance in a circuit controlled by a **current sensing cut-out control** is equal to the value of the operating I^2t expressed in $A^2 \cdot s$.