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Automatic electrical controls –
Part 2-24: Particular requirements for displacement electrical controls

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FOREWORD

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IEC 60730-2-24 has been prepared by IEC technical committee 72: Automatic electrical controls. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
72/1506/CDV	72/1525/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This part 2-24 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the sixth edition of that standard (2022). Consideration may be given to future editions of, or amendments to, IEC 60730-1.

This part 2-24 supplements or modifies the corresponding clauses in IEC 60730-1, so as to convert that publication into the IEC standard: Particular requirements for displacement electrical controls.

Where this part 2-24 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, part 2-24 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.

In this publication:

– The following print types are used:
  - requirements proper: in roman type;
  - test specifications: *in italic type*;
  - explanatory matter: in smaller roman type.
  - Defined terms: **bold type**.
– Subclauses, notes or items 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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

1 Scope

This clause of Part 1 is replaced by the following:

This part of IEC 60730 applies to automatic **displacement electrical controls**

– for use in, on, or in association with appliances for household and similar use;

NOTE 1 Through this document, the word "**control**" means "**displacement electrical control**".

EXAMPLE 1 **Displacement electrical controls** used in electrical pressure cookers with gross volume up to 25 l, with working pressure over 4 kPa and less than 150 kPa.

– that are AC or DC powered **controls** with a rated voltage not exceeding 690 V AC or 600 V DC;
– used in, on, or in association with equipment that use electricity;
– that are mechanically or electrically operated, responsive to change of position of **point of action**.

NOTE 2 Requirements for manual switches not forming part of an automatic **control** are covered in IEC 61058-1-1.

This document applies to

– inherent safety of automatic electro-mechanical **displacement electrical controls**;
– functional safety of automatic electro-mechanical **displacement electrical controls**;
– the operating values, operating times, and operating sequences where such are associated with equipment safety;
– **displacement electrical controls** having temperature sensing element(s), in which cases additional requirements can be considered to be necessary. Requirements for temperature sensing controls are included in IEC 60730-2-9.

This document specifies the requirements for construction, operation and testing of automatic **displacement electrical controls** used in, on, or in association with equipment.

This document does not

– apply to automatic 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 applies.

NOTE 3 For more information about guidance to the application of **displacement electrical controls**, see Annex AA.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

3.2 Definitions of types of control according to purpose

Additional definitions:

3.2.101
displacement electrical control
automatic control where the displacement of **point of action** occurs through the displacement of the container due to pressure change

Note 1 to entry: The container is an inner pot in the case of rice cooker.

Note 2 to entry: The **displacement electrical control** is considered an operating control with a **type 2 action** and normally a protective control is provided on the end product to prevent a hazard, therefore there is no need to verify the robustness of the self-locking mechanism.

3.2.102
position limiter
displacement electrical control which is intended to keep a position below one particular value during normal operating conditions and which may have provision for setting by the end-product manufacturer

Note 1 to entry: A **position limiter** can be manual reset type.

3.2.103
position regulator
cycling **displacement electrical control**, which is intended to keep a position between two particular values under normal operating conditions and which may have provision for setting by the end-product manufacturer

3.4 Definitions relating to disconnection and interruption

Additional definitions:

3.4.101
free position
$\boldsymbol{P_f}$
initial state of the **point of action** of the **displacement electrical control**

Note 1 to entry: P_f is indicated as the position of 0 displacement in Figure 101.

Note 2 to entry: In general, **free position** is at located position.

3.4.102
disconnection position
$\boldsymbol{P_d}$
position where the contact is disconnected from the circuit by the action mechanism under the external force

Note 1 to entry: P_d is indicated in Figure 101.

3.4.103
self-locking position
$\boldsymbol{P_s}$
position in which the self-locking mechanism just operates while the displacement can continue to increase when the contact is disconnected