

01-avgust-1995

Automatic electrical controls for household and similar use - Part 2: Particular requirements for thermal motor protectors for motor-compressors of hermetic and semi hermetic type (IEC 730-2-4:1990, modified)

Automatic electrical controls for household and similar use -- Part 2-4: Particular requirements for thermal motor protectors for motor-compressors of hermetic and semi-hermetic type

Automatische elektrische Regel- und Steuergeräte für den Hausgebrauch und ähnliche Anwendungen -- Teil 2-4: Besondere Anforderungen für thermische Motorschutzeinrichtungen für hermetisch und halbhermetisch gekapselte Motorverdichter

[SIST EN 60730-2-4:1995](https://standards.itih.ai/catalog/standards/sist/9e33ac79-fe37-4e94-ab3b-100000000000/sist-en-60730-2-4-1995)

Dispositifs de commande électrique automatiques à usage domestique et analogue -- Partie 2-4: Règles particulières pour les protecteurs thermiques de moteurs pour motocompresseurs de type hermétique et semi-hermétique

Ta slovenski standard je istoveten z: EN 60730-2-4:1993

ICS:

97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use
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SIST EN 60730-2-4:1995

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60730-2-4

May 1993

UDC 64.06-83:681.5:621.313.13:621.51-213.34

Descriptors: Electrical household appliance, control, automatic control, thermal protection, electric motor, motor-compressor, test

English version

**Automatic electrical controls for household and similar use
Part 2: Particular requirements for thermal motor protectors
for motor-compressors of hermetic and semi-hermetic type**
(IEC 730-2-4:1990, modified)

Dispositifs de commande électrique
automatiques à usage domestique et
analogue

Deuxième partie: Règles particulières
pour les protecteurs thermiques de
moteurs pour motocompresseurs de
type hermétique et semi-hermétique
(CEI 730-2-4:1990, modifiée)

Automatische elektrische Regel- und
Steuergeräte für den Hausgebrauch
und ähnliche Anwendungen

Teil 2: Besondere Anforderungen für
thermisch wirkende Motorschutz-
einrichtungen für hermetisch und halb-
hermetisch gekapselte Motorverdichter
(IEC 730-2-4:1990, modifiziert)

[SIST EN 60730-2-4:1995](https://standards.iteh.ai/catalog/standards/sist/9e33ac79-fe37-4e94-ab3b-9050521b-7105/sist-en-60730-2-4-1995)

[https://standards.iteh.ai/catalog/standards/sist/9e33ac79-fe37-4e94-ab3b-](https://standards.iteh.ai/catalog/standards/sist/9e33ac79-fe37-4e94-ab3b-9050521b-7105/sist-en-60730-2-4-1995)

This European Standard was approved by CENELEC on 9 March 1993. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The International Standard IEC 730-2-4:1990, together with common modifications prepared by CENELEC Technical Committee TC 72: Automatic controls for household use, was submitted to the CENELEC formal vote in September 1992.

The text of the draft was approved by CENELEC as EN 60730-2-4 on 9 March 1993.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1994-07-01
- latest date of withdrawal of
conflicting standards (dow) 1997-07-01

For products which have complied with the relevant national standard before 1997-07-01 as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2001-07-01.

This document supplements or modifies the corresponding clauses of IEC 730-2-4:1990, so as to convert it into the European Standard EN 60730-2-4.

This Part 2 has to be used in conjunction with EN 60730-1:1991, Automatic electrical controls for household and similar use - Part 1: General requirements, and its amendments A1:1991 and A11:1991.

Where a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

Subclauses which are in addition to those in IEC 730-1 are numbered 101, 102, etc.
Additional CENELEC annexes are numbered ZA, ZB etc.

There are no special national conditions (snc) causing a deviation from this European Standard other than those listed in annex ZA of EN 60730-1.

Where reference is made to other international or harmonized standards, the edition of that standard quoted in annex ZB (normative) is applicable.

NOTE: In this document, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type;
- instructions for modification of the reference document: **in bold type.**

Endorsement notice

The text of the International Standard IEC 730-2-4:1990 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Foreword **Delete.**

Preface **Delete.**

1 Scope

1.1 **Replace** "IEC Publication 730-1" by "EN 60730-1".

Replace "IEC Publication 335-2-34" by "HD 277 S1".

1.1.1 **Replace** the second paragraph by:

This standard applies to thermal motor protectors for motor compressors within the scope of EN 60335-1. EN 60730-2-1 does not apply to such motor protectors.

7 Information

Add the following additional items to the replacement of Table 7.2.

3. Rated voltage

5. Rated current

22. Temperature limits of the switch head

23. Temperature limits of mounting surfaces

27. Number of automatic cycles

NOTE: Attention is drawn, however, to subclause 19.3, locked rotor test, of HD 277 S1, in which a minimum operation of 360 h, with a minimum of 2 000 cycles, is prescribed.

37. Maximum rate of operation

38. Values of overshoot of activating quantity which are necessary for correct action or which can be used for test purposes

12 Moisture resistance

12.2 **Delete** the addition.

14 Heating

Replace "IEC Publication 335-2-34 or the appropriate IEC standard" by "HD 277 S1 or the appropriate standard".

COMMON MODIFICATIONS

17 Endurance

Replace by:

This clause of Part 1 is replaced by:

This clause contains requirements for an endurance test on the Thermal Motor Protector as a component i.e., not installed in a motor.

The test of this Standard is not intended to replace the Locked Rotor Test given in HD 277 S1, subclause 19.3 "Operation under Locked Rotor Conditions".

17.1 *General Requirements*

17.1.1 Thermal Motor Protectors shall withstand the mechanical and thermal stress that occurs in normal use.

17.1.2 *Compliance is checked by the tests of 17.1.3.*

17.1.3 *Test sequence and conditions*

17.1.3.1 *The sequence of tests is:*

- *a test of automatic action at accelerated rate specified in 17.6.*

17.1.3.2 *The electrical, thermal and mechanical conditions of test shall be those specified in 17.2, 17.3 and 17.4. The general test requirements are given in 17.6 and 17.7.*

17.1.3.3 *Tests for a manual action forming part of an automatic action are specified in the subclause appropriate to the automatic action.*

17.1.3.4 *After all the tests specified the samples shall meet the requirements of subclause 17.7.*

17.2 *Electrical conditions for the tests*

17.2.1 *Each circuit of the control shall be loaded according to the ratings declared by the manufacturer.*

17.2.2 *In those countries using an earthed neutral system, the enclosure shall be connected through a 3 A cartridge fuse to the protective conductor of the circuit, and for other than an earthed neutral system, the enclosure shall be connected through such a fuse to the live pole least likely to break down to earth.*

17.3 *Thermal conditions for the tests.*

17.3.1 *For parts of the control other than any temperature sensing element, the following shall apply:*

- *those parts which are accessible when the control is mounted in a declared manner shall be exposed to normal room temperature (see 4.1);*
- *the mounting surface of the control shall be maintained between $T_{s\ max}$ and either $T_{s\ max} + 5\ ^\circ\text{C}$ or 1,05 times $T_{s\ max}$ whichever is greater;*
- *the remainder of the switch head shall be maintained between T_{max} and either $T_{max} + 5\ ^\circ\text{C}$ or 1,05 times T_{max} whichever is greater. If T_{min} is less than $0\ ^\circ\text{C}$, additional tests shall be carried out with the switch head maintained between T_{min} and $T_{min} - 5\ ^\circ\text{C}$.*

COMMON MODIFICATIONS

17.4 *Manual and mechanical conditions for the test*

17.4.1 *The speed of movement of the actuating member shall be:*

45 ± 5 ° per s for rotary actions

25 ± 2,5 mm/s for linear actions.

17.4.2 *During the accelerated speed test of 17.4.1:*

- *care is taken to ensure that the test apparatus allows the actuating member to operate freely, so that it does not interfere with the normal action of the mechanism.*
- *for controls where the movement of the actuating member is limited a torque (for rotary controls), or a force (for non-rotary controls) shall be applied at the extreme of each movement to verify the strength of the limiting end stops.
The torque shall be either 5 times the normal actuating torque, or 1,0 Nm whichever is the smaller but with a minimum of 0,2 Nm. The force shall be either five times the normal actuating force, or 45 N, whichever is the smaller, but with a minimum of 9 N. If the normal actuating torque exceeds 1,0 Nm, or the normal actuating force exceeds 45 N, then the torque or force applied shall be the same as the normal actuating torque or force.*
- *for controls which are designed for actuation in one direction only, the test shall be in the designed direction provided that it is not possible to rotate the actuating member in the reverse direction using the torques specified above.*

17.4.3 *Additional lubrication shall not be applied during these tests.*

[SIST EN 60730-2-4:1995](https://standards.iteh.ai/SIST/EN-60730-2-4-1995)

17.5 *Electrical strength requirements*

17.5.1 *After all the tests of this clause, the requirements of 13.2 shall apply, with the exception that the samples are not subjected to the humidity treatment before the application of the test voltage. The test voltage shall be 75 % of the corresponding test voltages shown in that subclause.*

17.6 *Test of automatic action at accelerated rate*

17.6.1 *The electrical conditions shall be those specified in 17.2.*

17.6.2 *The thermal conditions shall be those specified in 17.3.*

17.6.3 *The method and rate of operation shall be agreed between the testing authority and the manufacturer provided that it causes no significant alterations to safety, life or purpose of the action.*

17.6.4 *The number of automatic cycles shall be that declared in 7.2.*

COMMON MODIFICATIONS

17.7 *Evaluation of compliance*

After the test of 17.6 the control shall be deemed to comply if:

- *all actions function automatically and manually in the intended and declared manner within the meaning of this standard.*
- *the requirements of 17.5 are still met.*
- *there is no evidence that any transient fault between live parts and earthed metal, accessible parts or actuating members has occurred.*

20 Creepage distances, clearances and distances through insulation

20.3 **Delete** up to 20.3.1 inclusive (already deleted in EN 60730-1).

Appendix D **Delete.**

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Annex ZA (normative)**Special national conditions (snc)**

There are no special national conditions (snc) causing a deviation from this European Standard other than those listed in annex ZA to EN 60730-1.

Annex ZB (normative)**Other international publications quoted in this standard
with the references of the relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE: When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
269-1	1986	Low-voltage fuses - Part 1: General requirements	EN 60269-1	1989
269-3	1987	Part 3: Supplementary requirements for use by unskilled persons (fuses mainly for household and similar applications)	-	-
335-2-34 (mod) A1	1984 1987	Safety of household and similar electrical appliances - Part 2: Particular requirements for motor-compressors	HD 277 S1 A1	1985 1989

NORME INTERNATIONALE INTERNATIONAL STANDARD

CEI IEC 730-2-4

Première édition First edition 1990-03

21 yr

Dispositifs de commande électrique automatiques à usage domestique et analogue

Deuxième partie:

Règles particulières pour les protecteurs thermiques de moteurs pour motocompresseurs de type hermétique et semi-hermétique

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Automatic electrical controls for household and similar use

Part 2:

Particular requirements for thermal motor protectors for motor-compressors of hermetic and semi-hermetic type



Numéro de référence Reference number CEI/IEC 730-2-4: 1990

Vertical handwritten text in Cyrillic script on the left margin, including words like 'регулятор', 'защита', 'герметичный', 'полухерметичный', 'компрессор', 'автоматический', 'электрический', 'контроль', 'для бытового и похожего применения'.

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