

STN	Automatické elektrické riadiace zariadenia Časť 2-22: Osobitné požiadavky na tepelné ochrany motorov	STN EN IEC 60730-2-22 36 1950
------------	---	---

Automatic electrical controls - Part 2-22: Particular requirements for thermal motor protectors

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/20

Obsahuje: EN IEC 60730-2-22:2020, IEC 60730-2-22:2014

Oznámením tejto normy sa od 14.02.2023 ruší
STN EN 60730-2-2 (36 1950) z februára 2003

STN EN 60730-2-4 (36 1950) z augusta 2008

130799

EUROPEAN STANDARD

EN IEC 60730-2-22

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2020

ICS 97.120

Supersedes EN 60730-2-2:2002, EN 60730-2-4:2007
and all of their amendments and corrigenda (if any)

English Version

**Automatic electrical controls - Part 2-22: Particular requirements
for thermal motor protectors
(IEC 60730-2-22:2014)**

Dispositifs de commande électrique automatiques - Partie
2-22: Exigences particulières pour les protecteurs
thermiques
(IEC 60730-2-22:2014)

Automatische elektrische Regel- und Steuergeräte - Teil 2-
22: Besondere Anforderungen an thermisch wirkende
Motorschutzeinrichtungen
(IEC 60730-2-22:2014)

This European Standard was approved by CENELEC on 2019-10-14. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 60730-2-22:2020 (E)**European foreword**

The text of document 72/941/FDIS, future edition 1 of IEC 60730-2-22, prepared by IEC/TC 72 "Automatic electrical controls" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60730-2-22:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-08-14
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-02-14

This document supersedes EN 60730-2-4:2007 and EN 60730-2-2:2002 and all of their amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60730-2-22:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60034-11:2004	NOTE	Harmonized as EN 60034-11:2004 (not modified)
IEC 60335 (series)	NOTE	Harmonized as EN 60335 (series)
IEC 60730 (series)	NOTE	Harmonized as EN IEC 60730 (series)
IEC 60730-2-9:2008	NOTE	Harmonized as EN 60730-2-9:2010 (modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60269-3	-	Low-voltage fuses - Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar applications) - Examples of standardized systems of fuses A to F	HD 60269-3	-
IEC 60335-2-34	2012	Household and similar electrical appliances - Safety - Part 2-34: Particular requirements for motor-compressors	EN 60335-2-34	2013



IEC 60730-2-22

Edition 1.0 2014-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Automatic electrical controls – Part 2-22: Particular requirements for thermal motor protectors

**Dispositifs de commande électrique automatiques –
Partie 2-22: Exigences particulières pour les protecteurs thermiques**



**THIS PUBLICATION IS COPYRIGHT PROTECTED****Copyright © 2014 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 60730-2-22

Edition 1.0 2014-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Automatic electrical controls – Part 2-22: Particular requirements for thermal motor protectors

**Dispositifs de commande électrique automatiques –
Partie 2-22: Exigences particulières pour les protecteurs thermiques**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

U

ICS 97.120

ISBN 978-2-8322-1577-7

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	4
1 Scope and normative references	7
2 Definitions	8
3 General requirements	8
4 General notes on tests	8
5 Rating.....	8
6 Classification.....	9
7 Information	10
8 Protection against electric shock	10
9 Provision for protective earthing	11
10 Terminals and terminations.....	11
11 Constructional requirements	11
12 Moisture and dust resistance	11
13 Electric strength and insulation resistance	12
14 Heating.....	12
15 Manufacturing deviation and drift.....	12
16 Environmental stress	12
17 Endurance.....	12
18 Mechanical strength	14
19 Threaded parts and connections.....	15
20 Creepage distances, clearances and distances through solid insulation.....	15
21 Resistance to heat, fire and tracking.....	15
22 Resistance to corrosion	15
23 Electromagnetic compatibility (EMC) requirements – emission.....	16
24 Components	16
25 Normal operation	16
26 Electromagnetic compatibility (EMC) requirements – immunity	16
27 Abnormal operation	16
28 Guidance on the use of electronic disconnection	16
Annexes	17
Annex E (normative) Circuit for measuring leakage current.....	17
Annex AA (informative) Endurance test for thermal motor protectors as components, i.e. not installed on a motor.....	18
Annex BB (informative) Testing of the combination of motor and thermal motor protectors (not applicable to sealed motor-compressors)	20
Annex CC (informative) Additional information on the application of motor protectors in pollution degree 1, 2 and 3.....	27
Bibliography.....	28
Figure 101 – Limited short circuit test scheme	14

Table 1	10
Table 101 – Limited short-circuit capacity (applicable in Canada and the USA).....	13
Table BB.101 – Additional required information and methods of providing information	21
Table BB.201 – Maximum allowable temperatures on running loads	23
Table BB.202 – Maximum continuous running overload current permitted by thermal protector as percentage of nominal full load motor current	23
Table BB.203 – Maximum allowable temperatures for locked rotor conditions	24
Table CC.1	27

INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUTOMATIC ELECTRICAL CONTROLS–**Part 2-22: Particular requirements for thermal motor protectors**

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.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 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 60730-22 has been prepared by IEC technical committee 72: Automatic electrical controls.

The text of this standard is based on the following documents:

FDIS	Report on voting
72/941/FDIS	72/950/RVD

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

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

This Part 2-22 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the fourth edition (2010) of that standard¹. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

This Part 2-22 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 thermal motor protectors.

Where this Part 2-22 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 2-22 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 practice are contained in the following subclauses:

- 7.2.6 (Canada, USA)
- 12.2 (Canada, Japan, USA)
- 17.101.2.1.2 (Canada, USA)
- 18.1.3.101.2 (Canada, USA)
- BB17.205.1.2 (Canada, USA)

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;
 - 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, under the general title *Automatic electrical controls for household and similar use*, can be found on the IEC website.

¹ A fifth edition of IEC 60730-1 was published in 2013.

The committee has decided that the contents of this publication 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.

AUTOMATIC ELECTRICAL CONTROLS–

Part 2-22: Particular requirements for thermal motor protectors

1 Scope and normative references

This clause of Part 1² is applicable except as follows:

1.1 Replacement:

This part of IEC 60730 applies to the partial evaluation of **thermal motor protectors** as defined in IEC 60730-1 for household and similar use, including heating, air conditioning and similar applications as well as for sealed (hermetic and semi-hermetic type) motor-compressors.

NOTE A **thermal motor protector** is considered an **integrated control** since its protective functionality is dependent on the correct mounting and fixing in or on a motor and which can only be fully tested in combination with the relevant motor. This dependency is illustrated by:

- the ability of the **thermal motor protector** to accurately and reliably sense the heat of the motor windings; thus, addressing the over-temperature protection due to motor overload conditions;
- the ability of the **thermal motor protector** to accurately and reliably sense the current due to motor locked-rotor conditions; thus, reducing the response time and not being adversely affected by heat-sink at the assembly spot in the application;
- the influence of the motor's electromagnetic field on the switch behaviour of the **thermal motor protector**; particularly, affecting the arc direction between the contacts resulting in uneven wear of the contact material and eventually leading to failure of operation.

Requirements concerning the testing of the combination of sealed (hermetic and semi-hermetic type) motor-compressors and **thermal motor protectors** are given in IEC 60335-2-34.

This standard applies to **thermal motor protectors** using NTC or PTC thermistors, additional requirements for which are contained in Annex J.

1.1.1 This standard applies to the inherent safety, to the **operating values**, **operating times**, and **operating sequences**, where such are associated with equipment safety, and to the testing of **thermal motor protectors** used in or on household or similar equipment as well as sealed (hermetic and semi-hermetic type) motor-compressors.

This standard applies to **thermal motor protectors** for appliances within, but not limited to, the scope of IEC 60335-1 and its Part 2's.

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

Thermal motor protectors 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 standard.

This standard does not apply to **thermal motor protectors** designed exclusively for industrial applications.

1.1.2 This standard does not apply to other means of motor protection.

² References to "Part 1" in this document pertain to the fourth edition of IEC 60730-1 published in 2010.

1.1.3 This standard does not apply to a manual device for opening the circuit.

1.5 Normative references

Addition:

IEC 60269-3, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) – Examples of standardized systems of fuses A to F*

IEC 60335-2-34:2012, *Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN