

# 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**



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IEC 60730-2-22

Edition 1.0 2014-05

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

ICS 97.120

ISBN 978-2-8322-1577-7

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## 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

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

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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 standard<sup>1</sup>. 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.

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<sup>1</sup> 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.

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## AUTOMATIC ELECTRICAL CONTROLS–

### Part 2-22: Particular requirements for thermal motor protectors

#### 1 Scope and normative references

This clause of Part 1<sup>2</sup> 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.

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<sup>2</sup> 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*

## **2 Definitions**

This clause of Part 1 is applicable except as follows:

### **2.6 Definitions of type of automatic action of a control according to test procedure**

*Additional definition:*

#### **2.6.101**

##### **type 3 action**

**automatic action** for which reliability of the operating characteristics can only be evaluated in terms of measurements made on the protected motor or motor compressor

### **2.13 Miscellaneous definitions**

*Additional definition:*

#### **2.13.101**

##### **sealed motor-compressor**

mechanical compressor (of a hermetic or semi-hermetic type) consisting of a compressor and a motor, both of which are enclosed in the same sealed housing with no external shaft seals, the motor operating in a refrigerant atmosphere

Note 1 to entry: The enclosure may be permanently sealed by welding or brazing (hermetic compressor) or may be sealed by one or more gasketed joints (semi-hermetic compressor).

## **3 General requirements**

This clause of Part 1 is applicable.

## **4 General notes on tests**

This clause of Part 1 is applicable except as follows:

**4.3.1.1** and **4.3.1.2** Not applicable.

**4.3.2** Not applicable.

## **5 Rating**

This clause of Part 1 is applicable.