



# SLOVENSKI STANDARD SIST EN 60691:1998

01-april-1998

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## Thermal-links - Requirements and application guide (IEC 60691:1993 + A1:1995)

Thermal-links - Requirements and application guide

Temperatursicherungen - Anforderungen und Anwendungshinweise

Protecteurs thermiques - Prescriptions et guide d'application

Ta slovenski standard je istoveten z: EN 60691:1995

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### ICS:

29.120.50	Xæ[ çæ ^ Ái ~ * æ { ^ áq \ [ ç} æ Á æ æ æ	Fuses and other overcurrent protection devices
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**SIST EN 60691:1998**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60691**

November 1995

ICS 29.120.50

Supersedes EN 60691:1987

Descriptors: Thermally controlled protective devices, requirements, classification, testing, definitions

English version

**Thermal-links**  
**Requirements and application guide**  
(IEC 691:1993 + A1:1995)

Protecteurs thermiques  
Prescriptions et guide d'application  
(CEI 691:1993 + A1:1995)

Temperatursicherungen  
Anforderungen und  
Anwendungshinweise  
(IEC 691:1993 + A1:1995)

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This European Standard was approved by CENELEC on 1995-09-20. 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 text of the International Standard IEC 691:1993 and its amendment 1:1995, prepared by SC 32C, Miniature fuses, of IEC TC 32, Fuses, was submitted to the formal vote and was approved by CENELEC as EN 60691 on 1995-09-20 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 1996-10-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 1996-10-01

Annexes designated "normative" are part of the body of the standard.  
In this standard, annexes A, B and ZA are normative.  
Annex ZA has been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 691:1993 and its amendment 1:1995 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA (normative)

Normative references to international publications  
with their corresponding 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 (including amendments).

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 65 (mod)	1985	Safety requirements for mains operated electronic and related apparatus for household and similar general use	EN 60065 <sup>1)</sup> + corr. November 1993	1993
IEC 68-2-3	1969	Basic environmental testing procedures Part 2: Tests Test Ca: Damp heat, steady state	HD 323.2.3 S2 <sup>2)</sup>	1987
IEC 68-2-20	1979	Test T: Soldering	HD 323.2.20 S3 <sup>3)</sup>	1988
IEC 68-2-21	1983	Test U: Robustness of termination integral mounting devices	HD 323.2.21 S3 <sup>4)</sup>	1988
IEC 112	1979	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
IEC 260	1968	Test enclosures of non-injection type for constant relative humidity	HD 98 S1	1977
IEC 335-2-3	1993	Safety of household and similar electrical appliances Part 2: Particular requirements for electric irons	EN 60335-2-3	1995
IEC 664-1	1992	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	-	-

1) EN 60065 includes A1:1987 + A2:1989 + A3:1992 to IEC 65, mod.

2) HD 323.2.3 S2 includes A1:1984 to IEC 68-2-3:1969.

3) HD 323.2.20 S3 includes A2:1987 to IEC 68-2-20:1979.

4) HD 323.2.21 S3 includes A1:1985 to IEC 68-2-21:1983.

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# NORME INTERNATIONALE INTERNATIONAL STANDARD

**CEI  
IEC  
691**

Deuxième édition  
Second edition  
1993-03

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**Protecteurs thermiques –  
Prescriptions et guide d'application**

**Thermal-links –  
Requirements and application guide**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

THERMAL LINKS –  
REQUIREMENTS AND APPLICATION GUIDE

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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. The 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 the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

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International Standard IEC 691 has been prepared by sub-committee 32C: Miniature fuses, of IEC technical committee 32: Fuses.

This second edition cancels and replaces the first edition published in 1980.

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

DIS	Report on Voting	Amendment to DIS	Report on Voting
32C(CO)66	32C(CO)67	32C(CO)68	32C(CO)69 and 69A

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

Annexes A and B form an integral part of this standard.

## INTRODUCTION

Thermal-links, defined as non-resettable devices functioning once only without refunctioning, are widely applied for the thermal protection of equipment in which, under fault conditions, one or more parts may reach hazardous temperatures.

As these devices have several aspects in common with miniature fuse-links and are used for obtaining a comparable degree of protection, this standard has endeavoured to lay down a number of basic requirements for such devices.

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## THERMAL-LINKS – REQUIREMENTS AND APPLICATION GUIDE

### 1 Scope and object

1.1 This International Standard is applicable to thermal-links, intended for incorporation in electrical appliances, electronic equipment and component parts thereof, normally intended for use indoors, in order to protect them against excessive temperatures under abnormal conditions.

#### NOTES

- 1 The equipment need not be designed to generate heat.
- 2 The effectiveness of the protection against excessive temperatures logically depends upon the position and method of mounting of the thermal-link, as well as upon the current which it is carrying.
- 3 Attention is drawn to the fact that the external creepage distances and clearances specified in table 3 may in some cases be smaller than those required by certain appliance or equipment standards. In such cases, additional means should be provided when a thermal-link is mounted in the equipment in order to adjust the creepage distances and clearances to the values required by the relevant equipment standard.

1.2 This standard may be applicable to thermal-links for use under other than indoor conditions, provided that the climatic and other circumstances in the immediate surroundings of such thermal-links are comparable with those in this standard.

1.3 This standard may be applicable to thermal-links in their simplest forms (e.g. melting strips or wires), provided that molten materials, expelled during function, cannot adversely interfere with the safe use of the equipment, especially in the case of hand-held or portable equipment irrespective of its attitude.

1.4 This standard is applicable to thermal-links with a rated voltage not exceeding 660 V a.c. and a rated current not exceeding 63 A.

1.5 This standard is not applicable to thermal-links used under extreme conditions such as corrosive or explosive atmospheres.

1.6 This standard is applicable to thermal-links primarily intended for use in circuits operating on a.c. with a frequency between 45 Hz and 62 Hz.

1.7 The object of this standard is:

- a) to establish uniform requirements for thermal-links;
- b) to define methods of test;
- c) to provide useful information for the application of thermal-links in equipment.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 65: 1985, *Safety requirements for mains operated electronic and related apparatus for household and similar general use*

IEC 68-2-3: 1969, *Environmental testing – Part 2: Tests – Test Ca: Damp heat, steady state*

IEC 68-2-20: 1979, *Environmental testing – Part 2: Tests – Test T: Soldering*

IEC 68-2-21: 1983, *Environmental testing – Part 2: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 112: 1979, *Method for determining the comparative and the proof-tracking indices of solid insulating materials under moist conditions*

IEC 260: 1968, *Test enclosures of non-injection type for constant relative humidity*

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## 3 Definitions

For the purposes of this standard, the following definitions apply:

**3.1 thermal-link (TL):** A non-resettable device which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed.

**3.2 rated functioning temperature ( $T_r$ ):** The temperature of the thermal-link which causes it to change its state of conductivity when measured under specified conditions.

NOTE - This temperature is pre-determined by the manufacturer.

**3.3 holding temperature ( $T_c$ ):** The maximum temperature of the thermal-link at which it will not change its state of conductivity during a specified time under specified conditions.

NOTE - This temperature is stated by the manufacturer.

**3.4 maximum temperature limit ( $T_m$ ):** The temperature of the thermal-link, stated by the manufacturer, up to which the mechanical and electrical properties of the thermal-link having changed its state of conductivity, will not be impaired for a given time.