

SOOJUSLINGID. NÕUDED JA RAKENDUSJUHIS

Thermal-links - Requirements and application guide

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>See Eesti standard EVS-EN IEC 60691:2023 sisaldab Euroopa standardi EN IEC 60691:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.11.2023.</p> <p>Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN IEC 60691:2023 consists of the English text of the European standard EN IEC 60691:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 03.11.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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English Version

Thermal-links - Requirements and application guide  
(IEC 60691:2023)

Protecteurs thermiques - Exigences et guide d'application  
(IEC 60691:2023)

Temperatursicherungen - Anforderungen und  
Anwendungshinweise  
(IEC 60691:2023)

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Europäisches Komitee für Elektrotechnische Normung

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## European foreword

The text of document 32C/604/FDIS, future edition 5 of IEC 60691, prepared by SC 32C "Miniature fuses" of IEC/TC 32 "Fuses" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60691:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2024-07-04 level by publication of an identical national standard or by endorsement
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IEC 60085:2007	NOTE Approved as EN 60085:2008 (not modified)
IEC 60695-10-3:2016	NOTE Approved as EN 60695-10-3:2016 (not modified)
IEC 60695-11-20:2015	NOTE Approved as EN 60695-11-20:2015 (not modified)
IEC 60127-1:2006	NOTE Approved as EN 60127-1:2006 (not modified)
IEC 60127-1:2006/A1:2011	NOTE Approved as EN 60127-1:2006/A1:2011 (not modified)
IEC 60127-1:2006/A2:2015	NOTE Approved as EN 60127-1:2006/A2:2015 (not modified)
IEC 60216-1:2013	NOTE Approved as EN 60216-1:2013 (not modified)
IEC 60695-2-11:2021	NOTE Approved as EN IEC 60695-2-11:2021 (not modified)

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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

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



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IEC Secretariat  
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CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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

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

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ICS 29.120.50

ISBN 978-2-8322-6469-0

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**THERMAL-LINKS –  
REQUIREMENTS AND APPLICATION GUIDE****FOREWORD**

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IEC 60691 has been prepared by subcommittee 32C: Miniature fuses, of IEC technical committee 32: Fuses. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2015 and Amendment 1:2019. This edition constitutes a technical revision.

This fifth edition includes the following significant technical changes with respect to the previous edition:

- a) requirements for thermal-link packaged assemblies;
- b) renew the requirements and definitions for  $T_h$ -test;

The harmonization of the USA national standard, UL 1020, fifth edition (withdrawn 2003), and IEC 60691:1993, together with its Amendment 1:1995 and Amendment 2:2000 have served as a basis for the elaboration of this standard.

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

Draft	Report on voting
32C/604/FDIS	32C/605/RVD

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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## 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 (abnormal) 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.

## THERMAL-LINKS – REQUIREMENTS AND APPLICATION GUIDE

### 1 Scope

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.

NOTE 1 The equipment is not designed to generate heat.

NOTE 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.

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

This document 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 position.

Annex H of this document is applicable to thermal-link packaged assemblies where the thermal-link(s) has already been approved to this standard but packaged in a metallic or non-metallic housing and provided with terminals/wiring leads.

This document is applicable to thermal-links with a rated voltage not exceeding 690 V AC or DC and a rated current not exceeding 63 A.

The objectives of this document are:

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

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

This document is not applicable to thermal-links to be used in circuits on AC with a frequency lower than 45 Hz or higher than 62 Hz.

### 2 Normative references

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.

IEC 60065:2014, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60112:2020, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60127-2:2014, *Miniature fuses – Part 2: Cartridge fuse-links*

IEC 60216-5:2008, *Electrical insulating materials – Thermal endurance properties – Part 5: Determination of relative thermal endurance index (RTE) of an insulating material*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

IEC 60695-2-12:2021, *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability index (GWFI) test method for materials*

IEC 60695-2-13:2021, *Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignition temperature (GWIT) test method for materials*

IEC 60695-10-2:2014, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 60695-11-10:2013, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 60730-1:2013, *Automatic electrical controls – Part 1: General requirements*

IEC 60730-1:2013/AMD1:2015

IEC 60730-1:2013/AMD2:2020

IEC 61210:2010, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1

##### **clearance**

shortest distance in air between two conductive parts

#### 3.2

##### **creepage distance**

shortest distance along the surface of insulating material between two conductive parts

#### 3.3

##### **holding temperature**

$T_h$

maximum ambient temperature of the thermal-link at which it will not change its state of conductivity during a specified time at a specified rated current