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## Mekaniska byggsätt för elektronikutrustningar – Kapslingar för placering utomhus - Del 3: Fordringar beträffande miljötålighet och säkerhet

*Mechanical structures for electrical and electronic equipment -*

*Outdoor enclosures -*

*Part 3: Environmental requirements, tests and safety aspects*

Som svensk standard gäller europastandarden EN IEC 61969-3:2024. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61969-3:2024.

### Nationellt förord

Europastandarden EN IEC 61969-3:2024

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61969-3, Fourth edition, 2023 - Mechanical structures for electrical and electronic equipment – Outdoor enclosures – Part 3: Environmental requirements, tests and safety aspects**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN IEC 61969-3, utg 3:2020 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2026-12-25.

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## SEK Svensk Elstandard

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English Version

**Mechanical structures for electrical and electronic equipment -  
Outdoor enclosures - Part 3: Environmental requirements, tests  
and safety aspects  
(IEC 61969-3:2023)**

Structures mécaniques pour équipement électrique et  
électronique - Enveloppes de plein air - Partie 3: Exigences  
et essais d'environnement, et aspects liés à la sécurité  
(IEC 61969-3:2023)

Mechanische Bauweisen für elektrische und elektronische  
Einrichtungen - Außengehäuse - Teil 3:  
Umgebungsanforderungen, Prüfungen und  
Sicherheitsaspekte  
(IEC 61969-3:2023)

This European Standard was approved by CENELEC on 2023-12-25. 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, Türkiye 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**

## **European foreword**

The text of document 48D/765/FDIS, future edition 4 of IEC 61969-3, prepared by SC 48D "Mechanical structures for electrical and electronic equipment" of IEC/TC 48 "Electrical connectors and mechanical structures for electrical and electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61969-3:2024.

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) 2024-09-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-12-25

This document supersedes EN IEC 61969-3:2020 and all of its 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.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

## **Endorsement notice**

The text of the International Standard IEC 61969-3:2023 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 standard indicated:

IEC 60068-2-5 NOTE Approved as EN IEC 60068-2-5

IEC 60695-11-10 NOTE Approved as EN 60695-11-10

IEC 60825-1 NOTE Approved as EN 60825-1

IEC 61010-1 NOTE Approved as EN 61010-1

IEC 61140 NOTE Approved as EN 61140

IEC 62305-4 NOTE Approved as EN 62305-4

## 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](http://www.cenelec.eu).

| <u>Publication</u> | <u>Year</u> | <u>Title</u>                                                                                                                                                                        | <u>EN/HD</u>      | <u>Year</u> |
|--------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|
| IEC 60068-2-1      | -           | Environmental testing - Part 2-1: Tests - Test A: Cold                                                                                                                              | EN 60068-2-1      | -           |
| IEC 60068-2-2      | -           | Environmental testing - Part 2-2: Tests - Test B: Dry heat                                                                                                                          | EN 60068-2-2      | -           |
| IEC 60068-2-6      | -           | Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)                                                                                                           | EN 60068-2-6      | -           |
| IEC 60068-2-10     | -           | Environmental testing - Part 2-10: Tests - Test J and guidance: Mould growth                                                                                                        | EN 60068-2-10     | -           |
| IEC 60068-2-11     | -           | Environmental testing - Part 2-11: Tests - Test Ka: Salt mist                                                                                                                       | EN IEC 60068-2-11 | -           |
| IEC 60068-2-14     | -           | Environmental testing - Part 2-14: Tests - Test N: Change of temperature                                                                                                            | EN IEC 60068-2-14 | -           |
| IEC 60068-2-27     | -           | Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock                                                                                                              | EN 60068-2-27     | -           |
| IEC 60068-2-30     | -           | Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)                                                                                           | EN 60068-2-30     | -           |
| IEC 60068-2-60     | -           | Environmental testing - Part 2-60: Tests - Test Ke: Flowing mixed gas corrosion test                                                                                                | EN 60068-2-60     | -           |
| IEC 60529          | -           | Degrees of protection provided by enclosures (IP Code)                                                                                                                              | EN 60529          | -           |
| IEC 60721-3-2      | -           | Classification of environmental conditions - Part 3-2: Classification of groups of environmental parameters and their severities - Transportation and Handling                      | EN IEC 60721-3-2  | -           |
| IEC 60721-3-4      | -           | Classification of environmental conditions - Part 3-4: Classification of groups of environmental parameters and their severities - Stationary use at non-weatherprotected locations | EN IEC 60721-3-4  | -           |

|                |      |                                                                                                                                                                                           |                   |      |
|----------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|
| IEC 60794-1-21 | -    | Optical fibre cables - Part 1-21: Generic specification - Basic optical cable test procedures - Mechanical tests methods                                                                  | EN 60794-1-21     | -    |
| IEC 61300-2-10 | -    | Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-10: Tests - Crush and load resistance                                         | EN IEC 61300-2-10 | -    |
| IEC 61300-2-56 | 2020 | Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-56: Tests - Wind resistance of mounted housing                                | EN IEC 61300-2-56 | 2020 |
| IEC 61439-5    | -    | Low-voltage switchgear and controlgear assemblies - Part 5: Assemblies for power distribution in public networks                                                                          | EN IEC 61439-5    | -    |
| IEC 61587-1    | -    | Mechanical structures for electrical and electronic equipment - Tests for IEC 60917 and IEC 60297 series - Part 1: Environmental requirements, test setups and safety aspects             | EN IEC 61587-1    | -    |
| IEC 61587-2    | -    | Mechanical structures for electronic equipment - Tests for IEC 60917 and 60297 - Part 2: Seismic tests for cabinets and racks                                                             | EN 61587-2        | -    |
| IEC 61587-3    | -    | Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 - Part 3: Electromagnetic shielding performance tests for cabinets and subracks                        | EN 61587-3        | -    |
| IEC 61969-1    | 2023 | Mechanical structures for electrical and electronic equipment - Outdoor enclosures - Part 1: Design guidelines                                                                            | EN IEC 61969-1    | 2023 |
| IEC 62194      | -    | Method of evaluating the thermal performance of enclosures                                                                                                                                | EN 62194          | -    |
| IEC 62262      | -    | Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)                                                                       | EN 62262          | -    |
| IEC 62368-1    | -    | Audio/video, information and communication technology equipment - Part 1: Safety requirements                                                                                             | EN 62368-1        | -    |
| ISO 2533       | -    | Standard Atmosphere                                                                                                                                                                       | -                 | -    |
| ISO 3744       | -    | Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane | EN ISO 3744       | -    |
| ISO 4892-2     | -    | Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps                                                                                                      | EN ISO 4892-2     | -    |
| ISO 4892-3     | -    | Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps                                                                                                 | EN ISO 4892-3     | -    |

|                       |                                                                                                                                                                                                                                       |   |   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| ETSI EN 300 019-2-2 - | Equipment Engineering (EE);<br>Environmental conditions and<br>environmental tests for<br>telecommunications equipment; Part 2-2:<br>Specification of environmental tests;<br>Transportation                                          | - | - |
| ETSI EN 300 019-2-4 - | Environmental Engineering (EE);<br>Environmental conditions and<br>environmental tests for<br>telecommunications equipment; Part 2-4:<br>Specification of environmental tests;<br>Stationary use at non-weatherprotected<br>locations | - | - |

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**Mechanical structures for electrical and electronic equipment – Outdoor enclosures –**

**Part 3: Environmental requirements, tests and safety aspects**

**Structures mécaniques pour équipement électrique et électronique – Enveloppes de plein air –**

**Partie 3: Exigences et essais d'environnement, et aspects liés à la sécurité**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MECHANICAL STRUCTURES FOR ELECTRICAL AND  
ELECTRONIC EQUIPMENT – OUTDOOR ENCLOSURES –****Part 3: Environmental requirements, tests and safety aspects****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.
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IEC 61969-3 has been prepared by subcommittee 48D: Mechanical structures for electrical and electronic equipment, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2020. This edition constitutes a technical revision.

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

- a) alignment with the content of ETSI EN 300 019 and IEC 60721 series latest editions, particularly with the actualization of climate conditions;
- b) rationale for the selected operating conditions from IEC 60721-3-4 are added;

- c) tests are grouped according to the classification of conditions in IEC 60721-3-4;
- d) test severities for vibration and shock tests are aligned with ETSI EN 300 019-2-4;
- e) addition of pass/fail criteria for each test.

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

| Draft        | Report on voting |
|--------------|------------------|
| 48D/765/FDIS | 48D/766/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).

This International Standard is to be used in conjunction with IEC 61969-1:2023.

A list of all parts in the IEC 61969 series, published under the general title *Mechanical structures for electrical and electronic equipment – Outdoor enclosures*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

## INTRODUCTION

The products covered by IEC 61969 series are empty enclosures for outdoor locations, to be equipped with application-specific combinations of electrical and electronic equipment, and to be used at non-weatherprotected locations above ground.

IEC 61969 series consists of:

- a design guidelines general part: IEC 61969-1;
- a coordination dimensions standard: IEC 61969-2;
- an environmental requirements and tests, safety aspects standard: IEC 61969-3.

This document provides basic environmental requirements and tests, as well as safety aspects, to be used for outdoor enclosures in absence of local regulatory documents, or of application-specific environmental test requirements.

This document provides manufacturers and users of generic outdoor enclosures with minimum performance compliance criteria. The thermal management solution depends on the specific environment of the outdoor enclosure.

Since forced air heat dissipation and acoustic noise are closely related, noise limitations are typically defined by local regulatory documents.

It is responsibility of the outdoor enclosure vendor to provide a solution for thermal management within the local regulatory noise limitations.

# MECHANICAL STRUCTURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – OUTDOOR ENCLOSURES –

## Part 3: Environmental requirements, tests and safety aspects

### 1 Scope

This part of IEC 61969 specifies a set of basic environmental requirements and tests, as well as safety aspects for outdoor enclosures for electrical and electronic equipment, under conditions of non-weatherprotected locations above ground.

The purpose of this document is to define a minimum level of environmental performance in order to meet requirements of storage, transport and final installation. The intention is to establish basic environmental performance criteria for outdoor enclosure compliance.

### 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 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-10, *Environmental testing – Part 2-10: Tests – Test J and guidance: Mould growth*

IEC 60068-2-11, *Environmental testing – Part 2-11: Tests – Test Ka: Salt mist*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60068-2-60, *Environmental testing – Part 2-60: Tests – Test Ke: Flowing mixed gas corrosion test*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60721-3-2, *Classification of environmental conditions – Part 3-2: Classification of groups of environmental parameters and their severities – Transportation and handling*

IEC 60721-3-4, *Classification of environmental conditions – Part 3-4: Classification of groups of environmental parameters and their severities – Stationary use at non-weatherprotected locations*

IEC 60794-1-21, *Optical fibre cables – Part 1-21: Generic specification – Basic optical cable test procedures – Mechanical tests methods*

IEC 61300-2-10, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-10: Tests – Crush and load resistance*

IEC 61300-2-56:2020, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-56: Tests – Wind resistance of mounted housing*

IEC 61439-5, *Low-voltage switchgear and controlgear assemblies – Part 5: Assemblies for power distribution in public networks*

IEC 61587-1, *Mechanical structures for electrical and electronic equipment – Tests for IEC 60917 and IEC 60297 series – Part 1: Environmental requirements, test setups and safety aspects*

IEC 61587-2, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 2: Seismic tests for cabinets and racks*

IEC 61587-3, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 3: Electromagnetic shielding performance tests for cabinets and subracks*

IEC 61969-1:2023, *Mechanical structures for electrical and electronic equipment – Outdoor enclosures – Part 1: Design guidelines*

IEC 62194, *Methods of evaluating the thermal performance of enclosures*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62368-1, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

ISO 2533, *Standard atmosphere*

ISO 3744, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane*

ISO 4892-2, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*

ISO 4892-3, *Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps*

ETSI EN 300 019-2-2, *Environmental Engineering (EE) – Environmental conditions and environmental tests for telecommunications equipment – Part 2-2: Specification of environmental tests – Transportation*

ETSI EN 300 019-2-4, *Environmental Engineering (EE) – Environmental conditions and environmental tests for telecommunications equipment – Part 2-4: Specification of environmental tests – Stationary use at non-weatherprotected locations*