

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**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**



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## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	7
4 Coordination dimensions .....	7
5 Environmental requirements, tests and safety aspects – Classification of environmental conditions .....	7
6 Test conditions .....	8
6.1 General .....	8
6.2 Climatic tests .....	8
6.3 Biological tests .....	9
6.4 Tests of resistance against chemically active substances .....	9
6.5 Tests of resistance against mechanically active substances .....	9
7 Mechanical tests .....	10
7.1 General .....	10
7.2 Transport tests .....	10
7.3 Lifting and stiffness test .....	11
8 Safety aspects .....	11
8.1 General .....	11
8.2 Locking devices .....	11
8.3 Vandalism resistance .....	11
8.4 Firearms resistance (optional) .....	11
9 Seismic requirements .....	12
10 Electromagnetic shielding performance .....	12
11 Thermal management .....	12
12 Noise emission .....	12
Bibliography .....	13
Table 1 – Climatic conditions for environmental classes 1 and 2 .....	8
Table 2 – Biological tests .....	9
Table 3 – Tests of resistance against chemically active substances .....	9
Table 4 – Tests of resistance against mechanically active substances .....	9
Table 5 – Vibration and shock test .....	10

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MECHANICAL STRUCTURES FOR ELECTRICAL AND  
ELECTRONIC EQUIPMENT – OUTDOOR ENCLOSURES –****Part 3: Environmental requirements, tests and safety aspects**

## FOREWORD

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International Standard 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.

This third edition cancels and replaces the second edition published in 2011. 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) new requirements added to reflect market requirements on environmental issues;
- c) improvement on terminology and overall editorial improvement.

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

FDIS	Report on voting
48D/721/FDIS	48D/724/RVD

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

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

This International Standard is to be used in conjunction with IEC 61969-1:2020.

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.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

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

IEC 61969 (all parts) 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 under conditions of non-weather protected 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, *Basic environmental testing procedures – 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 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

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

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

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

IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*



IEC 61587-1, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 series – Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation*

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

IEC 61969-1:2020, *Mechanical structures for electrical and electronic equipment – Outdoor enclosures – Part 1: Design guidelines*

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

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*

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*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61969-1 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>

### 4 Coordination dimensions

*This clause of IEC 61969-1:2020 applies.*

### 5 Environmental requirements, tests and safety aspects – Classification of environmental conditions

The environmental conditions are derived from IEC 60721-3-4, with the focus on empty outdoor enclosures relevant requirements.

Class 1: Non-weatherprotected location: Covers all regions with a moderate climate.

Class 2: Non-weatherprotected locations, extended: Covers all regions with severe climate.

The individual outdoor enclosure tested to these basic environmental test requirements may claim compliance to either class 1 or class 2 or a combination of class 1/class 2.