



Edition 1.0 2023-07

TECHNICAL SPECIFICATION

Classification of environmental conditions -

Part 4-3: Guidance for the correlation and transformation of environmental condition classes of IEC 60721-3 to the environmental tests of IEC 60068 – Stationary use at weatherprotected locations

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 19.040

ISBN 978-2-8322-7300-5

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD	3
INTRODUCTION	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 General	7
4.1 General remarks concerning IEC 60721-3-3	7
4.2 General remarks concerning the IEC 60068-2 series	7
4.3 Recommended test procedures and severities	7
4.4 Environmental tests for in-use classes	7
4.5 Test durations	
4.6 Ambient	
5 Climate conditions, classes 3K20 to 3K24 from IEC 60721-3-3	
5.1 Class 3K20 (fully air-conditioned enclosed locations)	
5.2 Class 3K21 (continuously temperature-controlled enclosed locations)	
5.3 Class 3K22 (temperature-controlled enclosed locations)	
 5.4 Class 3K23 (enclosed locations having no temperature or humidity control) 5.5 Class 3K24 (enclosed locations having neither temperature nor humidity 	12
control)	14
6 Special climate conditions, classes 3Z12 to 3Z14 from IEC 60721-3-3	
7 Biological conditions, classes 3B1 to 3B3 from IEC 60721-3-3	16
8 Mechanical conditions, classes 3M10 to 3M12 from IEC 60721-3-3	
Annex A (informative) Interdependence of air temperature, relative air humidity, and	
absolute air humidity	18
Bibliography	19
Figure A.1 – Climatogram of interdependence of air temperature, relative air humidity,	
and absolute air humidity	18
Table 1 – Class 3K21 (continuously temperature-controlled enclosed locations)	8
Table 2 – Class 3K22 (temperature-controlled enclosed locations)	10
Table 3 – Class 3K23 (enclosed locations having no temperature or humidity control)	12
Table 4 – Class 3K24 (enclosed locations having neither temperature nor humidity	
control)	14
Table 5 – Class 3Z12 to 3Z14	16
Table 6 – Class 3B1 to 3B3	16
Table 7 – Class 3M10 to 3M12	17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS -

Part 4-3: Guidance for the correlation and transformation of environmental condition classes of IEC 60721-3 to the environmental tests of IEC 60068 – Stationary use at weatherprotected locations

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 for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC TS 60721-4-3 has been prepared by IEC technical committee 104: Environmental conditions, classification, and methods of test. It is a Technical Specification.

This first edition cancels and replaces IEC TR 60721-4-3:2001 and IEC TR 60721-4-3:2001/AMD1:2003. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC TR 60721-4-3:2001 and IEC TR 60721-4-3:2001/AMD1:2003:

- a) the document has been totally reworked;
- b) all figures have been removed, except in Annex A;

c) severities have been aligned with those of IEC 60721-3-3:2019.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
104/977/DTS	104/1014/RVDTS

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 Technical Specification 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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60721 series, published under the general title *Classification of environmental conditions*, 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 in the data related to the specific document. At this date, the document will be

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

IEC TS 60721-4-3:2023 © IEC 2023 - 5 -

INTRODUCTION

It is essential to emphasize the guidance nature of this document since it is virtually impossible to specify mandatory requirements for worldwide use. However, for those cases which require different tests from those recommended in this document, the guidance given should establish principles and methodology to determine alternative tests.

The reasons for correlation are provided to enable specification writers to modify a test if their application warrants it.

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS -

Part 4-3: Guidance for the correlation and transformation of environmental condition classes of IEC 60721-3 to the environmental tests of IEC 60068 – Stationary use at weatherprotected locations

1 Scope

This part of IEC 60721 deals with the correlation and transformation of the conditions given in IEC 60721-3-3 to the environmental test procedures defined in IEC 60068-2.

This document provides test procedures and test severities for electrotechnical equipment operated at stationary weatherprotected locations for the product classes set out in IEC 60721-3-3.

An environment can consist of several environmental conditions such as dynamic, climatic, and biological, and other effects due to chemically and mechanically active substances. In this document, dynamic, air pressure, biological and climatic conditions have been considered.

The purpose of this document is to provide the specification writer with guidance together with a set of easy-to-use tables which correlate and transform these environmental conditions.

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 60068-1:2013, Environmental testing – Part 1: General and guidance

IEC 60721-1, Classification of environmental conditions – Part 1: Environmental parameters and their severities

IEC 60721-3-3:2019, Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use at weatherprotected locations