Irish Standard
I.S. EN IEC 60300-3-4:2022

Dependability management - Part 3-4: Application guide - Specification of dependability requirements

I.S. EN IEC 60300-3-4:2022

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National Foreword

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60300-3-4

April 2022

ICS 03.100.40; 03.120.01

Supersedes EN 60300-3-4:2008

English Version

Dependability management - Part 3-4: Application guide - Specification of dependability requirements (IEC 60300-3-4:2022)

Gestion de la sûreté de fonctionnement - Partie 3-4: Guide d'application - Spécification d'exigences de sûreté de fonctionnement
(IEC 60300-3-4:2022)

Zuverlässigkeitsmanagement - Teil 3-4: Anwendungsleitfaden - Anleitung zum Festlegen von Zuverlässigkeitsforderungen
(IEC 60300-3-4:2022)

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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 56/1932/FDIS, future edition 3 of IEC 60300-3-4, prepared by IEC/TC 56 "Dependability" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60300-3-4:2022.

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) 2023-01-15
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-04-15

This document supersedes EN 60300-3-4:2008 and all of its amendments and corrigenda (if any).

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The text of the International Standard IEC 60300-3-4:2022 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 standards indicated:

IEC 60300-1:—[1]	NOTE	Harmonized as EN 60300-1:—[2] (not modified)
IEC 60300-3-1	NOTE	Harmonized as EN 60300-3-1
IEC 60300-3-10	NOTE	Harmonized as EN IEC 60300-3-10[3]
IEC 60300-3-14	NOTE	Harmonized as EN 60300-3-14
IEC 62628	NOTE	Harmonized as EN 62628
IEC 61508 (series)	NOTE	Harmonized as EN 61508 (series)
IEC 62960	NOTE	Harmonized as EN IEC 62960
IEC 60706-3	NOTE	Harmonized as EN 60706-3
IEC 62308	NOTE	Harmonized as EN 62308
IEC 62741	NOTE	Harmonized as EN 62741
IEC 60300-3-3	NOTE	Harmonized as EN 60300-3-3

[1] Fourth edition under preparation. Stage at the time of publication: IEC PCC 60300-1:2022.

[2] Under preparation. Stage at the time of publication: prEN 60300-1.

[3] Under preparation. Stage at the time of publication: prEN IEC 60300-3-10.

ISO 9000	NOTE	Harmonized as EN ISO 9000
IEC 60706-5	NOTE	Harmonized as EN 60706-5
IEC 62506	NOTE	Harmonized as EN 62506
IEC 61025	NOTE	Harmonized as EN 61025
IEC 61078	NOTE	Harmonized as EN 61078
IEC 61703	NOTE	Harmonized as EN 61703
IEC 61649	NOTE	Harmonized as EN 61649
IEC 61710	NOTE	Harmonized as EN 61710
IEC 62402	NOTE	Harmonized as EN IEC 62402
IEC 61709	NOTE	Harmonized as EN 61709
ISO 9001	NOTE	Harmonized as EN ISO 9001
IEC 62429	NOTE	Harmonized as EN 62429

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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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.

Publication	Year	Title	EN/HD	Year
IEC 60050-192	-	International electrotechnical vocabulary - Part 192: Dependability	-	-

IEC 60300-3-4

Edition 3.0 2022-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Dependability management – Part 3-4: Application guide – Specification of dependability requirements

Gestion de la sûreté de fonctionnement – Partie 3-4: Guide d'application – Spécification d'exigences de sûreté de fonctionnement

IEC 60300-3-4:2022-03(en-fr)

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IEC 60300-3-4

Edition 3.0 2022-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Dependability management – Part 3-4: Application guide – Specification of dependability requirements

Gestion de la sûreté de fonctionnement – Partie 3-4: Guide d'application – Spécification d'exigences de sûreté de fonctionnement

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DEPENDABILITY MANAGEMENT –

Part 3-4: Application guide – Specification of dependability requirements

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 60300-3-4 has been prepared by IEC technical committee 56: Dependability. It is an International Standard.

This third edition cancels and replaces the second edition published in 2007. This edition constitutes a technical revision.

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

a) consistency with the other of the six core IEC dependability standards;
b) a process for defining requirements has been included;
c) the definitions and language used have been made consistent with other system related standards.

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

Draft	Report on voting
56/1932/FDIS	56/1939/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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60300 series, published under the general title *Dependability management*, 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.

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INTRODUCTION

Dependability is the ability to perform as and when required. A dependable item is one where there is justified confidence that it operates as desired and satisfies agreed stakeholder expectations.

Dependability has many attributes, but is usually characterized in terms of reliability, maintainability, and supportability, and the derived characteristic of availability. Dependability also includes the performance characteristics such as durability, testability and restorability as well as security and integrity, particularly in relation to software-based systems.

Dependability is an important attribute that affects the value items generate. Consequently, relevant dependability attributes should be defined and specified in addition to functional performance requirements and physical attributes. Whilst mainly addressing system and equipment level dependability, many of the techniques described in the various dependability related IEC standards may also be applied to products or at the component level. The term "item" is used throughout this document to mean an individual part, component, device, functional unit, off-the-shelf (OTS) equipment, subsystem, or system. The item may consist of hardware, software, people or any combination thereof (see IEC 60050-192). In order to refer to a specific kind of "item", terms like component, OTS, product or large open system are used.

Dependability attributes may be specified for an individual system or product (for example, a vehicle) and/or a group of similar systems or products (for example, a fleet of similar vehicles).

Dependability attributes may be specified using either quantitative and/or qualitative measures. In order to assess the values of some of the dependability attributes achieved, statistical methods may be necessary.

The levels of reliability, maintainability, supportability and availability achieved by an item depend on the conditions under which it is realized, utilized, maintained and supported and also on the life profile of the system. The requirements in the dependability specification, should also define the following:

- conditions under which the item is stored, transported, realized and utilized;
- life profile and expected useful life;
- maintenance policies;
- available support.

Dependability attributes may be specified, along with other performance characteristics, in various ways depending on the situation. In a basic project context where an acquirer obtains an item from a supplier, three main types are:

1) specifications written by the supplier;
2) specifications written by the acquirer;
3) specifications mutually agreed or written by the supplier and the acquirer.

The guidance in this document is applicable to all three types of specifications and may be adapted to other situations as needed.

This document provides guidance for writing dependability requirements in specifications, together with a means of assuring the achievement of those requirements.

This document is one of the six "top level" interrelated dependability standards that provide managers and technical personnel with guidance on how to effectively plan and implement dependability activities. As such, this document should be used in conjunction with:

- IEC 60300-1 [1][1], which highlights the importance and benefits of managing dependability. It gives guidance on dependability activities and how to integrate them into an existing management system and life cycle processes;
- IEC 60300-3-1 [2], IEC 60300-3-10 [3], IEC 60300-3-14 [4] which provide guidance on how to identify and apply appropriate analysis and assurance techniques for reliability, maintainability (and maintenance) and supportability (and support) respectively. A standard to cover availability is planned.

[1] Numbers in square brackets refer to the Bibliography.

DEPENDABILITY MANAGEMENT –

Part 3-4: Application guide – Specification of dependability requirements

1 Scope

This part of IEC 60300 gives guidance on specifying dependability requirements and collating these requirements in a specification, together with a list of the means of assuring the achievement of the dependability requirements.

The guidance provided includes:

- specifying quantitative and qualitative reliability, maintainability, supportability and availability requirements;
- advising acquirers on how to ensure that the requirements can be fulfilled by suppliers;
- advising suppliers to help them meet the acquirer's requirements.

Other obligations, such as legislation and governmental regulations, can also place requirements on items, in addition to any requirements derived in accordance with this document.

Whilst mainly addressing system and equipment level dependability, many of the techniques described in the various dependability related IEC standards can also be applied to products or at the component level. The term "item" is used throughout this document.

This guidance is given in a basic project context where an acquirer obtains an item from a supplier. It can be modified and adapted to other situations as needed.

NOTE 1 This document does not directly consider safety and environment specifications although much of the guidance in this document could also be applied to them.

NOTE 2 This document does not cover items with special multi-stakeholder long-term arrangements (e.g. services provided through Public-Private Partnership procurements) and how dependability is specified in such arrangements.

NOTE 3 The guidance in this document can be applied to some aspects of the specification of requirements relating to software but specific guidance can be found in IEC 62628 [5] and the different parts of the IEC 61508 series [6].

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 60050-192, *International Electrotechnical Vocabulary (IEV) – Part 192: Dependability* (available at http://www.electropedia.org)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-192 and the following apply.