INTERNATIONAL STANDARD

IEC 60300-3-1

Second edition
2003-01

Dependability management –

Part 3-1:
Application guide –
Analysis techniques for dependability –
Guide on methodology

Gestion de la sûreté de fonctionnement –

Partie 3-1:
Guide d'application –
Techniques d'analyse de la sûreté de fonctionnement –
Guide méthodologique

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International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE XA

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DEPENDABILITY MANAGEMENT –

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FOREWORD

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International Standard IEC 60300-3-1 has been prepared by IEC technical committee 56: Dependability.

This second edition cancels and replaces the first edition, published in 1991, and constitutes a full technical revision. In particular, the guidance on the selection of analysis techniques and the number of analysis techniques covered has been extended.

The text of this standard is based on the following documents:

FDIS	Report on voting
56/825/FDIS	56/840/RVD

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

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

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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- withdrawn;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

INTRODUCTION

The analysis techniques described in this part of IEC 60300 are used for the prediction, review and improvement of reliability, availability and maintainability of an item.

These analyses are conducted during the concept and definition phase, the design and development phase and the operation and maintenance phase, at various system levels and degrees of detail, in order to evaluate, determine and improve the dependability measures of an item. They can also be used to compare the results of the analysis with specified requirements.

In addition, they are used in logistics and maintenance planning to estimate frequency of maintenance and part replacement. These estimates often determine major life cycle cost elements and should be carefully applied in life cycle cost and comparative studies.

In order to deliver meaningful results, the analysis should consider all possible contributions to the dependability of a system: hardware, software, as well as human factors and organizational aspects.

DEPENDABILITY MANAGEMENT –

Part 3-1: Application guide – Analysis techniques for dependability – Guide on methodology

1 Scope

This part of IEC 60300 gives a general overview of commonly used dependability analysis techniques. It describes the usual methodologies, their advantages and disadvantages, data input and other conditions for using various techniques.

This standard is an introduction to selected methodologies and is intended to provide the necessary information for choosing the most appropriate analysis methods.

2 Normative references

The following referenced documents are indispensable for the application 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(191):1990, *International Electrotechnical Vocabulary (IEV) – Chapter 191: Dependability and quality of service*

IEC 60300-3-2:1993, *Dependability management – Part 3: Application guide – Section 2: Collection of dependability data from the field*

IEC 60300-3-4:1996, *Dependability management – Part 3: Application guide – Section 4: Guide to the specification of dependability requirements*

IEC 60300-3-5:2001, *Dependability management – Part 3-5: Application guide – Reliability test conditions and statistical test principles*

IEC 60300-3-10:2001, *Dependability management – Part 3-10: Application guide – Maintainability*

IEC 60706-1:1982, *Guide on maintainability of equipment – Part 1: Sections One, Two and Three – Introduction, requirements and maintainability programme*

IEC 60706-2:1990, *Guide on maintainability of equipment – Part 2: Section Five – Maintainability studies during the design phase*

IEC 60812:1985, *Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA)*

IEC 61078:1991, *Analysis techniques for dependability – Reliability block diagram method*

IEC 61165:1995, *Application of Markov techniques*

IEC 61709:1996, *Electronic components – Reliability – Reference conditions for failure rates and stress models for conversion*

IEC 61882:2001, *Hazard and operability studies (HAZOP studies) – Application guide*

ISO 9000:2000, *Quality management systems – Fundamentals and vocabulary*