



BSI Standards Publication

**Guidelines for safety related risk assessment
and risk reduction for low voltage equipment**

National foreword

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GUIDE



Guidelines for safety related risk assessment and risk reduction for low voltage equipment

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope and object.....	7
1.1 Scope.....	7
1.2 Object.....	7
1.3 Exclusion and limitation.....	7
2 Normative references.....	8
3 Terms definitions and abbreviations.....	8
3.1 Terms and definitions.....	9
3.2 Abbreviations.....	12
4 Basic principles.....	12
4.1 Principle of SAFETY INTEGRATION.....	12
4.2 Basic concepts.....	13
4.2.1 Information for RISK ASSESSMENT.....	15
4.2.2 Information related to LV equipment description.....	16
4.2.3 Related standards and other applicable documents.....	16
4.2.4 Information related to application experience.....	16
4.2.5 Relevant ergonomic principles.....	16
5 Determination of the limits of the LV equipment.....	16
6 HAZARD identification.....	17
7 RISK estimation.....	18
7.1 General.....	18
7.2 Elements of RISK.....	18
7.2.1 Combination of elements of RISK.....	18
7.2.2 Severity of harm.....	20
7.2.3 Probability of occurrence of harm.....	21
7.2.4 RISK INDEX.....	22
7.3 Aspects to be considered during RISK estimation.....	22
7.3.1 Exposure of persons or domestic animals.....	22
7.3.2 Type, frequency and duration of exposure.....	22
7.3.3 Accumulation and synergy of effects.....	23
8 Risk evaluation.....	23
8.1 General.....	23
8.2 Aspects to be considered during RISK evaluation.....	23
8.2.1 Human factors.....	23
8.2.2 Reliability of RISK REDUCTION MEASURES.....	24
8.2.3 Ability to defeat or circumvent PROTECTIVE MEASURES.....	24
8.2.4 Ability to maintain RISK REDUCTION MEASURES.....	25
8.2.5 Information for use.....	25
8.2.6 Current values of society.....	25
8.3 Elimination of hazards or reduction of RISK by RISK REDUCTION MEASURES.....	25
8.4 Comparison of RISKS.....	26
9 Risk reduction.....	26
10 Documentation.....	29

Annex A (normative) SAFETY aspects relating to LOW VOLTAGE EQUIPMENT	30
A.1 General.....	30
A.2 Preliminary observations.....	30
A.3 SAFETY INTEGRATION.....	30
A.4 Protection against electrical hazards.....	31
A.5 Protection against mechanical hazards	31
A.6 Protection against other hazards.....	31
A.6.1 General	31
A.6.2 Explosion.....	31
A.6.3 Hazards arising from electric, magnetic, and electromagnetic fields, other ionising and non-ionising radiation.....	32
A.6.4 Electric, magnetic or electromagnetic disturbances.....	32
A.6.5 Optical radiation	32
A.6.6 Fire.....	32
A.6.7 Temperature.....	32
A.6.8 Acoustic noise	32
A.6.9 Biological and chemical effects.....	32
A.6.10 Emissions, production and/or use of hazardous substances (e.g. gases, liquids, dusts, mists, vapour)	33
A.6.11 Unattended operation	33
A.6.12 Connection to and interruption from power supply.....	33
A.6.13 Combination of equipment	33
A.6.14 Implosion.....	33
A.6.15 Hygiene conditions	33
A.6.16 Ergonomics	33
A.7 FUNCTIONAL SAFETY and reliability	33
A.7.1 General	33
A.7.2 Equipment design.....	34
A.7.3 Equipment type related hazards	34
A.7.4 System faults.....	34
A.8 SAFETY-RELATED SECURITY RISK.....	34
A.9 Information requirements	35
Annex B (informative) Supporting standards	36
B.1 Basic SAFETY standards	36
B.2 Group SAFETY standards	36
Annex C (informative) Table C.1 – Examples of hazards, hazardous situations and HAZARDOUS EVENTS.....	37
Annex D (informative) Tool for the application of this IEC Guide	39
Bibliography.....	41
Figure 1 – Principle of safety integration	13
Figure 2 – Iterative process of RISK ASSESSMENT and RISK reduction.....	15
Figure 3 – Elements of RISK for RISK estimation.....	19
Figure 4 – Graph for RISK estimation	20
Figure 5 – RISK reduction process.....	28
Table D.1 – RISK ASSESSMENT documentation	39

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**GUIDELINES FOR SAFETY RELATED RISK ASSESSMENT
AND RISK REDUCTION FOR LOW VOLTAGE EQUIPMENT**

FOREWORD

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This second edition of IEC Guide 116 has been prepared, in accordance with ISO/IEC Directives, Part 1, Annex A, by the IEC Advisory Committee on Safety (ACOS). This is a non-mandatory guide in accordance with SMB Decision 136/8.

This second edition of IEC Guide 116 cancels and replaces its first edition published in 2010 and constitutes a technical revision; main changes with respect to the first edition are as follows:

- addition of a clause dealing with safety related security aspects, derived from the IEC 62443 series (Clause A.8);
- reference to "domestic animals" rather than to "livestock", throughout the text of the guide;
- alignment of definitions and Figure 2 with the latest edition of ISO/IEC Guide 51 (2014);
- editorial improvements throughout the text;
- updates of the links to the IEC website.

The text of this IEC Guide is based on the following documents:

FDIS	Report on voting
ACOS/2084/DV	ACOS/2108/RV

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.

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.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This non-mandatory IEC Guide is intended to be applied to RISK ASSESSMENT and risk reduction for SAFETY of LOW VOLTAGE EQUIPMENT.

This Guide provides guidance to those developing and revising standards, specifications and similar publications. However, the RISK ASSESSMENT method of this guide can be useful as background information for, amongst others, designers, architects, manufacturers, service providers, educators, communicators, auditors, SAFETY inspectors and policy makers.

This IEC Guide reflects ISO/IEC Guide 51 and gives additional guidance to ISO/IEC Guides 50, 51, and 71 on more detailed practical way of carrying out RISK ASSESSMENT and implementing RISK reduction for RISKS commonly considered during all relevant phases of the life of LOW VOLTAGE EQUIPMENT.

The user of this Guide is expected to take into account safety-related standards when available (see also Annex B) and their use automatically reflects the state of the art as defined in ISO/IEC Guide 2.

This Guide provides useful information in the absence of a specific standard.

GUIDELINES FOR SAFETY RELATED RISK ASSESSMENT AND RISK REDUCTION FOR LOW VOLTAGE EQUIPMENT

1 Scope and object

1.1 Scope

This non-mandatory IEC Guide complements ISO/IEC Guide 51 and establishes guidelines useful for achieving SAFETY in low voltage (LV) equipment. These guidelines include RISK ASSESSMENT, in which the knowledge and experience of the design, use, incidents, accidents, and HARM related to LOW VOLTAGE EQUIPMENT are brought together in order to assess the RISKS during the relevant phases of the life of the equipment, as specified in Clause 6, and to implement the basic principles for RISK REDUCTION MEASURES. This IEC guide should be used by technical committees as far as appropriate and to the extent they decide to apply it.

This IEC Guide gives additional guidance to ISO/IEC Guides 50, 51 and 71 on the information required to allow RISK ASSESSMENT to be performed. Procedures are described for identifying hazards, estimating and evaluating RISK (including comparison of RISKS) and RISK reduction where necessary. Harms considered in this document include possible damages to persons, property, or domestic animals. It is not intended that the structure of this guide be adopted by technical committees.

This IEC Guide also includes requirements for the equipment documentation to include adequate information for the safe use of equipment.

1.2 Object

The purpose of this IEC Guide is to provide guidance for technical committees for decisions to be made on the SAFETY of LOW VOLTAGE EQUIPMENT and the type of documentation required to verify the RISK ASSESSMENT carried out.

This IEC Guide applies to all electrical equipment designed for use with a voltage range up to 1 000 V a.c. (1 500 V d.c.). Voltage ratings refer to the voltage of the electrical input or output, not to voltages that may appear inside the equipment.

Annex A of this Guide identifies basic health and SAFETY requirements, typically for LOW VOLTAGE EQUIPMENT.

Annex D can be used as a tool for documenting a self-assessment by a Technical Committee.

1.3 Exclusion and limitation

This guide does not apply to those basic components whose RISK ASSESSMENT depends to a very large extent on how they are used and incorporated into a machine, electrical system or installation. However, other electrical components that are intended to be incorporated into other electrical equipment and for which a RISK ASSESSMENT can be undertaken are covered by this IEC Guide, in general requiring a further assessment of the SAFETY aspects related to the way in which such components are incorporated.

NOTE 1 The scope of the exclusion of basic components should not be misunderstood and extended to items like lamps, starters, fuses, switches for household use, elements of electrical installations, etc.

These components, even if they are often used in conjunction with other electrical equipment and have to be properly installed in order to deliver their useful function, are themselves to be considered electrical equipment in the sense of this Guide.