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# IEC GUIDE 116

Edition 1.0 2010-08

## GUIDE



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

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

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ICS 29.020

ISBN 978-2-88912-150-2

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

### FOREWORD

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This first 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.

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

Four months' vote	Report on voting
C/1614/DV	C/1634/RV

Full information on the voting for the approval of this Guide 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.

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 IEC Guide reflects ISO/IEC Guide 51 and gives additional guidance to ISO/IEC Guides 50, 51, and 71 on more detailed practical information for carrying out risk assessment and on basics to implement risk reduction, in order to assess risks commonly considered during all relevant phases of the life of low voltage equipment.

This IEC Guide is intended to be applicable for TCs and SCs when they elaborate their own safety standards for the related products, if they have decided to carry out a structured risk assessment. This Guide can also be used when new features of a product are not covered by existing standards.

The use of this Guide implies that safety-related standards are also taken into account when available (see also Annex B) and using them automatically reflects the state of the art as defined in ISO/IEC Guide 2.

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

### **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 basics 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 Guide 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. Risks considered in this document include possible damages to persons, property, and livestock. It is not intended that the structure of this guide be adopted by technical committees.

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. Components intended not to be used alone can only be assessed insofar as the manufacturer can predict the reasonably foreseeable use.

The voltage range considered in this IEC Guide is up to 1000 V a.c. (1 500 V d.c.). Low voltage equipment generating internal voltages higher than 1 000 V a.c. (1 500 V d.c.) are covered, provided these voltages are not touchable (example: TV set with internal HV cascade).

Product standards shall require that the equipment documentation include adequate information for the safe use of equipment.

This guide does not cover components used within the electrical distribution system or within an electrical system or machines whose risk assessment depends to a very large extent on how they are used and incorporated in an electrical system or installation.

NOTE Protective measures to be taken by the user of a product are subject to legal requirements in many countries, especially in the occupational health and safety framework.

This IEC Guide itself is not intended to be used for the purpose of certification. Product committees are encouraged to include a clause in product safety standards pertaining to risk assessment, to be used when the requirements of the standard do not fully encompass all possible hazards with equipment within the standard's scope. This clause should incorporate the principles of this Guide.

### **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 Guide 104:2010, *The preparation of safety publications and the use of basic safety publications and group safety publications*

ISO/IEC Guide 50:2002, *Safety aspects – Guidelines for child safety*

NOTE Guide 50 applies in conjunction with ISO/IEC Guide 51:1999.

ISO/IEC Guide 51:1999, *Safety aspects – Guidelines for their inclusion in standards*

ISO/IEC Guide 71, *Guidelines for standards developers to address the needs of older persons and persons with disabilities*