

TECHNICAL
REPORT

IEC
TR 60664-2-2

First edition
2002-01

**Insulation coordination for equipment
within low-voltage systems –**

**Part 2-2:
Interface considerations –
Application guide**



Reference number
IEC/TR 60664-2-2:2002(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/catlg-e.htm) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (www.iec.ch/JP.htm) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

TECHNICAL REPORT

IEC
TR 60664-2-2

First edition
2002-01

Insulation coordination for equipment within low-voltage systems –

Part 2-2: Interface considerations – Application guide

© IEC 2002 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission 3, rue de Varembé, Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site: <http://www.iec.ch>



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE **M**

For price, see current catalogue

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Reference documents.....	6
3 Definitions.....	7
4 Consideration of overvoltage categories.....	7
5 Consideration on the use of protective control.....	7
5.1 General.....	7
5.2 Recapitulation on lightning overvoltages.....	8
6 Observations on surge overvoltages and failure rates.....	9
6.1 General.....	9
6.2 Using field failure data.....	9
6.3 Preventing permanent damage.....	10
7 Principles of coordination between SPDs and with equipment to be protected (refer also to IEC 61312-3).....	11
8 Equipment for systems, installations and equipment operation under conditions of inherent or protective control.....	11
8.1 Specific protection for sections of systems or installations.....	11
8.2 Specific protection within equipment.....	11
Bibliography.....	12

This document is a preview generated by EVS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INSULATION COORDINATION FOR EQUIPMENT
WITHIN LOW-VOLTAGE SYSTEMS –**
Part 2-2: Interface considerations – Application guide

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this technical report may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example “state of the art”.

Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 60664-2-2, which is a technical report, has been prepared by IEC technical committee 109: Insulation coordination for low-voltage equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
28A/168/CDV	109/2/RVC

Full information on the voting for the approval of this technical report 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 3.

This document, which is purely informative, is not to be regarded as an International Standard.

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

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

This document is a preview generated by EVS

INTRODUCTION

This technical report provides guidelines for a common basis for IEC technical committees when considering interface issues in relation to insulation coordination. Surge protective devices are key elements in achieving a controlled overvoltage condition in low-voltage a.c. power systems and equipment. The aim of this guide is to avoid conflicting activities in the various committees involved and to achieve consistent requirements and guidelines. It deals with factors that influence the determination of overvoltage categories for installation and equipment.

A technical report IEC TR 62066 is being prepared by a joint working group (JWG) initially composed of representatives from the five IEC technical committees and subcommittees listed below and subsequently complemented by experts appointed by national committees and by CIGRE-CIRED.

SC 37A	Low-voltage surge-protective devices
TC 64	Electrical installations and protection against electric shock
SC 77B	High-frequency phenomena
TC 81	Lightning protection
TC 109	Insulation coordination for low-voltage equipment

Excerpts from IEC 62066 are included in order to identify information relevant to insulation coordination for low-voltage equipment.

document is a preview generated by EVS

INSULATION COORDINATION FOR EQUIPMENT WITHIN LOW-VOLTAGE SYSTEMS –

Part 2-2: Interface considerations – Application guide

1 Scope

This technical report provides an overview of the different kinds of surge overvoltages that can occur on low-voltage installations and equipment. In particular:

- the magnitude and duration of typical surges as well as their frequency of occurrence;
- information on overvoltages resulting from interaction between power and communication systems;
- guidelines when considering interface issues in relation to insulation coordination;
- guidelines concerning surge protection means on the basis of availability and risk considerations, including interaction within the system;
- highlights temporary overvoltages and other factors that have to be taken into account for insulation coordination, primarily related to protective control using surge protective devices.

2 Reference documents

IEC 60364-4-44, *Electrical installations of buildings – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC TS 61312-3, *Protection against lightning electromagnetic impulse – Part 3: Requirements of surge protective devices (SPDs)*

IEC 61643-1, *Surge protective devices connected to low-voltage power distribution systems – Part 1: Performance requirements and testing methods*

IEC TR 62066, *General basic information regarding surge overvoltages and surge protection in low-voltage a.c. power systems*¹

IEC 61643-12, *Surge protective devices connected to low-voltage power distribution systems – Part 12: Selection and application principles*¹

¹ To be published.