Surge overvoltages and surge protection in low-voltage a.c. power systems – General basic information

Surtensions de choc et protection contre la foudre dans les réseaux à basse tension – Informations générales fondamentales
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FOREWORD

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IEC 62066, which is a technical report, has been prepared by Technical Committee 64: Electrical installations and protection against electric shock.

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

<table>
<thead>
<tr>
<th>Enquiry draft</th>
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This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.
The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

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- withdrawn;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

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

A bilingual version of this document may be issued at a later date.
SURGE OVERVOLTAGES AND SURGE PROTECTION
IN LOW-VOLTAGE AC POWER SYSTEMS –
GENERAL BASIC INFORMATION

1 Scope

IEC 62066 is a technical report that presents a general overview on the different kinds of
surge overvoltages that can occur on low-voltage installations. Typical surge magnitude and
duration as well as frequency of occurrence are described. Information on overvoltages
resulting from interactions between power system and communications system is also
provided.

Additionally, general guidelines are given concerning surge protection means and systems on
the basis of availability and risk considerations, including interactions and the need for
coordination and consideration of temporary overvoltages in the selection of surge-protective
devices.

2 Reference documents

IEC 60364-4-44:2001, Electrical installations of buildings – Part 4-44: Protection for safety –
Protection against voltage disturbances and electromagnetic disturbances

of electrical equipment – Isolation, switching and control

IEC 60664-1:1992, Insulation coordination for equipment within low-voltage systems – Part 1:
Principles, requirements and tests
Amendment 1 (2000)

Section 5: Classification of electromagnetic environments. Basic EMC publication

IEC 61000-4-1:2000, Electromagnetic compatibility (EMC) – Part 4: Testing and measurement
techniques – Overview of IEC 61000-4 series

IEC 61000-4-4:1995, Electromagnetic compatibility (EMC) – Part 4: Testing and measurement
techniques – Section 4: Electrical fast transient/burst immunity test. Basic EMC publication

IEC 61000-4-5:1995, Electromagnetic compatibility (EMC) – Part 4: Testing and measurement
techniques – Section 5: Surge immunity test
Amendment 1 (2000)

IEC/TR 61000-5-2:1997, Electromagnetic compatibility (EMC) – Part 5: Installation and
mitigation guidelines – Section 2: Earthing and cabling

IEC 61024-1:1990, Protection of structures against lightning – Part 1: General principles

Section 1: Guide A – Selection of protection levels for lightning protection systems

IEC 61312-1:1995, Protection against lightning electromagnetic impulse – Part 1: General
principles

IEC 61643-1:1998, Surge protective devices connected to low-voltage power distribution systems – Part 1: Performance requirements and testing methods

IEC 61643-12:2002, Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power distribution systems – Selection and application principles

IEC 61662:1995, Assessment of the risk of damage due to lightning Amendment 1 (1996)


ITU-T K.20, Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents

ITU-T K.21, Resistibility of telecommunication equipment installed in customers' premises to overvoltages and overcurrents

IEEE 1036:1992, Guide for application of shunt power capacitors

NOTE Other documents are listed in the bibliography, which includes documents that were used in developing the present report, documents cited in support of a recommendation, and documents suggested as further reading for information.