

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Electromagnetic compatibility (EMC) –
Part 6-5: Generic standards – Immunity for equipment used in power station and
substation environment**

**Compatibilité électromagnétique (CEM) –
Partie 6-5: Normes génériques – Immunité pour les équipements utilisés dans
les environnements de centrales électriques et de postes**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 6-5: Generic standards – Immunity for equipment used
in power station and substation environment**

FOREWORD

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International Standard IEC 61000-6-5 has been prepared by committee 77: Electromagnetic compatibility (EMC).

This first edition cancels and replaces the first edition of IEC TS 61000-6-5 published in 2001. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the scope is extended in order to cover also power generating systems in industrial facilities;
- b) the locations under consideration, i.e. power stations and substations are described in more detail;
- c) performance criteria and the EUT functions they apply to are reviewed;

- d) immunity requirements are reviewed and more specifically related to the relevant locations;
- e) informative annexes for guidance and on protected zones are added.

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

FDIS	Report on voting
77/484/FDIS	77/500/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.

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will

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- withdrawn,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

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INTRODUCTION

IEC 61000 series is published in separate parts, according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)
Definitions, terminology

Part 2: Environment

Description of the environment
Classification of the environment
Compatibility levels

Part 3: Limits

Emission limits
Immunity limits (in so far as they do not fall under the responsibility of the product committees)

Part 4: Testing and measurement techniques

Measurement techniques
Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines
Mitigation methods and devices

Part 6: Generic standards

Part 9: Miscellaneous

Each part is further subdivided into sections which are to be published either as International Standards or as technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

This International Standard deals with the electromagnetic compatibility (EMC) of equipment used in the generation, transmission and distribution of electricity and related telecommunication systems.

Several EMC product standards have been published by technical committees dealing with different application areas in the generation, transmission and distribution of electricity and related telecommunication systems, for example:

- fixed power supply installations and apparatus for railway applications (TC 9),
- switchgear and controlgear (TC 17),
- instrument transformers (TC 38),
- nuclear instrumentation (TC 45),
- power systems management and associated information exchange (TC 57),
- industrial-process measurement and control – system aspects (SC 65A),
- measuring relays and protection equipment (TC 95), etc.

The requirements specified in these product standards consider product-specific aspects only. It is the task of this generic standard IEC 61000-6-5 to specify a set of essential requirements, test procedures and generalized performance criteria applicable to such products or systems operating in this electromagnetic environment.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 6-5: Generic standards – Immunity for equipment used in power station and substation environment

1 Scope and object

This part of IEC 61000 specifies EMC immunity requirements which apply to electrical and electronic equipment intended for use in power stations and substations, as described below. Immunity requirements for electromagnetic phenomena with spectral contributions in the frequency range 0 Hz to 400 GHz are covered. No tests need to be performed at frequencies or for phenomena where no requirements are specified.

This international standard sets immunity test requirements for equipment intended for use in the generation, transmission and distribution of electricity and related telecommunication systems. The electromagnetic environments encompassed by this standard are those which exist at locations

- in power stations, and
- in high and medium voltage substations.

Installations to generate or convert into electrical power inside industrial facilities are also covered by this standard as long as they, at their primary electrical connection, cannot be directly connected to the LV power network, e.g. where the generator output voltage is medium voltage or higher. Power installations that directly provide power into the low voltage network (such as photovoltaic cells or combined heat power systems in private houses) are not covered by this standard.

NOTE 1 In general, power stations comprise installations which are mainly built to convert some kind of primary energy into electrical energy. Moreover, these power stations are connected to the medium or high voltage power system directly or via a step-up transformer.

The object of this standard is to define immunity test requirements for equipment defined in the scope in relation to continuous and transient, conducted and radiated disturbances, including electrostatic discharges.

The immunity test requirements are given on a port-by-port basis, and selected according to the location, with differentiated levels for equipment to be installed in power stations or substations. In special cases, situations will arise where the level of electromagnetic disturbances may exceed the levels specified in this standard; in these instances, special mitigation measures should be adopted.

The immunity requirements are suitable for satisfying the particular needs related to the functions and tasks of equipment and systems, for which reliable operation is required under realistic electromagnetic conditions; in this respect, this standard establishes performance criteria for different functional requirements.

This generic EMC immunity standard is applicable if no relevant dedicated product or product-family EMC immunity standard exists. According to IEC Guide 107, this generic standard should be considered for the preparation or revision of any EMC standard referring to specific products used in power stations and substations.

NOTE 2 Product standards covering EMC aspects for equipment to be used in power stations or substations are for example IEC 62271-1 (switchgear and controlgear), IEC 60255-26 (measuring relays and protection equipment) or IEC 62236-5 (fixed power supply installations and apparatus for railway applications).