



## **Electromagnetic compatibility (EMC)**

### **Part 6.5: Generic standards—Immunity for equipment used in power station and substation environment**



This Australian Standard® was prepared by Committee TE-003, Electromagnetic Compatibility. It was approved on behalf of the Council of Standards Australia on 3 April 2017.

This Standard was published on 24 May 2017.

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The following are represented on Committee TE-003:

- Australian Communications and Media Authority
  - Australian Industry Group
  - Australian Information Industry Association
  - Consumer Electronics Suppliers Association
  - Curtin University of Technology
  - Department of Defence (Australian Government)
  - Electrical Compliance Testing Association
  - EMC Society of Australia
  - Energy Networks Australia
  - Engineers Australia
  - Free TV Australia
  - Lighting Council Australia
  - Wireless Institute Australia
- 

This Standard was issued in draft form for comment as DR AS IEC 61000.6.5:2017.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

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### **Part 6.5: Generic standards—Immunity for equipment used in power station and substation environment**

First published as AS IEC 61000.6.5:2017.

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Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76035 773 3

## PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee TE-003, Electromagnetic Compatibility.

The objective of this Standard is to specify EMC immunity requirements which apply to electrical and electronic equipment intended for use in power stations and substations.

This Standard is identical with, and has been reproduced from IEC 61000-6-5:2015 (ED.1.0), *Electromagnetic compatibility (EMC), Part 6-5: Generic standards—Immunity for equipment used in power station and substation environment*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

As this Standard is reproduced from an International Standard, the following applies:

- (a) In the source text ‘this part of 61000’ should read ‘this Australian Standard’.
- (b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific standards.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

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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.

## AUSTRALIAN STANDARD

**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).