

Australian/New Zealand Standard™

Electromagnetic compatibility (EMC)

Part 2.12: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power supply systems



AS/NZS 61000.2.12:2003

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RECONFIRMATION

OF

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Electromagnetic compatibility (EMC)

Part 2.12: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power supply systems

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NOTES

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-034, Power Quality.

The objective of this Standard is to specify compatibility levels for electromagnetic disturbance phenomena which can be expected in public medium voltage a.c. distribution systems.

This Standard is identical with, and has been reproduced from IEC 61000-2-12:2003, *Electromagnetic compatibility (EMC) - Part 2-12: Environment - Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power supply systems*.

This Standard is Part 2.12 of a series, which, currently consists of the following:

AS/NZS

61000 Electromagnetic compatibility (EMC)

61000.1.1 Part 1.1: General—Application and interpretation of fundamental definitions and terms

61000.2.2 Part 2.2: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems

61000.2.3 Part 2.3: Environment—Description of the environment—Radiated and non-network-frequency-related conducted phenomena

61000.2.5 Part 2.5: Environment—Classification of electromagnetic environments

61000.2.12 Part 2.12: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power supply systems (this Standard)

61000.3.2 Part 3.2: Limits—Limits for harmonic current emissions (equipment input current less than or equal to 16 A per phase)

61000.3.3 Part 3.3: Limits—Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current less than or equal to 16 A per phase and not subject to conditional connection

61000.3.5 Part 3.5: Limits—Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current greater than 16 A

61000.3.6 Part 3.6: Limits—Assessment of emission limits for distorting loads in MV and HV power systems

61000.3.7 Part 3.7: Limits—Assessment of emission limits for fluctuating loads in MV and HV power systems

61000.3.11 Part 3.11: Limits—Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems—Equipment with rated current less than or equal to 75A and subject to conditional connection

61000.4.1 Part 4.1: Testing and measurement techniques—Overview of immunity tests

61000.4.2 Part 4.2: Testing and measurement techniques—Electrostatic discharge immunity test

61000.4.3 Part 4.3: Testing and measurement techniques—Radiated radio-frequency electromagnetic field immunity test

61000.4.5 Part 4.5: Testing and measurement techniques—Surge immunity test

61000.4.6 Part 4.6: Testing and measurement techniques—Immunity to conducted disturbances, induced by radio-frequency fields

- 61000.4.7 Part 4.7: Testing and measurement techniques—General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto
- 61000.4.8 Part 4.8: Testing and measurement techniques—Power frequency magnetic field immunity test
- 61000.4.16 Part 4.16: Testing and measurement techniques—Test for immunity to conducted common mode disturbances in the frequency range 0 Hz to 150 kHz
- 61000.6.2 Part 6.2: Generic standards—Immunity for industrial environments

In this Standard, the following print types are used:

- requirements proper: in arial type;
- *test specifications: in italic type;*
- explanatory matter: in smaller arial type.

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

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this international standard’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

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

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Australian/New Zealand Standard**Electromagnetic compatibility (EMC)****Part 2.12: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power supply systems****1 Scope and object**

This part of AS/NZS 61000 is concerned with conducted disturbances in the frequency range from 0 kHz to 9 kHz, with an extension up to 148,5 kHz specifically for mains signalling systems. It gives compatibility levels for public medium voltage a.c. distribution systems having a nominal voltage between 1 kV and 35 kV and a nominal frequency of 50 Hz or 60 Hz (see IEC 60038).

Compatibility levels are specified for electromagnetic disturbances of the types which can be expected in public medium voltage power supply systems, for guidance in:

- a) the limits to be set for disturbance emission into public power supply systems (including the planning levels defined in 3.1.5);
- b) the immunity limits to be set by product committees and others for the equipment exposed to the conducted disturbances present in public power supply systems.

The disturbance phenomena considered are:

- voltage fluctuations and flicker;
- harmonics up to and including order 50;
- inter-harmonics up to the 50th harmonic;
- voltage distortions at higher frequencies (above 50th harmonic);
- voltage dips and short supply interruptions;
- voltage unbalance;
- transient overvoltages;
- power frequency variation;
- d.c. components;
- mains signalling.

Most of these phenomena are described in IEC 61000-2-1. In cases where it is not yet possible to establish compatibility levels, some information is provided.

The medium-voltage systems covered by this standard are public distribution systems supplying either:

- a) private installations in which equipment is connected directly or through transformers, or
- b) substations feeding public low-voltage distribution systems.

The compatibility levels specified in this standard apply at the point of common coupling in the case of (a) and at the medium-voltage terminals of the substation in the case of (b). See Clause 4.

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.

References to international standards that are struck through in this clause are replaced by references to Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is identified as such.

IEC 60071(all parts), *Insulation co-ordination*

IEC 60071-1, *Insulation co-ordination – Part 1: Definitions, principles and rules*

~~IEC 61000-2-2, Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems~~

AS/NZS 61000.2.2, *Electromagnetic compatibility (EMC), Part 2.2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*

IEC 61000-2-4, *Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances*

~~IEC 61000-4-7, Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto~~

AS/NZS 61000.4.7, *Electromagnetic compatibility (EMC), Part 4.7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*

3 Terms and definitions

For the purpose of this present document, the following definitions apply.

3.1 General definitions

3.1.1 (electromagnetic) disturbance

any electromagnetic phenomenon which, by being present in the electromagnetic environment, can cause electrical equipment to depart from its intended performance

[IEV 161-01-05 modified]

3.1.2 disturbance level

the amount or magnitude of an electromagnetic disturbance, measured and evaluated in a specified way

[IEV 161-03-01 modified]