

AS/NZS IEC 61000.3.12:2023
IEC 61000-3-12:2011+AMD1:2021 CSV



Australian/New Zealand Standard™

Electromagnetic compatibility (EMC)

Part 3.12: Limits — Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase



AS/NZS IEC 61000.3.12:2023

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-034, Power Quality, to supersede AS/NZS IEC 61000.3.12:2013.

The objective of this document is to specify the limitation of harmonic currents injected into the public supply system. The limits given in this document are applicable to electrical and electronic equipment with a rated input current exceeding 16 A and up to and including 75 A per phase, intended to be connected to public low-voltage a.c. distribution systems of the following types:

- (a) Nominal voltage up to 240 V, single-phase, two or three wires.
- (b) Nominal voltage up to 690 V, three-phase, three or four wires.
- (c) Nominal frequency 50 Hz or 60 Hz.

Other distribution systems are excluded. The limits given in this document apply to equipment when connected to 230/400 V, 50 Hz systems. See also Clause 5.

This document applies to equipment intended to be connected to low-voltage systems interfacing with the public supply at the low-voltage level. It does not apply to equipment intended to be connected only to private low-voltage systems interfacing with the public supply only at the medium- or high-voltage level.

This document defines:

- (i) Requirements and emission limits for equipment.
- (ii) Methods for type tests and simulations.

Tests according to this document are type tests of complete pieces of equipment. Conformity with this document can also be determined by validated simulations.

This document is identical with, and has been reproduced from, IEC 61000-3-12:2011+AMD1:2021 CSV, *Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase*.

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NOTES

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	8
3 Terms and definitions	8
4 Measurement conditions.....	12
4.1 Determination of the reference current.....	12
4.2 Harmonic current measurement	12
4.2.1 General	12
4.2.2 Measurement procedure	12
4.2.3 Repeatability	13
4.2.4 Starting and stopping.....	13
4.2.5 Application of limits	13
4.2.6 Test report.....	13
4.2.7 Test observation period	13
4.3 Equipment consisting of several self-contained items.....	14
5 Requirements and limits for equipment.....	14
5.1 Control methods	14
5.2 Limits for emission.....	14
5.3 Procedure if the reference current is less than 16 A.....	18
6 Product documentation.....	19
7 Test and simulation conditions.....	19
7.1 General.....	19
7.2 Requirements for direct measurement.....	20
7.3 Requirements for simulation.....	21
7.4 General conditions for test and simulation.....	22
Annex A (normative) Type test conditions	23
Annex B (informative) Illustration of limits for harmonic currents	25
Annex C (informative) Equipment not complying with the requirements and limits of this standard.....	26
Bibliography.....	27
Figure 1 – Definition of the 5 th harmonic current phase angle (I_5 leads U_{p1} , $\alpha_5 > 0$)	11
Figure 2 – Definition of the 5 th harmonic current phase angle (I_5 lags U_{p1} , $\alpha_5 < 0$)	12
Figure 3 – Flowchart of the application procedure	18
Figure B.1 – Limits of the 5 th harmonic current as functions of R_{Sce}	25
Table 1 – Values of the observation period	14
Table 2 – Current emission limits for equipment other than balanced three-phase equipment.....	16
Table 3 – Current emission limits for balanced three-phase equipment	17
Table 4 – Current emission limits for balanced three-phase equipment under specified conditions (a, b, c)	17

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Table 5 – Current emission limits for balanced three-phase equipment under specified conditions (d, e, f)..... 17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 3-12: Limits –
Limits for harmonic currents produced
by equipment connected to public low-voltage systems
with input current >16 A and ≤75 A per phase**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 61000-3-12 edition 2.1 contains the second edition (2011-05) [documents 77A/740/FDIS and 77A/747/RVD], its interpretation sheet 1 (2012-09) and its amendment 1 (2021-06) [documents 77A/1042/CDV and 77A/1074/RVC].

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

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International Standard IEC 61000-3-12 has been prepared by subcommittee 77A: Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

This second edition constitutes a technical revision.

The significant technical changes with respect to the previous edition are listed below:

- the reference fundamental current I_1 is replaced by the reference current I_{ref} for the calculation of emission limits;
- a new table of current emission limits (Table 5) is added;
- a new annex (Annex A) is added to define test conditions for some types of equipment;
- former Annexes B (Approximate interpolation formulas) and D (Information on the *PWHD* factor) are deleted.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of 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 the base publication and its amendment 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 be

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

INTRODUCTION

IEC 61000 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 several parts, 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 is a Product Family Standard.

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 3-12: Limits –
Limits for harmonic currents produced
by equipment connected to public low-voltage systems
with input current >16 A and ≤ 75 A per phase****1 Scope**

This part of IEC 61000 deals with the limitation of harmonic currents injected into the public supply system. The limits given in this International Standard are applicable to electrical and electronic equipment with a rated input current exceeding 16 A and up to and including 75 A per phase, intended to be connected to public low-voltage AC distribution systems of the following types:

- nominal voltage up to 240 V, single-phase, two or three wires;
- nominal voltage up to 690 V, three-phase, three or four wires;
- nominal frequency 50 Hz or 60 Hz.

Other distribution systems are excluded. The limits given in this edition apply to equipment when connected to 230/400 V, 50 Hz systems. See also Clause 5.

NOTE 1 The limits for the other systems will be added in a future edition of this standard.

NOTE 2 Equipment with a rated input current exceeding 75 A per phase should be considered in the harmonic current requirements for installations. See IEC/TR 61000-3-6 and IEC/TR 61000-3-14.

This standard applies to equipment intended to be connected to low-voltage systems interfacing with the public supply at the low-voltage level. It does not apply to equipment intended to be connected only to private low-voltage systems interfacing with the public supply only at the medium- or high-voltage level.

NOTE 3 The scope of this standard is limited to equipment connected to public low voltage systems because emissions from equipment installed in private low voltage systems can be controlled in aggregate at the MV point of common coupling using procedures defined in IEC/TR 61000-3-6 and/or by means of contractual agreements between the distribution network operator and the customer. It is expected that operators of private systems will manage the EMC environment in a manner that ensures compliance with the provisions given in IEC/TR 61000-3-6 and/or the contractual agreements.

NOTE 4 If the equipment is intended to be connected only to private systems, the manufacturer should make this very clear in the product documentation.

NOTE 5 Professional equipment with input current ≤ 16 A per phase and that does not comply with the requirements and limits of standard IEC 61000-3-2 may be permitted to be connected to certain types of low voltage supplies, in the same way as equipment with input current >16 A per phase and that does not comply with the requirements and limits of the present standard (see Annex C).

NOTE 6 The limits in this standard are not applicable to stand-alone harmonic filters.

This standard defines:

- a) requirements and emission limits for equipment;
- b) methods for type tests and simulations.

Tests according to this International Standard are type tests of complete pieces of equipment.

Conformity with this standard can also be determined by validated simulations.