

Australian/New Zealand Standard™

Electromagnetic compatibility (EMC)

**Part 3.2: Limits—Limits for harmonic
current emissions (equipment input
current ≤ 16 A per phase)**



AS/NZS 61000.3.2:2013

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-034, Power Quality. It was approved on behalf of the Council of Standards Australia on 17 June 2013 and on behalf of the Council of Standards New Zealand on 5 June 2013.

This Standard was published on 27 June 2013.

The following are represented on Committee EL-034:

Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Information Industry Association
Bureau of Steel Manufacturers of Australia
Consumer Electronics Suppliers Australia
Consumers Federation of Australia
Electrical Regulatory Authorities Council
Electricity Engineers Association, New Zealand
Energy Networks Association
Engineers Australia
Lighting Council of Australia
Ministry of Economic Development, New Zealand
National Measurement Institute
New Zealand Coordinating Committee on Power and Telecommunication Systems
New Zealand Electric Fence Energiser Manufacturers Standards WG
University of Canterbury, New Zealand
University of Wollongong

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.saiglobal.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS 61000.3.2.

Australian/New Zealand Standard™

Electromagnetic compatibility (EMC)

Part 3.2: Limits—Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

Originated in Australia as AS 2279.1—1979.
Previous edition AS/NZS 61000.3.2:2007.
Fourth edition 2013.

COPYRIGHT

© Standards Australia Limited/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140.

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-034, Power Quality, to supersede AS/NZS 61000.3.2:2007, *Electromagnetic compatibility (EMC), Part 3.2: Limits—Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) (IEC 61000-3-2, Ed. 3.0 (2005) MOD)*.

The objective of this Standard is to provide manufacturers and suppliers of electricity and users of electrical equipment intended for connection to an electrical network with limits for voltage disturbances and harmonics produced by that equipment and the methods for ascertaining compliance to them in order to maintain electromagnetic compatibility within the electrical network.

FOR AUSTRALIA: This Standard is identical with and has been reproduced from IEC 61000-3-2, Ed. 3.2 (2009), *Electromagnetic compatibility (EMC), Part 3-2: Limits—Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*.

FOR NEW ZEALAND: This Standard is an adoption with national modifications and has been reproduced from IEC 61000-3-2, Ed. 3.2 (2009), *Electromagnetic compatibility (EMC), Part 3-2: Limits—Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)* and has been varied as indicated to take account of New Zealand conditions. The modifications are specified in Appendix ZZ.

The consolidated version of IEC 61000-3-2, Ed. 3.2 (2009) consists of the third edition of IEC 61000-3-2 (2005), its Amendment 1 (2008) and Amendment 2 (2009). The amended text is indicated by a vertical line in the margin. The contents of the IEC corrigendum of August 2009 have also been included in this consolidated version.

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

- (a) The International Standard number appears only on the cover.
- (b) In the source text ‘this part of IEC 61000’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
IEC		AS	
60974	Arc welding equipment	60974	Arc welding equipment
60974-1	Part 1: Welding power sources	60974.1	Part 1: Welding power sources (IEC 60974-1:2000, MOD)
		AS/NZS	
60155	Glow-starters for fluorescent lamps	60155	Glow-starters for fluorescent lamps
60335	Household and similar electrical appliances	60335	Household and similar electrical appliances
60335-2-2	Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances	60335.2.2	Part 2.2: Particular requirements for vacuum cleaners and water-suction cleaning appliances (IEC 60335-2-2 Ed. 5.2, MOD)
60335-2-14	Part 2-14: Particular requirements for kitchen machines	60335.2.14	Part 2.14: Particular requirements for kitchen machines (IEC 60335-2-14, Ed. 5.0 MOD)

IEC		AS/NZS	
61000	Electromagnetic compatibility (EMC)	61000	Electromagnetic compatibility (EMC)
61000-2-2	Part 2-2: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	61000.2.2	Part 2.2: Environment—Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems
61000-3-12	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	61000.3.12	Part 3.12: Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase
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	61000.4.7	Part 4.7: Testing and measurement techniques—General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto
IEC/TS			
61000-3-4	Part 3-4: Limits—Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A	61000.3.4	Part 3.4: Limits—Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 75 A

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The term ‘normative’ has been used in this Standard to define the application of the annex to which it applies. A ‘normative’ annex is an integral part of a Standard.

CONTENTS

1	Scope	7
2	Normative references	7
3	Definitions	8
4	General	12
5	Classification of equipment	12
6	General requirements	13
6.1	Control methods	13
6.2	Harmonic current measurement	14
6.3	Equipment in a rack or case	16
7	Harmonic current limits	17
7.1	Limits for Class A equipment	19
7.2	Limits for Class B equipment	19
7.3	Limits for Class C equipment	19
7.4	Limits for Class D equipment	20
	Annex A (normative) Measurement circuit and supply source	22
A.1	Test circuit	22
A.2	Supply source	22
	Annex B (normative) Requirements for measurement equipment	25
	Annex C (normative) Type test conditions	26
C.1	General	26
C.2	Test conditions for television (TV) receivers	26
C.3	Test conditions for audio amplifiers	27
C.4	Test conditions for video-cassette recorders	28
C.5	Test conditions for lighting equipment	28
C.6	Test conditions for independent and built-in incandescent lamp dimmers	29
C.7	Test conditions for vacuum cleaners	29
C.8	Test conditions for washing machines	29
C.9	Test conditions for microwave ovens	29
C.10	Test conditions for information technology equipment (ITE)	30
C.11	Test conditions for induction hobs	31
C.12	Test conditions for air conditioners	31
C.13	Test conditions for kitchen machines as defined in IEC 60335-2-14	31
C.14	Test conditions for arc welding equipment which is not professional equipment	32

Figure 1 – Flowchart for determining conformity	18
Figure 2 – Illustration of the relative phase angle and current parameters described in 7.3 b)	19
Figure A.1 – Measurement circuit for single-phase equipment.....	23
Figure A.2 – Measurement circuit for three-phase equipment.....	24
Table 1 – Limits for Class A equipment	20
Table 2 – Limits for Class C equipment	21
Table 3 – Limits for Class D equipment	21
Table 4 – Test observation period	21
Table C.1 – Conventional load for arc welding equipment tests	32

AUSTRALIAN/NEW ZEALAND STANDARD

Electromagnetic compatibility (EMC)

Part 3.2:

Limits—Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)**1 Scope**

This part of IEC 61000 deals with the limitation of harmonic currents injected into the public supply system.

It specifies limits of harmonic components of the input current which may be produced by equipment tested under specified conditions.

Harmonic components are measured according to Annexes A and B.

This part of IEC 61000 is applicable to electrical and electronic equipment having an input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems.

Arc welding equipment which is not professional equipment, with input current up to and including 16 A per phase, is included in this standard.

Arc welding equipment intended for professional use, as specified in IEC 60974-1, is excluded from this standard and may be subject to installation restrictions as indicated in IEC 61000-3-4 or IEC 61000-3-12.

The tests according to this standard are type tests. Test conditions for particular equipment are given in Annex C.

For systems with nominal voltages less than 220 V (line-to-neutral), the limits have not yet been considered.

NOTE The words apparatus, appliance, device and equipment are used throughout this standard. They have the same meaning for the purpose of this standard.

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.

IEC 60050(131), *International Electrotechnical Vocabulary (IEV) – Chapter 131: Electric and magnetic circuits*

IEC 60050(161), *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 60107-1, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*