

Australian/New Zealand Standard™

Electrical installations—Generating sets



AS/NZS 3010:2017

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-001, Wiring Rules. It was approved on behalf of the Council of Standards Australia on 13 March 2017 and by the New Zealand Standards Approval Board on 5 April 2017.

This Standard was published on 8 May 2017.

The following are represented on Committee EL-001:

Australian Building Codes Board
Australian Industry Group
Communications, Electrical and Plumbing Union—Electrical Division
Consumers Federation of Australia
Electrical Contractors Association of New Zealand
Electrical Regulatory Authorities Council
Electrical Safety Organisation, New Zealand
ElectroComms and Energy Utilities Industries Skills Council
Energy Networks Association
Engineers Australia
Institute of Electrical Inspectors
Master Electricians Australia
Ministry of Business, Innovation and Employment, New Zealand
National Electrical and Communications Association
National Electrical Switchboard Manufacturers Association
New Zealand Council of Elders
New Zealand Electrical Institute
New Zealand Manufacturers and Exporters Association

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 Standards may also be withdrawn.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 Australia Web Site at www.standards.org.au or Standards New Zealand web site at www.standards.govt.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 Standards Australia or the New Zealand Standards Executive at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS 3010:2015.

Australian/New Zealand Standard™

Electrical installations—Generating sets

First published as AS 3010.1—1987.
Revised and redesignated AS/NZS 3010:2005.
Second edition 2017.

COPYRIGHT

© Standards Australia Limited

© The Crown in right of New Zealand, administered by the New Zealand Standards Executive

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).

PREFACE

This Standard was prepared by the joint Standards Australia/Standards New Zealand Committee EL-001, Wiring Rules, to supersede AS/NZS 3010:2005 and AS 2790—1989.

The objective of this Standard is to set out the minimum safety requirements related to the use of generating sets for the supply of electricity at voltages normally exceeding 50 V a.c. or 120 V d.c.

This Standard differs from AS/NZS 3010:2005 as follows:

- (a) Inclusion of several new figures showing a variety of generator connection methods which are acceptable and conform with the requirements of this Standard.
- (b) The modification of existing figures to show clearly the intent of the associated clauses, especially in relation to main switches.
- (c) The inclusion of some updated provisions of AS 2790 as a normative Appendix of this document (see Appendix D).
- (d) Inclusion of an exception in relation to the mechanical interlock requirements of the changeover device.
- (e) Inclusion of additional definitions, e.g. safety services and essential services.
- (f) General reinforcement of the MEN connection requirements.
- (g) Clarification of when switching of the neutral conductor is or is not permitted.
- (h) Clauses added in relation to carrying out additions, alterations and repairs in line with AS/NZS 3000.
- (i) Clauses added to clarify the use of three and four pole changeover devices.
- (j) Requirements of AS/NZS 3000 where not amended or changed by this Standard included within the Figures, e.g. mechanical maintenance isolating devices.

Any requirements that may be applicable in Australia only or New Zealand only are indicated in the text and by a symbol in the right margin as follows:

‘In Australia.....’

A

‘In New Zealand.....’

NZ

Statements expressed in mandatory terms in notes to Figures and Tables are deemed to be requirements of this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendices to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	4
1.2 APPLICATION	4
1.3 REFERENCED DOCUMENTS.....	5
1.4 DEFINITIONS.....	7
1.5 SYMBOLS	9
 SECTION 2 GENERAL REQUIREMENTS FOR THE INSTALLATION OF GENERATING SETS	
2.1 GENERAL.....	10
2.2 LOCATION.....	11
2.3 MECHANICAL AND THERMAL PROTECTION.....	11
2.4 CONTROL OF GENERATING SET.....	12
2.5 EARTHING ARRANGEMENTS	14
2.6 ELECTRICAL INSTALLATION.....	15
2.7 ALTERNATIVE SUPPLY (STANDBY)	16
2.8 EARTHING AND BONDING REQUIREMENTS.....	31
2.9 GENERATOR SWITCHBOARDS.....	34
2.10 LIGHTNING PROTECTION SYSTEMS.....	34
2.11 GENERATING SETS CONNECTED AS NORMAL SUPPLY TO A MAIN SWITCHBOARD IN A PERMANENT ELECTRICAL INSTALLATION.....	34
2.12 GENERATING SETS CONNECTED TO AN ELECTRICAL INSTALLATION CONNECTED AS AN ALTERNATIVE SUPPLY	35
 SECTION 3 ADDITIONAL REQUIREMENTS FOR PERMANENTLY CONNECTED GENERATING SETS	
3.1 GENERAL.....	44
3.2 LOCATION.....	44
3.3 GUARDING OF LIVE PARTS	45
3.4 TRANSFORMERS.....	45
3.5 GENERATING SETS SUPPLYING SAFETY AND ESSENTIAL SERVICES	46
 SECTION 4 ADDITIONAL REQUIREMENTS FOR PORTABLE GENERATORS	
4.1 GENERAL.....	52
4.2 CONNECTION TO AN ELECTRICAL INSTALLATION	52
4.3 EARTHING AND BONDING.....	53
4.4 CONNECTION OF A PORTABLE GENERATING SET TO A DEDICATED WIRING SYSTEM—NEW ZEALAND ONLY	54
 APPENDICES	
A EARTHING REQUIREMENTS FOR GENERATING SETS CONNECTED TO FIXED ELECTRICAL INSTALLATIONS	58
B RECOMMENDATIONS FOR PORTABLE GENERATING SETS SUPPLYING ELECTRICAL EQUIPMENT (NEW ZEALAND ONLY)	60
C DEDICATED WIRING IN AN ELECTRICAL INSTALLATION FOR CONNECTION OF A PORTABLE GENERATING SET (NEW ZEALAND ONLY).....	72
D REQUIREMENTS FOR THE CONSTRUCTION OF SELF-CONTAINED TRANSPORTABLE GENERATING SETS UP TO 25 KW.....	75

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Electrical installations—Generating sets

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out the minimum safety requirements related to the use of generating sets for the supply of electricity at low voltage, that is, not exceeding 1000 V a.c or 1500 V d.c.

The Standard applies to electricity generating sets that are driven by internal combustion engines, and forms any of the following:

- (a) Normal supply source for electrical installations.
- (b) Alternative supply source for electrical installations.
- (c) Electrical supply source for the connection of electrical appliances and portable tools.
- (d) Supply sources that operate in parallel with the normal supply in the electrical installation.

This Standard does not—

- (i) apply to uninterruptible power supplies; or
- (ii) apply to other renewable energy generation systems, such as, the following:
 - (A) Inverters.
 - (B) Photovoltaic arrays.
 - (C) Water or wind driven turbines.

NOTE: While intended to be applied to low voltage generating sets driven by internal combustion engines, the electrical principles could be applied to other types of energy sources.

1.2 APPLICATION

In addition to being in accordance with the requirements of AS/NZS 3000 and the additional requirements of this Standard, the generating set installation may be required to comply with requirements of electricity distributors and other relevant regulatory authorities. It is, therefore, recommended that these authorities be consulted prior to the installation of equipment.

Section 2 outlines general requirements for the installation of generating sets to an electrical installation. Sections 3 and 4 introduce additional requirements for permanently connected and plug and socket outlet connected generating sets respectively.

Appendix A specifies the fault current path when the generating set is fixed wired to an electrical installation.

Appendix B specifies a New-Zealand-only guidance for the connection of portable generating sets when directly supplying portable tools connected to the generating set by plugs and sockets. NZ

Appendix C specifies a New Zealand-only provision for the connection of a dedicated wiring system within an electrical installation. NZ