

Australian/New Zealand Standard™

**Electrical installations—Marinas and  
boats**

**Part 2: Boat installations**



## **AS/NZS 3004.2:2014**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-057, Boating and Boating Marinas Installations. It was approved on behalf of the Council of Standards Australia on 7 May 2014 and on behalf of the Council of Standards New Zealand on 6 June 2014. This Standard was published on 27 June 2014.

---

The following are represented on Committee EL-057:

Australian Corrosion Association  
Australian Industry Group  
Boating Industries Alliance of Australia  
Electrical Contractors Association of New Zealand  
Electrical Regulatory Authorities Council  
Electrical Safety Organisation, New Zealand  
Energy Networks Association  
Marina Industries Association of Australia  
Marine Queensland  
New Zealand Marina Operators  
New Zealand Motor Caravan 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 Standards may also be withdrawn.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 Web Shop at [www.saiglobal.com.au](http://www.saiglobal.com.au) or Standards New Zealand web site at [www.standards.co.nz](http://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 3004.2.*

---

# Australian/New Zealand Standard™

## Electrical installations—Marinas and boats

### Part 2: Boat installations

Originated in Australia as part of AS 3004—1979.  
Originated in New Zealand as part of AS/NZS 3004:2002.  
Previous edition AS/NZS 3004.2:2008.  
Second edition 2014.  
Reissued incorporating Amendment No. 1 (July 2015).

#### **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.

ISBN 978 1 74342 752 1

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-057, Boating and Boating Marinas Installations, to supersede AS/NZS 3004.2:2008, *Electrical installations—Marinas and recreational boats, Part 2: Recreational boats installations*.

*This Standard incorporates Amendment No. 1 (July 2015). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

The objective of this Standard is to provide designers, manufacturers, boat builders and regulators with safety requirements for small boats.

This Standard is part of a series, which includes the following:

AS/NZS

3004 Electrical installations—Marinas and boats

3004.1 Part 1: Marinas

3004.2 Part 2: Boat installations (this Standard)

In the preparation of this Standard reference was made to the following:

- (a) IEC 60092-507: Ed.1.0 (2000), *Electrical installations in ships, Part 507: Pleasure craft*.
- (b) ISO 10133, *Small craft—Electrical systems—Extra-low-voltage d.c. installations*.
- (c) ISO 13297, *Small craft—Electrical systems—Alternating current installations*.
- (d) American Boat and Yacht Council (ABYC) Standards and Technical Information Reports for Small Craft:
  - (i) A-28, *Galvanic isolators*.
  - (ii) A-32, *AC power conversion equipment and systems*.
  - (iii) E-11, *AC and DC electrical systems on boats*.
  - (iv) S-31, *Environmental considerations for systems and components installed onboard boats*.

and acknowledgement is made of the assistance received therefrom.

Compliance with this Standard may be required by legislation, from a date to be set by the relevant regulating authority.

If work on an installation was commenced before publication of this edition, permission can be granted by the relevant regulatory authority or electricity distributor for the installation to be completed under AS/NZS 3004:2008.

It is not the intention of this Standard to limit the introduction and use of emerging technologies. However, designers are reminded that it is essential that the basic tenets of electrical and marine safety be addressed before any other equipment and installation design elements are considered.

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.....’

‘In New Zealand.....’



Statements expressed in mandatory terms in footnotes to 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 appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is for information and guidance only.

## CONTENTS

	Page
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	6
1.2 APPLICATION .....	7
1.3 REFERENCED AND RELATED DOCUMENTS.....	7
1.4 DEFINITIONS.....	10
SECTION 2 GENERAL REQUIREMENTS	
2.1 RATINGS.....	15
2.2 AMBIENT AIR AND COOLING WATER TEMPERATURE.....	15
2.3 INCLINATION OF BOAT .....	16
2.4 VOLTAGE AND FREQUENCY VARIATIONS .....	16
2.5 ELECTRICAL POWER SOURCES .....	17
2.6 EQUIPMENT .....	20
2.7 EQUIPMENT CONSTRUCTION .....	22
2.8 PLUGS AND SOCKET-OUTLETS .....	24
2.9 BATTERY INSTALLATION.....	25
2.10 BATTERY CHARGERS .....	26
2.11 INTERNAL COMMUNICATION CIRCUITS.....	27
2.12 ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES .....	27
2.13 ELECTRICAL FITTINGS AND CABLES ATTACHED TO STRUCTURES OF ANOTHER METAL .....	27
2.14 NAVIGATION LIGHTS SUPPLY .....	27
2.15 LUMINAIRES.....	28
2.16 ELECTRICAL HEATING AND COOKING APPLIANCES .....	28
2.17 MAGNETIC COMPASSES.....	28
2.18 DIGITAL NETWORKED POWER DISTRIBUTION, CONTROL AND MONITORING SYSTEMS .....	28
SECTION 3 DISTRIBUTION SYSTEMS	
3.1 d.c. DISTRIBUTION SYSTEMS .....	29
3.2 STANDARD a.c. DISTRIBUTION SYSTEMS.....	29
3.3 EQUIPOTENTIAL BONDING CONDUCTORS .....	30
3.4 BALANCE OF LOADS IN THREE-PHASE a.c. SYSTEMS.....	31
3.5 SHORE CONNECTION ARRANGEMENTS .....	31
3.6 SWITCHBOARD .....	34
SECTION 4 PROTECTION AGAINST ELECTRIC SHOCK AND EARTH LEAKAGE IN a.c. SYSTEMS WITH VOLTAGE EXCEEDING 50 V	
4.1 PROTECTION AGAINST DIRECT CONTACT .....	36
4.2 AUTOMATIC DISCONNECTION OF SUPPLY TO FINAL SUBCIRCUITS OR EQUIPMENT .....	36
4.3 EARTHED NEUTRAL SYSTEMS .....	36
4.4 NON-NEUTRAL EARTHED SYSTEM (IT TYPE SYSTEM) .....	37
4.5 USE OF CLASS II EQUIPMENT .....	37
4.6 UNACCEPTABLE MEASURES AGAINST ELECTRIC SHOCK.....	37

	Page
<b>SECTION 5 PROTECTION AGAINST OVERCURRENT</b>	
5.1 GENERAL.....	38
5.2 CHARACTERISTICS OF PROTECTIVE DEVICES .....	38
5.3 d.c. SYSTEM.....	38
5.4 a.c. SYSTEM.....	39
5.5 GENERATORS .....	39
5.6 TRANSFORMERS .....	39
5.7 MOTOR PROTECTION.....	40
<b>SECTION 6 CABLES</b>	
6.1 SELECTION OF CABLES FOR MARINE ENVIRONMENT.....	41
6.2 CABLE SELECTION AND INSTALLATION .....	41
6.3 PROTECTIVE COVERINGS .....	41
6.4 DETERMINATION OF THE CROSS-SECTIONAL AREAS OF CONDUCTORS .	41
<b>SECTION 7 CABLE AND WIRING INSTALLATION AND TERMINATION</b>	
7.1 EQUIPOTENTIAL BONDS .....	46
7.2 CABLE TERMINATIONS .....	46
7.3 CABLE AND CONDUCTOR INSTALLATION .....	47
7.4 d.c. AND a.c. CABLING AND WIRING SEGREGATION .....	48
7.5 CONDUCTOR IDENTIFICATION.....	48
7.6 LIGHTNING PROTECTION .....	49
<b>SECTION 8 VERIFICATION</b>	
8.1 GENERAL.....	50
8.2 EARTHING.....	50
8.3 INSULATION RESISTANCE.....	50
8.4 SWITCHGEAR AND CONTROLGEAR .....	51
8.5 VOLTAGE DROP .....	51
8.6 INTERNAL COMMUNICATION CIRCUITS.....	51
8.7 LIGHTING, HEATING AND GALLEY EQUIPMENT.....	51
<b>APPENDICES</b>	
A BOATS OVER 24 METRES AND LARGER VESSELS OPERATIONAL IN OFFSHORE WATERS .....	52
B SHORE SIDE ARRANGEMENTS.....	55
C PERIODIC TESTING.....	59
D BOATS WARRANT OF ELECTRICAL FITNESS CERTIFICATION FORM— NEW ZEALAND ONLY .....	66

**This is a free preview. Purchase the entire publication at the link below:**

- 
- ▶ Looking for additional Standards? Visit [SAI Global Infostore](#)
  - ▶ Subscribe to our [Free Newsletters](#)
  - ▶ Do you need to [Manage Standards Collections Online?](#)
  - ▶ Learn about [LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
  - ▶ Do you want to [know when a Standard has changed?](#)
  - ▶ Create safe work processes for the workplace with our [Safe Work Method Statements](#)

Learn about other SAI Global Services:

- ▶ [LOGICOM Military Parts and Supplier Database](#)
- ▶ [Metals Infobase Database of Metal Grades, Standards and Manufacturers](#)
- ▶ [Materials Infobase Database of Materials, Standards and Suppliers](#)
- ▶ [Database of European Law, CELEX and Court Decisions](#)

---

Need to speak with a Customer Service Representative - [Contact Us](#)