AS/NZS 4509.1:2009
Reconfirmed 2017

Australian/New Zealand Standard™

Stand-alone power systems

Part 1: Safety and installation

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-042, Renewable Energy Power Supply Systems and Equipment. It was approved on behalf of the Council of Standards Australia on 16 September 2009 and on behalf of the Council of Standards New Zealand on 4 December 2009. This Standard was published on 21 December 2009.

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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 08125.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION OF AS/NZS 4509.1:2009 Stand-alone power systems Part 1: Safety and installation

RECONFIRMATION NOTICE

Technical Committee EL-042 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 10 October 2016.

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Australian PV Institute
Australian Solar Council
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Sustainable Electricity Association New Zealand
Sustainable Energy Association
The University of New South Wales
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Australian/New Zealand Standard™

Stand-alone power systems

Part 1: Safety and installation

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-042, Renewable Energy Power Supply Systems and Equipment. This Standard supersedes AS 4509.1—1999 and AS 4509.3—1999 on publication.

The object of this Standard is to specify essential safety and installation requirements for stand-alone power systems used for the supply of extra-low (ELV) and low voltage (LV) electric power.

This Standard was prepared following requests from interests involved in the solar energy industry who considered there is need for Standards covering safety, design, installation and maintenance procedures appropriate to the industry.

This Standard is Part 1 of a series, which consists of the following:

AS/NZS
4509 Stand-alone power systems
4509.1 Part 1: Safety and installation (this Standard)
4509.2 Part 2: System design guidelines

It is assumed that persons designing and/or installing stand-alone power systems have access to, and understand the requirements of, AS/NZS 3000.

This Standard was revised to—

(a) incorporate AS 4509.1 and AS 4509.3 into one document;

(b) make the Standard a joint Australian/New Zealand Standard;

(c) expand and clarify the general requirements for the safe installation of stand-alone power systems;

(d) include information on the connection of stand-alone power systems to loads; and

(e) clarify and expand requirements for battery enclosures.

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 for information. Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out safety and installation requirements for stand-alone power systems used for the supply of extra-low (ELV) and/or low voltage (LV) electric power to a single load, or an electrical installation in a single residence or building, or a group of residences or buildings and associated items with switchboards to AS/NZS 3000 requirements.

This Standard covers—

(a) equipment up to, and including, the output of the stand-alone power system (i.e. the point of supply—see the definition in Clause 1.4.12); and

(b) direct connection of a stand-alone power system to—

  (i) a single load (e.g. a water pump);

  (ii) a single electrical installation (e.g. a residence); or

  (iii) a group of independent electrical installations (e.g. a number of separate residences and/or buildings).

This Standard includes minimum rating and over-current protection requirements for the consumers mains and earthing arrangements.

NOTE: The connection from the output of the stand-alone power system to the electrical installation is regarded as the consumers mains (see AS/NZS 3000).

This Standard, with additional safety requirements, shall be applied to systems with energy storage at LV

System design considerations are detailed in AS 4509.2.

NOTE: System maintenance matters are considered in Appendix A.

1.2 APPLICATION

Stand-alone power systems and the connection to an electrical installation shall be in accordance with AS/NZS 3000, except as varied herein and with the applicable additional requirements of this Standard.

This Standard shall be read in conjunction with the regulations and any relevant requirements of any regulatory authority.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1170 Structural design actions
1170.4 Part 4: Earthquake actions in Australia