

Australian/New Zealand Standard™

**Installation of photovoltaic (PV) arrays**



## **AS/NZS 5033:2005**

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 8 April 2005 and on behalf of the Council of Standards New Zealand on 15 April 2005. This Standard was published on 19 May 2005.

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*This Standard was issued in draft form for comment as DR 03389.*

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## Installation of photovoltaic (PV) arrays

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## PREFACE

This Standard was produced by Joint Standards Australia/Standards New Zealand Committee EL-042, Renewable Energy Power Supply Systems and Equipment, with the assistance of the Australian Greenhouse Office (AGO) and the University of NSW.

*This Standard incorporates Amendment No. 1 (January 2009). 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 guidance for installers of photovoltaic arrays.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard**  
**Installation of photovoltaic (PV) arrays**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE**

This Standard sets out the general installation requirements for photovoltaic (PV) arrays with d.c. open circuit voltages up to 600 V between positive and negative conductors or up to  $\pm 600$  V with respect to earth and a maximum power of 30 kW.

A1 | This Standard does not apply to photovoltaic systems or arrays operating at less than 25 V d.c. and with a power of less than 25 W.

## NOTES:

- 1 This includes the following PV array configurations (refer to Figures 1.1 and 1.2)—
  - (a) Single string of modules.
  - (b) Multi-string PV array.
  - (c) PV array divided into several sub-arrays.
- 2 Direct current systems, and photovoltaic systems in particular, pose some hazards in addition to those derived from conventional a.c. power systems, including the ability to produce and sustain electrical arcs with currents that are not much greater than normal operating currents. This Standard addresses the safety requirements arising from the particular characteristics of photovoltaic systems. A discussion of those characteristics is presented in Appendix A.
- 3 Although this Standard does not cover PV array systems with a power greater than 30 kW, similar principles can be used for such systems.

**1.2 OBJECTIVE**

The objective of this Standard is to provide electrical safety and fire protection requirements for—

- (a) uninformed persons, including owner(s)/occupier(s) and users of the premises where photovoltaic arrays are installed;
- (b) informed workers (e.g. electricians) working on these systems; and
- (c) emergency workers.

NOTE: Mechanical safety recommendations are given in Appendix B.

**1.3 NORMATIVE REFERENCES**

## AS

- |        |  |
|--------|--|
| 1319   | Safety signs for the occupational environment          |
| 60529  | Degrees of protection provided by enclosures (IP Code) |
| 4509   | Stand-alone power systems                              |
| 4509.1 | Part 1: Safety requirements                            |
| 4509.2 | Part 2: System design guidelines                       |

## AS/NZS

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|--------|---------------------------|
| 1170   | Structural design actions |
| 1170.2 | Part 2: Wind actions      |