Technical guidance sheet 3.1

Solar PV system documentation

Solar Victoria

VICTORIA State Government

This guidance provides further information to support installers' understanding of applicable requirements and obligations relating to system documentation.

Standards referenced:

» AS/NZS 3000:2018 *Electrical installations "Wiring Rules"*.

» AS/NZS 4777.1:2016 *Grid connection of energy systems via inverters Part 1: Installation requirements*.

» AS/NZS 5033:2021 *Installation and safety requirements for photovoltaic (PV) arrays*.

This guidance is part of a series we commissioned Grey Sky Solar Consulting to develop to help installers maintain compliance with Australian Standards. It includes installation advice and examples of installations that may not be meeting the requirements relating to documentation. Energy Safe Victoria has reviewed this guidance.

In series 3:

System documentation

For grid connected PV systems

Relates to the mandatory requirements in AS/NZS 4777.1:2016 and AS/NZS 5033:2021.

The mandatory requirements to supply system documentation at the completion of a solar PV installation comes from two Australian Standards:

- AS/NZS 4777.1:2016 *Grid connection of energy systems via inverters. Part 1: Installation Requirements* (Figure 1.1), and
- AS/NZS 5033:2021 *Installation and safety requirements for photovoltaic (PV) arrays* (Figure 1.2).

There are several common requirements across both these standards, and they are:

- A list of electrical equipment supplied, with model description and serial numbers.
- Operating instructions (system and components) including a short description of the function and operation of all installed equipment.
- System connection diagram that includes the electrical ratings of the PV array and the ratings of all overcurrent devices and switches as installed.
- System performance estimate.
- Commissioning records and installation checklist. This includes a complete record of the initial system settings at the time of installation and commissioning checklists for quality assurance.
- Maintenance procedures and timetable.
- Warranty information.
- Start-up procedure and verification checks.
- Shutdown and isolation procedure for maintenance and emergency to ensure safe de-energisation of the system.
- Procedure for verifying correct system operation and what to do in the case of a system failure.
- Contact personnel for installation queries and system support.
- Equipment manufacturers documentation and handbooks (data sheets and user manuals) for all equipment supplied, and as a minimum should include the following specific to your installation type:
  - PV modules
  - mounting frame
  - inverter/PCE
  - isolators
  - cable
  - monitoring devices.

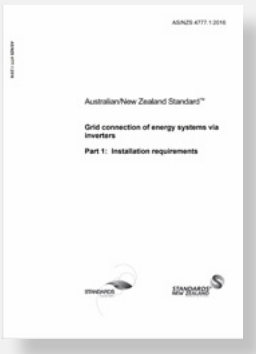
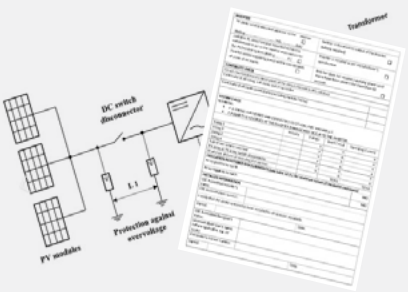


Figure 1.1

Figure 1.2



Examples of a site-specific wiring diagram and commissioning checklist.

System documentation

For grid connected PV systems

Relates to the mandatory requirements in AS/NZS 4777.1:2016 and AS/NZS 5033:2021.

In addition to the documentation listed above, the following information is also required for grid connected PV systems in accordance with AS/NZS 4777.1:2016 and is normally integrated into the commissioning checklist:

- Voltage rise calculations or measurements including any assumptions.
- Details of any central protection installed including devices, wiring and settings.
- DRED wiring and DRMs connected, if implemented.
- Export control including devices, settings, and wiring.

Where multiple inverter energy systems (IES) are installed within one electrical installation, documentation should be clear and use consistent terminology.

The following information is also required for PV arrays in accordance with AS/NZS 5033:2021:

- Basic system information including system rating and component ratings, commissioning date and equipment location.
- Response requirements for an earth fault alarm.
- Disconnection device location and cable routing.
- Details of wind and mechanical loading.

Note 1: To meet AS/NZS 1170.2 requirements, manufacturer's details and engineering certification shall be provided.

Standards referenced:

- AS/NZS 4777.1:2016 and AS/NZS 5033:2021

Documentation may not seem important, however it is your legal obligation to provide it as it provides system owners, inspectors, auditors, first responders and other trades with a reliable source of information based on the site-specific installation.

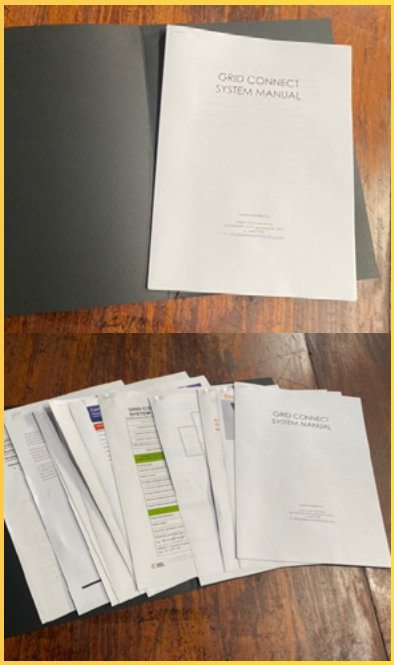
The documentation also contains relevant information to review when maintenance is being performed.

This document pack (shown right) provides records for the details of the installed system at the time it was commissioned and can be used by the current, or any future owners of the property, to prevent systems being "orphaned" due to lack of detailed system information and documentation.

Furthermore, it protects you as the installer if someone else makes changes to your original installation.

Providers of documentation packs should consider having a templated set for the requirements that apply to all sites. Adding the site-specific requirements to this template can make meeting the requirements easier to manage.

An electronic version of documentation is acceptable, and a good way to ensure compliance is by applying a QR code inside the main switchboard. This allows access to the documentation without relying on a hard copy to be available.



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For more information about Solar Victoria's commitment to safety and quality, including our audit program, checklists, and training and workforce development visit: solar.vic.gov.au/industry

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