16.8 Monitoring

Grid-connect inverters generally monitor the system output and the grid, displaying the measurements on the face of the inverter. Monitoring equipment can be used to communicate with the inverter, making it more convenient to monitor the system as well as providing the ability to store the data and display it in a more meaningful way.

The communication between the monitoring equipment and the inverter could be either wired or wireless. It is important to ensure that the site and its telecommunications are able to support the proposed system monitoring access and delivery. The installation of the monitoring equipment should follow the manufacturer's instructions.

16.9 Signage

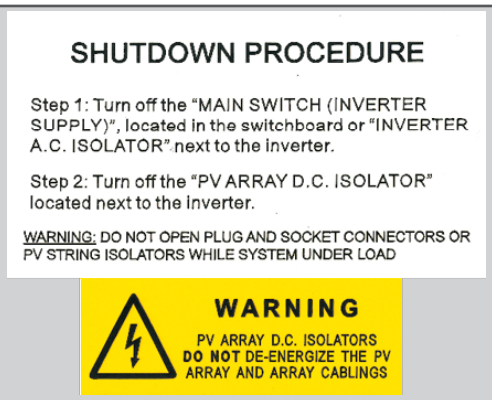
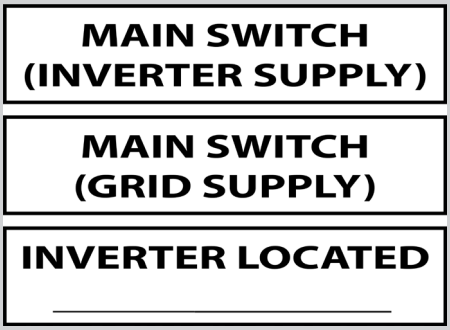
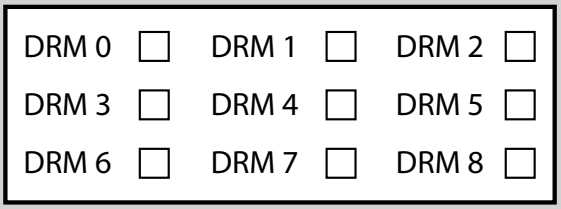
Signage is an important part of the system installation and should follow the relevant standards. The primary signage requirements are summarised in Table 16.1.

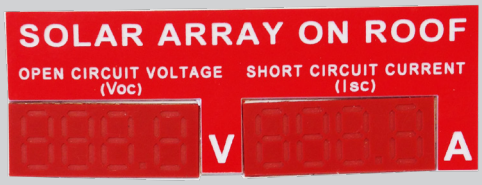
AUSTRALIAN STANDARDS

The mandatory signage requirements (including required colouring) for a grid-connected PV system are given in ***AS/NZS 5033:2014*** and ***AS/NZS 4777.1:2016***.

Table 16.1: *Key signage requirements for solar PV systems.*

Cabling Permanently and legibly marked with 'SOLAR' every 2 m Or Distinctive coloured labels marked with 'SOLAR' every 2 m ***AS/NZS 5033:2014*** Clause 5.3.1	
Combiner boxes Sign installed on combiner boxes in black writing on a yellow background with: "Warning: hazardous D.C. voltage" ***AS/NZS 5033:2014*** Clause 5.3.2	
PV array DC disconnecting devices Sign located in a prominent location on the disconnector with: "PV array D.C. isolator" ***AS/NZS 5033:2014*** Clause 5.5.2	
Where there are multiple DC disconnection devices that are not ganged Sign adjacent to the inverter in black writing on a yellow background with: "Warning: Multiple D.C. sources. Turn off all D.C. isolators to isolate equipment" ***AS/NZS 5033:2014*** Clause 5.5.2	

Shutdown Procedure The shutdown procedure must be on a sign adjacent to the equipment to be operated. For PV array DC isolators, it should include the text: "Warning: PV array D.C. isolators do not de-energize the PV array and array cabling" The warning text must be black text on a yellow background, and can be on a separate sign directly below the shutdown procedure. ***AS/NZS 5033:2014*** Clause 5.5.3	
Inside Switchboard A sign containing the text 'WARNING', 'MULTIPLE SUPPLIES' and 'ISOLATE ALL SUPPLIES BEFORE WORKING ON THIS SWITCHBOARD'. This sign shall be installed in a prominent position on the switchboard. ***AS/NZS 4777.1:2016*** Clause 6.2 (a)	
Inside Switchboard A sign adjacent to inverter main switch with: 'Main Switch (Inverter Supply)' A sign adjacent to the grid main switch with: 'Main Switch (Grid Supply)' A sign in a prominent position on the switchboard: 'Inverter Located' ***AS/NZS 4777.1:2016*** Clause 6.2	
Inside Distribution Board A sign adjacent to isolator to grid supply with: 'Main Isolator (Normal Supply)' ***AS/NZS 4777.1:2016*** Clause 6.2 (d)	
On Inverter A sign applied to the inverter by the inverter manufacturer or the installer indicating applicable Demand Response Modes. ***AS/NZS 4777.1:2016*** Clause 6.6	
On or Immediately Adjacent to Main Switchboard and Meter Box For PV arrays on buildings that have a power rating greater than 350 W or a PV array maximum voltage greater than ELV, a circular green reflective sign that is at least 70 mm in diameter with white text: 'PV' ***AS/NZS 5033:2014*** Clause 5.4.2	

Within the Main Switchboard For PV arrays on buildings that have a power rating greater than 350 W or a PV array maximum voltage greater than ELV, a sign that is white or black text on a red background with: "Solar array (location) Short circuit current: __ A Open circuit voltage: __ V" It is important that these figures are calculated based on the specific module ratings and should not be from measurements taken during the installation ***AS/NZS 5033:2014*** Clause 5.4.1	
On inverter-adjacent AC isolator Sign with: "Inverter A.C. isolator" ***AS/NZS 4777.1:2016*** Clause 6.8	
Access Door or Gate For systems over 600 V, a warning sign that is black lettering on a yellow background with: "Warning: Hazardous Voltage Authorised Access Only" This sign is not required for residential systems as they cannot exceed 600 V. ***AS/NZS 5033:2014*** Clause 5.5.4