

INSTALLATION CHECKLIST

PV ARRAY

Mounted flat on roof
 Building integrated
 Mounted on tilted array frame
 PV Array tilt °
 PV Array orientation °
 PV Array is securely fixed and installed
 in accordance with the manufacturers recommendations
 Any timber used is suitable for
 external use or is properly sealed
 No dissimilar metals are in contact
 with the array frames or supports
 Roof penetrations are suitably
 sealed and weatherproofed
 PV wiring losses are less than 1%
 at the maximum current output of the array
 Where PV array comprises multiple strings
 - string protection has been provided AS/NZS 5033
 Wiring is protected from UV and
 mechanical damage
 Weatherproof isolator
 (where required by local electricity distributor)
 is mounted immediately adjacent to the PV array

INVERTER

Double pole DC isolator [or DC circuit breaker]
 is mounted close to input of the inverter
 (rating.A)
 If d.c. isolator is of the polarised type then it is
 correctly connected to ensure operation under full load
 Isolator is mounted on output of the inverter
 (can be part of inverter)
 Lockable AC circuit breaker mounted within the
 switchboard to act as the main switch
 for the PV / inverter system. (rating A)
 Inverter is inside building or in weatherproof
 enclosure with adequate space and ventilation
 LV DC CABLING is clearly identified
 – LV DC or similar at least every 3 metres

SIGNAGE (White on Red)

AS 4777.1 & Appendix A

WARNING
 Dual Supply
 Isolate Both Normal and Solar
 Supplies before working on this

is permanently fixed
 on the switchboard.

Normal Supply
MAIN SWITCH

is permanently fixed at the main switch

Solar Supply
MAIN SWITCH

is permanently fixed at the
 main solar switch

*If the solar system is connected to a distribution board
 then the following sign is located on main switchboard
 and all intermediate distribution boards*

WARNING
 DUAL SUPPLY ISOLATE
 SOLAR SUPPLY AT
 DISTRIBUTION BOARD DB???

Where the inverter is not adjacent to the
 main switchboard, location information is provided

Warning and Advisory Signs AS/NZS 5033 & Appendix G

SOLAR DC

is permanently fixed
 on array junction boxes
 (Black on White)

SOLAR ARRAY
 ON ROOF

 Open circuit voltage: 220 V
 Short circuit current: 20 A

Colour: White on red

Fire Emergency information is
 permanently fixed on the main
 switchboard

(White on Red)

Shutdown procedure is permanently fixed
 at inverter and/or on main switchboard

Any other signage as required by
 the local Electricity Distributor

230-240 VOLT (LV) INSTALLATION

All low voltage wiring has been installed
 by a licensed electrical tradesperson
 All wiring has been tested and approved
 by a qualified electrical tradesperson

This checklist is based on the Clean Energy Council's GC Design and
 Installation Guidelines. The Guidelines demonstrate the latest industry
 "best practice" and are to be read in conjunction with the relevant
 Australian Standards.

AUTHORISATION : I, CEC Accreditation number verify that the
 following system has been installed to the standard indicated by these guidelines and complies with all applicable Australian Standards

Name of the person for whom the system was installed

Location of system

signed Date : / / Attach a separate sheet detailing any departures

TESTING and COMMISSIONING

PV ARRAY- d.c.

NOTE : where there is only 1 string and no array junction box, then the following tests will be conducted between the string and the PV array isolator at the inverter.

Isolate PV string and array wiring
CHECK that there is no voltage on input
OR output sides of any array junction box
(where installed)

CHECK
Continuity between strings and array junction box

- String 1 +ve
- String 1 -ve
- String 2 +ve
- String 2 -ve
- String 3 +ve
- String 3 -ve
-

Continuity between
array junction box and PV array isolator

CHECK
Polarity of PV string and array wiring

- String 1
- String 2
- String 3
-
- Array +ve
- Array -ve

Polarity of wiring between
array junction box and PV array isolator

**WARNING:
IF POLARITY OF ONE STRING IS REVERSED, THIS
CAN CAUSE A FIRE IN THE ARRAY JUNCTION BOX.**

RECORD PV string

open circuit Voltage	String 1V
	String 2V
	String 3V

WARNING:

The following procedures describe how to measure short circuit currents - the voltages can be very high and if the procedures are not followed then arcing and damage to components could occur.

Note: Some projects require that short circuit currents are recorded as part of the contractual commissioning; otherwise a record of the actual operating current of each string is sufficient.
This could be done by using the meter on the inverter or by using a clamp meter when the system is operational.

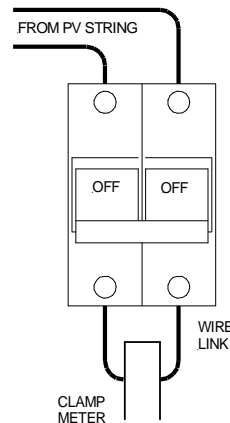


Figure 3

1. Where short circuit currents are required undertake the following steps to measure the short circuit current safely as shown in Figure 3:

Ensure each string fuse (where required) is not connected or that LV array is disconnected in the middle of the string as shown in Figure 1 of these guidelines.

2. Leave solar array cable connected to the PV array isolator.

3. Remove the cable from the PV Array isolator to the inverter.

4. With the PV array isolator off - put a link or small cable between the positive and negative outputs of the PV array isolator.

5. Install the string fuse for string 1 or connect the ELV segments to complete the wiring of the string. Turn on PV array isolator - using a d.c. clamp meter measure the DC short circuit current for String 1. Turn off PV array isolator. Disconnect string fuse for string 1 or remove links to break string into ELV segments.

6. Repeat point 5 for each string

7. After each string has been individually measured – ensure PV array isolator is off- then install all string fuses or connect the ELV segments of each string. Turn on PV array isolator and measure d.c. Array current using clamp meter. Turn off switch and remove link in output of PV array isolator.



Where short circuit currents are **not** required then record the operating current/s after Start-Up of System.

RECORD

Short circuit Currents String 1A
(where required)
String 2 A
String 3 A
String 4A
Array A

Irradiance at time of recording the currentW/m²

With the PV array isolator **OFF**

CHECK continuity
between PV array isolator and inverter

Array +ve
Array -ve

CHECK polarity
between the PV array isolator and inverter

RECORD Open circuit voltage at
input side of the PV array isolatorV

WARNING: If polarity is reversed at the inverter damage may occur which is generally not covered under warranty

INVERTER - a.c.

Ensure that the a.c. normal supply is isolated and the main switch Solar supply is OFF

CHECK continuity
between Inverter & main switch Solar supply

Line
Neutral

CHECK continuity
between main switch Solar supply & kWh meter

Line
Neutral

CHECK polarity
at the Inverter and the main switch Solar supply
CHECK polarity at the output
of main switch Solar supply from the kWh meter Initial

reading of kWh meter

Accredited Installer Name.....

Signed..... Date.....

Licensed Electrician Name.....

Signed..... Date.....

Start-Up of System

Refer to system manual for the inverter and follow start-up procedure.

This generally involves turning on the PV DC main switch followed by the Solar AC main switch but the procedures as recommended by the inverter manufacturer must be followed.

System connects to grid [after 60 seconds]
When the AC main switch is turned ON
- follow the inverter start-up procedure -

Voltage at d.c. input of inverterV

Voltage is within operating limits of inverter

Voltage at a.c. output of inverterV

Input power of the inverterW
(where available)

Output power of the inverterW
(where available)

Output power as expected

Turn AC main switch OFF

System immediately disconnects from grid

PV operating current

1. Where there's only one string in the array record the operating current after Start-Up of System.
2. If more than one string - turn off the inverter, the a.c. main switch and d.c. main switch. Isolate all strings.
3. With one string connected at a time turn system back on and record the operating current of that string.

Repeat 2 and 3 above
until all string currents have been recorded.

NOTE: Unless you have a solar irradiance meter then any string current tests should be performed on a bright sunny day with no cloud. This is to avoid varied readings due to cloud cover.

RECORD

operating currents : String 1A
String 2 A
String 3 A
String 4 A
Array A