

12 Installation and Commissioning

12.1 General

WARNING: Where short circuit currents are required, follow AS/NZS 5033 Appendix D for the steps that shall be undertaken to measure the short circuit safely.

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.

12.2 Insulation resistance measurement

WARNING: PV array dc circuits are live during daylight and, unlike a conventional ac circuit, cannot be isolated before performing this test.

Follow AS/ NZS 5033 Appendix D4 for the steps that shall be undertaken to measure the insulation safely.

12.3 Installation and commissioning sample

INSTALLATION DETAILS			
Address of installation:			
PV module Manufacturer and model number:			
Number of modules in series and model number:		Number of strings in parallel in PV array: How many modules per String	
Inverter manufacturer and model number:			
Number of inverters:		Number MPPTs:	
PV ARRAY			
PV array tilt ⁰		PV Array orientation ⁰	
Array frame is certified to AS1170.2 for installation location <input type="checkbox"/>		Array frame is installed to manufacturer's instructions <input type="checkbox"/>	
No galvanically dissimilar materials are in contact with the array frames or supports <input type="checkbox"/>		Roof penetrations are suitable sealed and weatherproofed <input type="checkbox"/>	
PV wiring losses are less than 3% at the maximum current output of the array <input type="checkbox"/>		Where PV array comprises multiple strings-string protection has been provided <input type="checkbox"/>	
Wiring is protected from mechanical damage and is appropriately supported <input type="checkbox"/>		Weatherproof PV array isolator mounted adjacent to the array (rating:.....Vdc,.....Adc) <input type="checkbox"/>	
LV DC and AC INSTALLATION			
All low voltage wiring has been installed by a licensed electrical tradesperson <input type="checkbox"/>		All wiring has been tested and approved by a qualified electrical tradesperson. <input type="checkbox"/>	

INVERTER				
PV array isolator mounted adjacent to the inverter (rating:.....Vdc,Adc)		Isolator is mounted on output of the inverter (where required)		
<input type="checkbox"/>		<input type="checkbox"/>		
Lockable AC circuit breaker mounted within the switchboard to act as the inverter main switch for the PV/inverter system (RatingA)		Inverter is installed as per manufacturer's specification		
<input type="checkbox"/>		<input type="checkbox"/>		
Inverter ceases supplying power within two seconds of a loss of AC mains		Inverter does not resume supplying power until main have been present for more than 60 seconds.		
<input type="checkbox"/>		<input type="checkbox"/>		
CONTINUITY CHECK				
Circuit checked (record a description of the circuit checked in the column)				
Continuity of all string, sub array and array cables				
Continuity of all earth connections (including module frame)				
SYSTEM CHECK				
WARNING:				
<ul style="list-style-type: none"> IF A STRING IS REVERSED AND CONNECTED TO OTHERS, FIRE MAY RESULT. IF POLARITY IS REVERSED AT THE INVERTER DAMAGE MAY OCCUR TO THE INVERTER. 				
	Polarity	Voltage	Short Circuit	Operating Circuit
String 1		V	A	A
String 2		V	A	A
String 3		V	A	A
String 4		V	A	A
Sub-arrays where required		V	A	A
PV array at PV array switch-disconnector		V	A	A
Irradiance at time of recording the current			W/m2	W/m2
INSULATION RESISTANCE MEASUREMENTS (See table 12.3.1 for minimum values of insulation resistance)				
Array positive to earth		MΩ		
Array negative to earth		MΩ		
INSTALLER INFORMATION				
CEC Accredited Installer's name:				
CEC Accredited number:				
CEC Accredited designer's name:				
I verify that the above system has been installed to all relevant standards				
Signed:		Date:		
Licensed electrician's name:		Electrician's licence number:		
Signed:		Date:		





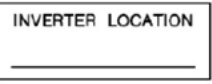



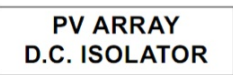

SIGNAGE (AS 4777)	
	On switchboard to which inverter is directly connected <input type="checkbox"/>
	Is permanently fixed at the main switch <input type="checkbox"/>
	Is permanently fixed at the solar main switch <input type="checkbox"/>
	If the solar system is connected to a distribution board then the following sign is located on main switchboard and all intermediate distribution boards <input type="checkbox"/>
	Where the inverter is not adjacent to the main switchboard, located information is provided <input type="checkbox"/>
SIGNAGE (AS/NZS 5033)	
	Is permanently fixed on array junction boxes (black and yellow) <input type="checkbox"/>
 	Fire emergency information is permanently fixed on the main switchboard and/or meter box (if not installed together) <input type="checkbox"/>
	PV DC isolation is clearly identified <input type="checkbox"/>
	Is placed adjacent to the inverter when multiple isolation/disconnection devices are used that are not ganged together <input type="checkbox"/>
<p style="text-align: center;">SOLAR</p>	Exterior surface of wiring enclosures labelled 'SOLAR' <input type="checkbox"/>
Shutdown procedure is permanently fixed at inverter and/or on main switchboard	Any other signage as required by the local electricity distributor <input type="checkbox"/>

TABLE 12.3.1 Minimum Insulation resistance

System Voltage (VOC x 1.25)	Test Voltage	Minimum insulation resistance, MΩ
<120	250	0.5
120 – 500	500	1
>500	1000	1