12 Installation and Commissioning

12.1 General

WARNING: Where short circuits 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:	dsjfnj jhj Junction, MOUNT VICTORIA NSW 2786		
PV module Manufacturer and model number:	pv1	pv2	
Number of modules in series and model number:	1 2	Number of strings in parallel in PV array: How many modules per String	3 4
Inverter manufacturer and model number:	11		
Number of inverters:	12	Number MPPTs:	13

PV ARRAY	
PV array tilt 14 0	PV Array orientation 15 0
Array frame is certified to AS1170.2 for installation location ☒	Array frame is installed to manufacturer's instructions ☐
No galvanically dissimilar mentals are in contact with the array frames or supports ☐	Roof penetrations are suitable sealed and weatherproofed ☒
PV wiring losses are less than 3% at the maximum current output of the array ☒	Where PV array comprises multiple strings-string protection has been provided ☐
Wiring is protected from mechanical damage and is appropriately supported ☐	Weatherproof PV array isolator mounted adjacent to the array (rating: 2 .....Vdc, 3 .....Adc)
LV DC and AC 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. ☒

ARKANA SOLAR

INVERTER	
PV array isolator mounted adjacent to the inverter ☒ (rating: 4 .....Vdc, 5 .....Adc)	Isolator is mounted on output of the inverter (where required) ☐
Lockable AC circuit breaker mounted within the switchboard to act as the inverter main switch for the PV/inverter system (Rating 6 .....A) ☐	Inverter is installed as per manufacturer's specification ☒
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. ☐

CONTINUITY CHECK	
Circuit checked (record a description of the circuit checked in the column)	
Continuity of all string, sub array and array cables	1
Continuity of all earth connections (including module frame)	2

SYSTEM CHECK

WARNING:

- 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	1	3 V	5 A	7 A
String 2	2	4 V	6 A	8 A
String 3	9	10 V	11 A	12 A
String 4	13	14 V	15 A	16 A
Sub-arrays where required	17	18 V	19 A	20 A
PV array at PV array switch-disconnector	21	22 V	23 A	24 A
Irradiance at time of recording the current	25	26	27 W/m2	28 W/m2

INSULATION RESISTANCE MEASUREMENTS (See table 12.3.1 for minimum values of insulation resistance)	
Array positive to earth	29 MΩ
Array negative to earth	30 MΩ

INSTALLER INFORMATION	
CEC Accredited Installer's name:	Aaron Dawson
CEC Accredited number:	A5117238
CEC Accredited designer's name:	Brian Williams

I verify that the above system has been installed to all relevant standards

Signed:		Date:	27/08/2020
Licensed electrician's name:	test	Electrician's licence number:	J123456
Signed:		Date:	27/08/2020

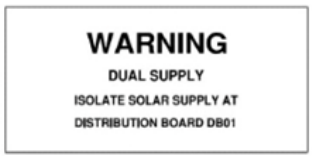
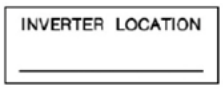
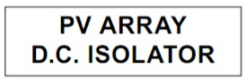
SIGNAGE (AS 4777)	
	On switchboard to which inverter is directly connected ☒
	Is permanently fixed at the main switch ☐
	Is permanently fixed at the solar main switch ☒
	If the solar system is connected to a distribution board then the following sign is located on main switchboard and all intermediate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

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