



Certificate G83/1

Engineering Recommendation

Manufacturer: SMA Solar Technology AG
Address: Sonnenallee 1
Postal code, place: 34266 Niestetal
Country: Germany

Test house details: SMA Solar Technology AG, R&D Department, Niestetal (D)

Type reference: Sunny Boy SB 5000TL-20
Max. AC power: 5000 W
Nominal AC power: 4600 W

The results of the G83/1 tests are summarized in this certificate. SMA declares that all devices (with G83 setting) that are shipped to the UK comply with the requirements defined in engineering recommendation G83/1. These setting cannot be changed by an installer, user or by any other person without the use of a tool (password protected). Complete documentation on test details are available at SMA on demand.

Test details

- Power quality
- Harmonic current emissions as per BS EN 61000-3-2 A
- Voltage fluctuations and flicker as per BS EN 61000-3-3 A
- DC injection / Power factor
- Under / Over frequency switch off
- Under / Over voltage switch off
- Loss of mains test

SMA Solar Technology AG

Niestetal, 2009-06-24

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Test results

Power quality

Harmonic current emissions as per BS EN 61000-3-2 A								
Harmonic	2 nd	3 rd	5 th	7 th	9 th	11 th	13 th	15 th ... 39 th
Limit _[A]	1.08	2.3	1.14	0.77	0.4	0.33	0.21	0.15 x (15/n)
Test value _[A]	0.044	0.168	0.161	0.179	0.113	0.116	0.109	< limit BS EN 61000-3-2

Voltage Fluctuations and Flicker			
Harmonic	starting	stopping	running
Limit	4 %	4 %	$P_{st} = 1.0$
Test value	<0.7%	<1.7%	0.267

	DC injection			Power factor		
G83/1 limit	20mA, tested at three levels			0.95 lag - 0.95 lead at three voltage levels at P_{rated}		
Test level	10%	55%	100%	212V	230V	248V
Test value	<8mA	<15mA	<10mA	0.99	0.99	0.99

Under / Over frequency switch off

	Under frequency switch off		Over frequency switch off	
Parameter	Frequency (Hz)	Time (s)	Frequency (Hz)	Time (s)
G83/1 Limit	47 Hz +/- 0.5%	5 s	50.5 Hz +/- 0.5%	5 s
Actual setting	47.0 Hz	5 s	50.5 Hz	5 s
Trip value	46.99 Hz	< 5 s	50.51 Hz	< 5 s

Under / Over voltage switch off

	Under voltage switch off		Over voltage switch off	
Parameter	Voltage (V)	Time (s)	Voltage (V)	Time (s)
G83/1 limit	207 V	5 s	264 V	5 s
Actual setting	207 V	5 s	264 V	5 s
Trip value	207 V	< 5 s	264 V	< 5 s

Loss of mains test

Method used	Resonant Circuit as per Annex C		
Output power level	10 % P_{rated}	55 % P_{rated}	100 % P_{rated}
G83/1 limit	5 s	5 s	5 s
Trip setting	5 s	5 s	5 s
Trip value	< 4 s	< 4 s	< 4 s

Reconnection time measurement

	Under / Over voltage	Under / Over frequency	Loss of mains
Minimum value	180 s	180 s	180 s
Actual setting	180 s	180 s	180 s
Recorded value	180 s	180 s	180 s

Fault level contribution

As Photovoltaic SSEGs are inverter connected, they are deemed to automatically comply with regulations and no further tests are required.

Self monitoring – solid state switching

Not applicable as electro-mechanical relays used.