



Certificate G83/1-1

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)
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Type reference:	Sunny Boy SB 3600TL-20
Max. AC power:	3680 VA
Nominal AC power:	3680 W

The results of the G83/1-1 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 G83/1-1. These settings cannot be changed by an installer, user or by any other person without the use of a tool (password protected).
The complete documentation can be viewed at SMA (headquarters) after prior announcement.

SMA Solar Technology AG
Niestetal, 22.12.2011

A handwritten signature in black ink, appearing to read "ppa. Frank Greizer". The signature is written in a cursive, somewhat stylized script.

ppa. Frank Greizer
(Vice President MP T PD)

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]	0.047	0.142	0.086	0.063	0.045	0.034	0.028	< limit BS EN 61000-3-2 A

Voltage fluctuations and flicker						
Harmonic	Starting		Stopping		Running	
Limit	4%		4%		P _{st} = 1.0	
Test value	0.55%		0.22%		0.150	
					P _{lt} = 0.65	
Test value					0.130	

	DC injection			Power factor		
G83/1-1 Limit	20 mA, tested at three levels			0.95 lag - 0.95 lead at three voltage levels at P _{rated}		
Test level	10%	55%	100%	212 V	230 V	248 V
Test value	< 12.8 mA	< 13.1 mA	< 17.0 mA	1.00	1.00	1.00

Under/over frequency switch off

	Under frequency switch off		Over frequency switch off	
Parameter	Frequency	Time	Frequency	Time
G83/1-1 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	47.04 Hz	< 5 s	50.46 Hz	< 5 s

Under/over voltage switch off

	Under voltage switch off		Over voltage switch off	
Parameter	Voltage	Time	Voltage	Time
G83/1-1 Limit	207 V	5 s	264 V	5 s
Actual setting	207 V	5 s	264 V	5 s
Trip value	208 V	< 5 s	262 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}
G83/1-1 Limit	5 s	5 s	5 s
Actual setting	5 s	5 s	5 s
Trip value	< 1 s	< 1 s	< 1 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	183.5 s	183.5 s	183.5 s

Fault level contribution

As SSEGs (small-scale embedded generators) for PV 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.