



## Certificate G83/1-1

### Engineering Recommendation

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

Test house Details	<b>SMA Solar Technology AG</b>
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Type reference:	Max AC power	Nominal AC power
STP 5000TL-20	5000 VA	5000 W
STP 6000TL-20	6000 VA	6000 W
STP 7000TL-20	7000 VA	7000 W
STP 8000TL-20	8000 VA	8000 W
STP 9000TL-20	9000 VA	9000 W
STP 10000TL-20	10000 VA	10000 W
STP 12000TL-20	12000 VA	12000 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, 2014 10.09.

*ppa. Frank Greizer*

ppa. Frank Greizer  
(Vice President MP T PD)



## Test results

### Power quality

Harmonic current emissions as per BS EN 61000-3-2										
		Harmonic	2nd	3rd	5th	7th	9th	11th	13th	15th .. 39th
BS EN 61000-3-2 Limit [A]			1.08	2.30	1.14	0.77	0.40	0.33	0.21	$0.15 \times (15/n)$
Test Values [A] (at rated power)	STP 5000TL-20		0.07	0.08	0.08	0.06	0.01	0.05	0.06	< limit BS EN 61000-3-2 A
	STP 6000TL-20		0.05	0.03	0.08	0.07	0.02	0.04	0.05	
	STP 7000TL-20		0.06	0.04	0.05	0.06	0.02	0.04	0.06	
	STP 8000TL-20		0.07	0.03	0.07	0.06	0.02	0.04	0.05	
	STP 9000TL-20		0.08	0.05	0.06	0.06	0.02	0.04	0.07	
	STP 10000TL-20		0.06	0.03	0.11	0.09	0.01	0.05	0.07	
	STP 12000TL-20		0.09	0.04	0.08	0.1	0.01	0.09	0.02	

Voltage Fluctuations and Flicker				
	starting	stopping	Running (at rated power)	
BS EN 61000-3-3 Limit	4 %	4 %	$P_v = 1.0$	$P_v = 0.65$
Test value	0.39 %	0.37 %	0.07	0.07

DC Injection			
G83/1-1 Limit	20 mA		
Test level (% of rated power)	10%	55%	100%
Test value	5.6 mA	11.1 mA	8.2 mA

Power factor			
G83/1-1 Limit	0.95 lag – 0.95 lead at three levels at $P_{rated}$		
Test level (AC voltage)	211 V	230 V	259 V
Test value (at rated power)	>0.98	>0.98	>0.98



## Test results

### Grid monitoring and reconnection time

Under / Over voltage test				
	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 values	209 V	4.96 s	261 V	4.96 s

Under / Over frequency test				
	Under Frequency switch off		Over Frequency switch off	
Parameter	Frequency	Time	Frequency	Time
G83/1-1 Limit	47 Hz	5 s	50.5 Hz	5 s
Actual setting	47 Hz	5 s	50.5 Hz	5 s
Trip values	47.06 Hz	4.97 s	50.46 Hz	4.97 s

Loss of mains test (method used: frequencyshift)			
Test level (% of rated power)	10 %	55 %	100 %
G83/1-1 Limit	5 s	5 s	5 s
Actual setting	–	–	–
Trip values	2.2 s	2.2 s	2.2 s

Reconnection times			
Test level (% of rated power)	Under/Over Voltage	Under/Over Frequency	Loss of mains
G83/1-1 Limit	180 s	180 s	180 s
Actual setting	180 s	180 s	180 s
Recorded values	>185s	>185s	>185s

## Fault level contribution

As SSEGs (small-scale embedded generators) for PV or wind turbine systems 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.