

# Certificate

# UK-G83/1

The results of tests performed according to reference standard UK-G83/1 are summarized in this certificate. Power-One Italy S.p.a. declares that the units set for UK-G83/1 operations are characterized by the following features:

- The internal specification and parameters are set to be compliant with UK-G83/1 engineering requirements.
- All units have identical internal parameters setting.
- These parameters cannot be changed without the usage of password protected tool.

### SSEG DETAILS (Small-Scale Embedded Generator)

SSEG Type Reference:	PHOTO-VOLTAIC and EOLIC GRID TIED INVERTER	
SSEG Model Reference:	UNO-2.0-I-OUTD UNO-2.0-I-OUTD-S UNO-2.0-I-OUTD-W UNO-2.5-I-OUTD UNO-2.5-I-OUTD-S UNO-2.5-I-OUTD-W	
Maximum export capability (SSEG rating less parasitic load)	2750W	(UNO-2.5-I-OUTD and derived models)
	2200W	(UNO-2.0-I-OUTD and derived models)
Nominal Output AC Power	2500W	(UNO-2.5-I-OUTD and derived models)
	2000W	(UNO-2.0-I-OUTD and derived models)

### MANUFACTURER and TEST HOUSE DETAILS

Name:	Power-one Italy S.p.A. - R. & D. Department
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### TEST RESULTS SUMMARY

Power Quality:

- Harmonic Current Emission as per EN-61000-3-2
- Voltage Fluctuation and Flickers as per EN-61000-3-3
- DC Injection as per UK G83/1
- Power Factor as per UK G83/1

Protection:

- Under/Over Frequency Tests
- Under/Over Voltage Tests
- Reconnection Times
- Loss of Mains Test

Power-One Italy S.p.a.  
Terranuova Bracciolini,

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(Director Safety & Environmental Compliance)



**UK-G83/1 TEST RESULTS DETAILS – TYPE VERIFICATION TEST SHEET**

**POWER QUALITY**

<b>(UNO-2.5-I-OUTD and derived models)</b>								
Harmonic Current Emission as per BS EN-61000-3-2								
Harmonic	3rd [A]	5rd [A]	7rd [A]	9rd [A]	11rd [A]	13rd [A]	THD [A%]	PWHD [A%]
Limit	2.3	1.14	0.77	0.4	0.33	0.21	-	-
Test value	0.075	0.0442	0.0578	0.05	0.046	0.0414	1.4398	-

<b>(UNO-2.0-I-OUTD and derived models)</b>								
Harmonic Current Emission as per BS EN-61000-3-2								
Harmonic	3rd [A]	5rd [A]	7rd [A]	9rd [A]	11rd [A]	13rd [A]	THD [A%]	PWHD [A%]
Limit	2.3	1.14	0.77	0.4	0.33	0.21	-	-
Test value	0.052	0.0304	0.0614	0.0526	0.047	0.0376	1.645	-

<b>(UNO-2.5-I-OUTD and derived models)</b>					
Voltage Fluctuation and Flickers as per BS EN-61000-3-3					
Voltage Disturbance	Pst	Plt	D(t) > 3%	dc (%)	dmax (%)
Limit	1	0.65	0.5	3.3	4
Test Value	0.072	0.07	0.0001	0.031	0.379

<b>(UNO-2.0-I-OUTD and derived models)</b>					
Voltage Fluctuation and Flickers as per BS EN-61000-3-3					
Voltage Disturbance	Pst	Plt	D(t) > 3%	dc (%)	dmax (%)
Limit	1	0.65	0.5	3.3	4
Test Value	0.08	0.077	0.0001	0.013	0.447

<b>(UNO-2.5-I-OUTD and derived models)</b>						
UK G83/1 Limit 20 mA	DC injection [mA]			Power Factor		
	20mA, tested at three power levels			0.95 lag - 0.95 lead at three voltage levels		
Test Level	10%	55%	100%	207 Vac	230 Vac	264 Vac
Test Value	2.4	4.6	5.4	0.9997	0.9997	0.9995

<b>(UNO-2.0-I-OUTD and derived models)</b>						
UK G83/1 Limit 20 mA	DC injection [mA]			Power Factor		
	20mA, tested at three power levels			0.95 lag - 0.95 lead at three voltage levels		
Test Level	10%	55%	100%	207 Vac	230 Vac	264 Vac
Test Value	5	4.2	6.6	0.9997	0.9995	0.9992

## PROTECTION

(UNO-2.5-I-OUTD and derived models) and (UNO-2.0-I-OUTD and derived models)

UNDER FREQUENCY TEST						
Fnom=50Hz	UK-G83/1 Limit		Settings		Results	
Under Frequency <	Frequency [Hz]	Time [s]	Frequency [Hz]	Time [s]	Frequency [Hz]	Time [s]
		47.00	0.50	47.05	0.42	47.07

OVER FREQUENCY TEST						
Fnom=50Hz	UK-G83/1 Limit		Settings		Results	
Over Frequency >	Frequency [Hz]	Time [s]	Frequency [Hz]	Time [s]	Frequency [Hz]	Time [s]
		50.50	0.50	50.45	0.42	50.45

UNDER VOLTAGE TEST						
Vφ-n nom =230V	UK-G83/1 Limit		Settings		Results	
Under Voltage <	Voltage [V]	Time [s]	Voltage [V]	Time [s]	Voltage [V]	Time [s]
	L1-N	207.0	1.5	209.2	1.3	209.1

OVER VOLTAGE TEST						
Vφ-n nom =230V	UK-G83/1 Limit		Settings		Results	
Over Voltage >	Voltage [V]	Time [s]	Voltage [V]	Time [s]	Voltage [V]	Time [s]
	L1-N	264.0	1.5	261.8	1.3	261.7

RECONNECTION TIMES			
	Under/Over voltage	Under/Over Frequency	Loss of Main
Minimum Value Limit [s]	180	180	180
Actual setting [s]	180	180	180
Recorded value [s]	191	192	189

LOSS OF MAIN TESTS			
Method used	Rate Of Change Of Frequency and Active Power Variation		
Output power Level	10%Prated	55%Prated	100%Prated
UK-G83/1 Limit [s]	5.0	5.0	5.0
Trip setting [s]	5.0	5.0	5.0
Trip value [s]	1.357	1.38	1.208

### SSEG Short Circuit Current Contribution Test

RMS Value over 1 Period (Cycle)	11.70	[Aac]
Peak Current	89.3	[A]

### SELF MONITORING – SOLID STATE SWITCHING

Not applicable because electro-mechanical relays are used

### ACCURACY

Voltage reading accuracy = +/- 1%  
 Frequency reading accuracy = +/- 0.05Hz