

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 GRID TIED INVERTER
SSEG Model Reference:	PVI-8.0-TL-OUTD PVI-8.0-TL-OUTD-S PVI-8.0-TL-OUTD-FS PVI-6.0-TL-OUTD PVI-6.0-TL-OUTD-S PVI-6.0-TL-OUTD-FS
Maximum export capability (SSEG rating less parasitic load)	8900W (PVI-8.0-TL-OUTD and derivated models) 6600W (PVI-6.0-TL-OUTD and derivated models)
Nominal Output AC Power	8000W (PVI-8.0-TL-OUTD and derivated models) 6000W (PVI-6.0-TL-OUTD and derivated 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

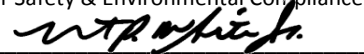
Protection:

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

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

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Robert White
(Director Safety & Environmental Compliance)



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

POWER QUALITY

PVI-8.0-TL-OUTD		Harmonic Current Emission as per 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	-	-
Result	Test value L1	0.1517	0.0511	0.0054	0.0119	0.0227	0.0298	1.6274	-
	Test value L2	0.0696	0.0453	0.0371	0.0075	0.0097	0.0435	1.0819	-
	Test value L3	0.0831	0.0844	0.0348	0.0058	0.0255	0.0401	1.3185	-

PVI-6.0-TL-OUTD		Harmonic Current Emission as per 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	-	-
Result	Test value L1	0.1672	0.0242	0.0304	0.0152	0.0292	0.027	2.3307	-
	Test value L2	0.1243	0.0398	0.028	0.0104	0.0188	0.0519	1.9724	-
	Test value L3	0.0885	0.0431	0.0059	0.0124	0.0295	0.0364	1.5426	-

PVI-8.0-TL-OUTD					
Voltage Fluctuation and Flickers as per EN-61000-3-3					
Voltage Disturbance	Pst	Plt	D(t) > 3%	dc (%)	dmax (%)
Limit	1	0.65	1	3.3	4
Test Value	0.17	0.15	0	1.80	2.18

PVI-6.0-TL-OUTD					
Voltage Fluctuation and Flickers as per EN-61000-3-3					
Voltage Disturbance	Pst	Plt	D(t) > 3%	dc (%)	dmax (%)
Limit	1	0.65	0.5	3.3	4
Test Value	0.17	0.15	0	1.80	2.18

PVI-8.0-TL-OUTD							
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%	50%	100%	210 Vac	230 Vac	260 Vac	
Test Value	L1	5.0	-17.0	12.0	0.999	0.999	0.999
	L2	1.0	-10.0	10.0			
	L3	-7.0	1.0	5.0			

PVI-6.0-TL-OUTD							
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%	50%	100%	210 Vac	230 Vac	260 Vac	
Test Value	L1	8.8	5.1	-1.3	0.999	0.999	0.999
	L2	-15.4	-14.0	-6.0			
	L3	-15.4	-13.4	-13.9			

PROTECTION

PVI-8.0-TL-OUTD and PVI-6.0-TL-OUTD

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	47.05

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	1.30	208.8
L2-N	209.4					1.34
L3-N	209.0					1.33
L1-L2-L3	362.0					1.33
L1-L2-L3	358.53	1.5	362.3	1.30	362.0	1.33

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	261.3
L2-N	262.5					1.34
L3-N	262.1					1.35
L1-L2-L3	453.9					1.34
L1-L2-L3	457.26	1.5	453.45	1.3	453.9	1.34

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]	184	184	183

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]	< 5.0	< 5.0	< 5.0

SSEG Short Circuit Current Contribution Test

RMS Value over 1 Period (Cycle)	13.28	[Aac]
Peak Current	204.0	[A]

SELF MONITORING – SOLID STATE SWITCHING

Not applicable because electro-mechanical relays are used

SSEG ACCURACY

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