

Certificate UK-G83 issue 2

The results of the G83/2 tests are summarized in this certificate.

Omnik New Energy Co.,Ltd. declares that the units installed in UK market and set for G83/2 operations are characterized by the following features:

- The internal specification and parameters are set to be compliant with: Engineering Recommendation G83 issue 2, 2012.
- All units have internal parameters setting.
- These parameters cannot be changed by user, an installer or by any person other than the manufacturer.
- All units are tested before shipping according to: Engineering Recommendation G83 issue 2, 2012.

SSEG Type reference number		PHOTO-VOLTAIC Inverter	
SSEG Type		Omniksol-M300 Omniksol-M600	
System Supplier name		Omnik New Energy Co.,Ltd.	
Address		CN-215213 Suzhou China Xinghu Road No. 218 Biobay Park A4-314	
Tel	+86 512 6956 8216	Fax	+86 512 6295 6682
E:mail		service@omnik-solar.com	
		Web site www.omnik-solar.com	
Maximum rated capacity	Connection Option		
	0.25	kW single phase (Omniksol-M300)	
	0.50	kW single phase (Omniksol-M600)	
	NA	kW three phase	
	NA	kW two phases in three phase system	
	NA	kW two phases split phase system	
	NA	kW two phases split phase system	
SSEG manufacturer/supplier declaration			
<p>I certify on behalf of the company named above as a manufacturer/supplier of Small Scale Embedded Generators, that all products manufactured/supplied by the company with the above SSEG Type reference number will be manufactured and tested to ensure that they perform as stated in this Type Verification Test Report, prior to shipment to site and that no site modifications are required to ensure that the product meets all the requirements of G83/2.</p>			
Signed	Zhiping.wang 2016-2-4	On behalf of	Omnik New Energy Co.,Ltd.

Omnik New Energy Co.,Ltd.

UK-G83 issue 2



TYPE VERIFICATION TEST SHEET

Omniksol-M300

Power Quality. Harmonics.

SSEG rating per phase (rpp)		250		W	NV=MV*3.68/rpp	
Harmonic	At 45-55% of rated output		100% of rated output			
	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Limit in BS EN 61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2	0.0044	0.065	0.0079	0.116	1.080	
3	0.007	0.103	0.0039	0.057	2.300	
4	0.0015	0.022	0.0031	0.046	0.430	
5	0.0031	0.046	0.0085	0.125	1.140	
6	0.0005	0.007	0.0018	0.026	0.300	
7	0.0009	0.013	0.005	0.074	0.770	
8	0.0005	0.007	0.0008	0.012	0.230	
9	0.0006	0.009	0.0031	0.046	0.400	
10	0.0003	0.004	0.0007	0.010	0.184	
11	0.0003	0.004	0.0008	0.012	0.450	
12	0	0.000	0.0003	0.004	0.153	
13	0.0004	0.006	0.0007	0.010	0.210	
14	0	0.000	0.0004	0.006	0.131	
15	0.0007	0.010	0.0008	0.012	0.150	
16	0.0002	0.003	0.0004	0.006	0.115	
17	0.001	0.015	0.0016	0.024	0.132	
18	0.0004	0.006	0.0005	0.007	0.102	
19	0.0011	0.016	0.0022	0.032	0.118	
20	0.0005	0.007	0.0003	0.004	0.092	
21	0.001	0.015	0.0024	0.035	0.107	
22	0.0005	0.007	0.0004	0.006	0.084	
23	0.0013	0.019	0.0025	0.037	0.098	0.147
24	0.0004	0.006	0	0.000	0.077	
25	0.0014	0.021	0.0022	0.032	0.090	0.135
26	0.0005	0.007	0	0.000	0.071	
27	0.0013	0.019	0.0018	0.026	0.083	0.124
28	0.0002	0.003	0.0004	0.006	0.066	
29	0.0016	0.024	0.002	0.029	0.078	0.117
30	0.0002	0.003	0.0003	0.004	0.061	
31	0.0017	0.025	0.0023	0.034	0.073	0.109
32	0.0002	0.003	0.0003	0.004	0.058	
33	0.0017	0.025	0.0024	0.035	0.068	0.102
34	0.0001	0.001	0.0003	0.004	0.054	
35	0.0015	0.022	0.0027	0.040	0.064	0.096
36	0.0004	0.006	0.0002	0.003	0.051	
37	0.0014	0.021	0.0026	0.038	0.061	0.091
38	0.0001	0.001	0.0004	0.006	0.048	
39	0.0016	0.024	0.0022	0.032	0.058	0.087
40	0.0002	0.003	0.0004	0.006	0.046	

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Omnik New Energy Co.,Ltd.

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Omniksol-M600						
Power Quality. Harmonics.						
SSEG rating per phase (rpp)			500	W	NV=MV*3.68/rpp	
Harmonic	At 45-55% of rated output		100% of rated output		Limit in BS EN 61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Measured Value (MV) in Amps	Normalised Value (NV) in Amps		
2	0.0098	0.144	0.0164	0.241	1.080	
3	0.0125	0.184	0.0195	0.287	2.300	
4	0.0065	0.096	0.0051	0.075	0.430	
5	0.0109	0.160	0.0196	0.289	1.140	
6	0.0033	0.049	0.0029	0.043	0.300	
7	0.0041	0.060	0.0115	0.169	0.770	
8	0.0007	0.010	0.0024	0.035	0.230	
9	0.0033	0.049	0.007	0.103	0.400	
10	0.0011	0.016	0.0023	0.034	0.184	
11	0.0035	0.052	0.0052	0.077	0.450	
12	0.002	0.029	0.0015	0.022	0.153	
13	0.0015	0.022	0.0045	0.066	0.210	
14	0.0015	0.022	0.0013	0.019	0.131	
15	0.0015	0.022	0.0037	0.054	0.150	
16	0.0007	0.010	0.0015	0.022	0.115	
17	0.0018	0.026	0.0044	0.065	0.132	
18	0.0006	0.009	0.0007	0.010	0.102	
19	0.0027	0.040	0.0045	0.066	0.118	
20	0.0014	0.021	0.0008	0.012	0.092	
21	0.0027	0.040	0.0035	0.052	0.107	
22	0.0011	0.016	0.0007	0.010	0.084	
23	0.0019	0.028	0.0019	0.028	0.098	0.147
24	0.0003	0.004	0.0012	0.018	0.077	
25	0.0015	0.022	0.0017	0.025	0.090	0.135
26	0.0002	0.003	0.0015	0.022	0.071	
27	0.0018	0.026	0.0021	0.031	0.083	0.124
28	0.0012	0.018	0.0011	0.016	0.066	
29	0.002	0.029	0.0036	0.053	0.078	0.117
30	0.0013	0.019	0.0015	0.022	0.061	
31	0.002	0.029	0.0045	0.066	0.073	0.109
32	0.0008	0.012	0.0009	0.013	0.058	
33	0.0023	0.034	0.0038	0.056	0.068	0.102
34	0.0004	0.006	0.0005	0.007	0.054	
35	0.0032	0.047	0.0037	0.054	0.064	0.096
36	0.001	0.015	0.0008	0.012	0.051	
37	0.0031	0.046	0.0035	0.052	0.061	0.091
38	0.0009	0.013	0.0011	0.016	0.048	
39	0.0024	0.035	0.0036	0.053	0.058	0.087
40	0.0008	0.012	0.0011	0.016	0.046	

Omniksol-M300								
Power Quality. Voltage fluctuations and Flicker.								
	Starting			Stopping			Running	
	dmax [%]	dc [%]	d(t) [%]	dmax [%]	dc [%]	d(t) [%]	Pst	Plt 2 hours
Measured Values	-0.15	0.11	0	-0.15	0.11	0	0.054	0.028
Normalised to standard impedance and 3.68kW for multiple units	-2.21	1.58	0	-2.21	1.58	0	0.795	0.412
Limits set under BS EN 61000-3-3	4%	3.30%	3.3% 500ms	4%	3.30%	3.3% 500ms	1	0.65
Test start date	2016-02-02			Test end date	2016-02-02			
Test location	Omnik New Energy Co.,Ltd, CN-215213 Suzhou China Xinghu Road No.218 Biobay Park A4-314							

Omniksol-M600								
Power Quality. Voltage fluctuations and Flicker.								
	Starting			Stopping			Running	
	dmax [%]	dc [%]	d(t) [%]	dmax [%]	dc [%]	d(t) [%]	Pst	Plt 2 hours
Measured Values	-0.19	0.15	0	-0.19	0.15	0	0.11	0.074
Normalised to standard impedance and 3.68kW for multiple units	-1.40	1.11	0	1.40	1.11	0	0.810	0.545
Limits set under BS EN 61000-3-2	4%	3.30%	3.3% 500ms	4%	3.30%	3.3% 500ms	1	0.65
Test start date	2016-02-02			Test end date	2016-02-02			
Test location	Omnik New Energy Co.,Ltd, CN-215213 Suzhou China Xinghu Road No.218 Biobay park A4-314							

Omniksol-M300				
Power quality. DC injection.				
Test power level	10%	55%	100%	
Recorded value(mA)	0.2775	1.0287	1.5914	
as % of rated AC current	0.01%	0.05%	0.07%	
Limit	0.25%	0.25%	0.25%	

Omniksol-M600				
Power quality. DC injection.				
Test power level	10%	55%	100%	
Recorded value(mA)	0.2362	2.1139	4.4962	
as % of rated AC current	0.01%	0.1%	0.21%	
Limit	0.25%	0.25%	0.25%	

Omniksol-M300				
Power Quality. Power factor.				
	216.2V	230V	253V	Measured at three voltage levels and at full output. Voltage to be maintained within $\pm 1.5\%$ of the stated level during the test.
Measured value	0.997	0.9964	0.9953	
Limit	>0.95	>0.95	>0.95	

Omniksol-M600				
Power Quality. Power factor.				
	216.2V	230V	253V	Measured at three voltage levels and at full output. Voltage to be maintained within $\pm 1.5\%$ of the stated level during the test.
Measured value	0.9968	0.9964	0.9957	
Limit	>0.95	>0.95	>0.95	

Omniksol-M300						
Protection. Frequency tests.						
Function	Setting		Trip test		"No trip tests"	
	Frequency	Time delay	Frequency	Time delay	Frequency /time	Confirm no trip
U/F stage 1	47.5Hz	20s	47.5Hz	20.1s	47.7Hz/ 25s	No trip
U/F stage 2	47Hz	0.5s	47.0Hz	0.5s	47.2Hz/ 19.98s	No trip
					46.8Hz/ 0.48s	No trip
O/F stage 1	51.5Hz	90s	51.5Hz	90.1s	51.3Hz/95s	No trip
O/F stage 2	52Hz	0.5s	52.0Hz	0.47s	51.8Hz/ 89.98s	No trip
					52.2Hz/ 0.48s	No trip

Omniksol-M300						
Protection. Voltage tests.						
Function	Setting		Trip test		"No trip tests"	
	Voltage	Time delay	Voltage	Time delay	Voltage /time	Confirm no trip
U/V stage 1	200.1V	2.5s	200.3V	2.52s	204.1V/3.5s	No trip
U/V stage 2	184V	0.5s	184.5V	0.52s	188V/2.48s	No trip
					180V/0.48s	No trip
O/V stage 1	262.2V	1.0s	262.4V	1.01s	258.2V/2.0s	No trip
O/V stage 2	273.7V	0.5s	274.0V	0.52s	269.7V/0.98s	No trip
					277.7V/0.48s	No trip

Omniksol-M600						
Protection. Frequency tests.						
Function	Setting		Trip test		"No trip tests"	
	Frequency	Time delay	Frequency	Time delay	Frequency /time	Confirm no trip
U/F stage 1	47.5Hz	20s	47.5Hz	20.1s	47.7Hz/ 25s	No trip
U/F stage 2	47Hz	0.5s	47.0Hz	0.54s	47.2Hz/ 19.98s	No trip
					46.8Hz/ 0.48s	No trip
O/F stage 1	51.5Hz	90s	51.5Hz	90.1s	51.3Hz/95s	No trip
O/F stage 2	52Hz	0.5s	52.0Hz	0.47s	51.8Hz/ 89.98s	No trip
					52.2Hz/ 0.48s	No trip

Omniksol-M600						
Protection. Voltage tests.						
Function	Setting		Trip test		"No trip tests"	
	Voltage	Time delay	Voltage	Time delay	Voltage /time	Confirm no trip
U/V stage 1	200.1V	2.5s	199.4V	2.52s	204.1V/3.5s	No trip
U/V stage 2	184V	0.5s	183.4V	0.54s	188V/2.48s	No trip
					180V/0.48s	No trip
O/V stage 1	262.2V	1.0s	261.8V	1.04s	258.2V/2.0s	No trip
O/V stage 2	273.7V	0.5s	273.2V	0.53s	269.7V/0.98s	No trip
					277.7V/0.48s	No trip

Omniksol-M300						
Protection. Loss of Mains test.						
Note: Inverter tested according to BS EN 62116.						
Test Power and imbalance	33% -5% Q Test 22	66% -5% Q Test 12	100% -5% P Test 5	33% +5% Q Test 31	66% +5% Q Test 21	100% +5% P Test 10
Trip time. Limit is 0.5s	212ms	210ms	357ms	212ms	420ms	406ms

Omniksol-M600						
Protection. Loss of Mains test.						
Note: Inverter tested according to BS EN 62116.						
Test Power and imbalance	33% -5% Q Test 22	66% -5% Q Test 12	100% -5% P Test 5	33% +5% Q Test 31	66% +5% Q Test 21	100% +5% P Test 10
Trip time. Limit is 0.5s	231ms	243ms	276ms	263ms	321ms	368ms

Omniksol-M300 and Omniksol-M600				
Protection. Frequency change, Stability test				
	Start Frequency	Change	End Frequency	Confirm no trip
Positive Vector Shift	49.5Hz	+9 degrees		No trip
Negative Vector Shift	50.5Hz	- 9 degrees		No trip
Positive Frequency drift	49.5Hz	+0.19Hz/sec	51.5Hz	No trip
Negative Frequency drift	50.5Hz	-0.19Hz/sec	47.5Hz	No trip

Fault level contribution.					
Omniksol-M300			Omniksol-M600		
For a Inverter SSEG			For a Inverter SSEG		
Time after fault	Volts	Amps	Time after fault	Volts	Amps
20ms	38.54	0.352	20ms	37.64	0.465
100ms	36.58	0.341	100ms	36.21	0.432
250ms	35.23	0.321	250ms	35.72	0.378
500ms	34.67	0.287	500ms	33.56	0.342
Time to trip	0.053	(in seconds)	Time to trip	0.063	(in seconds)



Omniksol-M300 and Omniksol-M600					
Protection. Re-connection timer.					
Test proves that the reconnection sequence starts after a minimum delay of 20 seconds for restoration of voltage and frequency to within the stage 1 settings of table 1 of the subject normative.					
Time delay setting	Measured delay	No reconnection when voltage or frequency is brought to just outside stage 1 limits of table 1.			
40s	40.2s	At 266.2V	At 196.1V	At 47.4Hz	At 51.6Hz
Confirmation that the SSEG does not re-connect.		No reconnection	No reconnection	No reconnection	No reconnection

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