

## Manufacture Declaration for EN50438:2013 Ireland

Type Approval and manufacturer/supplier declaration of compliance with the requirements of Engineering Recommendation EN50438:2013 A.13 IE-Ireland			
SSEG Type reference number		Photovoltaic Grid-tied inverter	
SSEG Type		X1- 3.0-T X1- 3.3-T X1- 3.6-T X1- 4.2-T X1- 5.0-T	
System Supplier name		Solax power Co., Ltd	
Address		Room 220, West Buliding A, National University Science and Technology Park of Zhejiang University 525, Xixi Rd, Hangzhou, Zhejiang Province, China, 310007	
Tel	+86(0571)-56260011	Fax	+86(0571)-56075753
E:mail	info@soalxpower.com	Web site	www.solaxpower.com
Maximum rated capacity, use separate sheet if more than one connection option.		Connection Option	
		3.0	kW single phase system
		3.3	kW single phase system
		3.6	kW single phase system
		4.2	kW single phase system
4.6		kW single phase system	
SSEG manufacturer/supplier declaration. 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 EN50438:2013 A.13 IE-Ireland			
Signed	<i>Guo Huawei</i>	On behalf of	Solax power Co., Ltd
Note that testing can be done by the manufacturer of an individual component, by an external test house, or by the supplier of the complete system, or any combination of them as appropriate. Where parts of the testing are carried out by persons or organizations other than the supplier then the supplier shall keep copies of all test records and results supplied to them to verify that the testing has been carried out by people with sufficient technical competency to carry out the tests.			

Power Quality. Harmonics						
SSEG rating per phase (rpp)			4.6	kW	NV=MV*3.68/rpp	
Harmonic	At 50% 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	0.0265	0.0212	0.0526	0.0968	1.080	
3	0.0688	0.0550	0.176	0.3238	2.300	
4	0.008	0.0064	0.0114	0.0210	0.430	
5	0.0423	0.0338	0.1021	0.1879	1.140	
6	0.0071	0.0057	0.0124	0.0228	0.300	
7	0.0221	0.0177	0.0415	0.0764	0.770	
8	0.0045	0.0036	0.0064	0.0118	0.230	
9	0.025	0.0200	0.0232	0.0427	0.400	
10	0.0068	0.0054	0.0055	0.0101	0.184	
11	0.0235	0.0188	0.0147	0.0270	0.330	
12	0.0051	0.0041	0.006	0.0110	0.153	
13	0.0192	0.0154	0.012	0.0221	0.210	
14	0.0053	0.0042	0.0052	0.0096	0.131	
15	0.0189	0.0151	0.0139	0.0256	0.150	
16	0.0085	0.0068	0.0095	0.0175	0.115	
17	0.0193	0.0154	0.0157	0.0289	0.132	
18	0.0108	0.0086	0.0107	0.0197	0.102	
19	0.0251	0.0201	0.0163	0.0300	0.118	
20	0.0087	0.0070	0.01	0.0184	0.092	
21	0.0164	0.0131	0.0182	0.0335	0.107	0.160
22	0.0119	0.0095	0.0092	0.0169	0.084	
23	0.0146	0.0117	0.0247	0.0454	0.098	0.147
24	0.0097	0.0078	0.0158	0.0291	0.077	
25	0.0168	0.0134	0.0228	0.0420	0.090	0.135
26	0.0103	0.0082	0.0146	0.0269	0.071	
27	0.0146	0.0117	0.0199	0.0366	0.083	0.124
28	0.0084	0.0067	0.0176	0.0324	0.066	
29	0.0107	0.0086	0.0125	0.0230	0.078	0.117
30	0.0068	0.0054	0.0217	0.0399	0.061	
31	0.0106	0.0085	0.0237	0.0436	0.073	0.109
32	0.0032	0.0026	0.0228	0.0420	0.058	
33	0.0088	0.0070	0.0252	0.0464	0.068	0.102
34	0.0047	0.0038	0.016	0.0294	0.054	
35	0.008	0.0064	0.0162	0.0298	0.064	0.096
36	0.0038	0.0030	0.0113	0.0208	0.051	
37	0.0071	0.0057	0.0168	0.0309	0.061	0.091
38	0.0027	0.0022	0.0094	0.0173	0.048	
39	0.0068	0.0054	0.0132	0.0243	0.058	0.087

40	0.0034	0.0027	0.006	0.0110	0.046	
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Power Quality. Voltage fluctuations and Flicker								
	Starting			Stopping			Running	
	d <sub>max</sub>	d <sub>c</sub>	d <sub>(t)</sub>	d <sub>max</sub>	d <sub>c</sub>	d <sub>(t)</sub>	P <sub>st</sub>	P <sub>lt</sub> 2 hours
Measured Values	0.57	0.53	0.0	0.52	0.42	0.0	0.09	0.09
Limits set under BS EN 61000-3-3	4%	3.3%	3.3% 500ms	4%	3.3%	3.3% 500ms	1.0	0.65
Test start date	2016-04-12			Test end date			2016-04-12	
Test location	Building 4, No. 518, Xinzhuan Road, Caohejing Songjiang High-Tech Park, Shanghai, P.R. China (201612)							

Power Quality. Power factor			
Limit	+ 0,95 - 0,95 at three voltage levels		
	210V	230V	250V
Measured value	0.9981	0.9983	0.9989

Under/over frequency				
	Under frequency		Over frequency	
Parameter	Frequency	Time	Frequency	Time
Protection limit (EN 50438 Annex A)	48Hz	0.5s	50.5Hz	0.5s
Actual Setting	48Hz	0.5s	50.5Hz	0.5s
Trip value (test result)	48.01 Hz	0.288s	50.51 Hz	0.272s

Under /Over voltage				
	Under Voltage		Over Voltage	
Parameter	Voltage	Time	Voltage	Time
Protection limit (EN 50438 Annex A)	230V-10%	0.5s	230V+10%	0.5s
Actual Setting	207.0V	0.5s	253.0V	0.5s
Trip value(test result)	206.9V	0.290s	253.0V	0.286s

Loss of Mains test			
Method used	inverters can be tested according to BS EN 62116		
Output power level (a)	Min.	Medium	Max.
Trip setting clearance time	0.5s	0.5s	0.5s
Trip value clearance time	0.204s	0.340s	0.242s

(a Indicative values are shown for minimum, medium and maximum power levels)

Fault level contribution					
For a directly coupled SSEG			For a Inverter SSEG		
Parameter	Symbol	Value	Time after fault	Volts	Amps
Peak Short Circuit current	$i_p$	NA	20ms	31.8 V	13.51 A
Initial Value of aperiodic current	$A$	NA	100ms	33.59V	12.09A
Initial symmetrical short-circuit current*	$I_k$	NA	250ms	NA	NA
Decaying (aperiodic) component of short circuit current*	$i_{DC}$	NA	500ms	NA	NA
Reactance/Resistance Ratio of source*	$X/R$	NA	Time to trip	28.5 ms	In seconds

Additional comments