



SMA New Energy Technology (Jiangsu) Co., Ltd

No. 198 Xiangyang Road

215011 Suzhou • China

Tel: +86 512 6937 0998

Fax: +86 512 6937 3159

Manufacture's Declaration

Confirmation of Compliance with the Requirements of VFR 2014/UTE C 15-712-1

SMA New Energy Technology (Jiangsu) Co., Ltd hereby confirms that the inverter type listed below table meets the requirements of the French code of practice UTE C 15-712-1.

Brand	zeversolar
Type reference	Zevelution Pro 33K
Nominal AC Power	33000W
Maximum AC Power	33000W

The inverter meets the requirements of VFR 2014/UTE C 15-712-1, along with the specifications in the data sheet and the CE declaration, by the following points:

- The certificate of the compliance with VDE 0126-1-1/A1:2012 has been issued by an accredited institute. The certificate can be downloaded from the website <http://www.zeversolar.com/>.
- The inverter meets the requirements of the French code of practice UTE C 15-712-1.
- The automatic disconnection devices integrated within the inverters with three-phase mains surveillance meets the requirements of DIN VDE 0126-1-1 / A1: 2012 with the deviation of VFR 2014 (mentioned in "Protections des installations de production raccordées au réseau public de distribution, ERDF-NOI-RES_13E, Version 5, 30/06/2013").
- The grid protection parameters can't be changed by user, an installer or by any person other than SMA (password protected).

Suzhou, 31.07.2017

SMA New Energy Technology (Jiangsu) Co., Ltd.

Sandy Gong, Safety Manager

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Test Results

Power quality

Harmonic current emissions as per EN 61000-3-12								
Harmonic	Test Value in	% of fund	Test Value in	% of fund	Test Value in	% of fund	Limit	
	Amps Phase 1	Phase 1	Amps Phase 2	Phase 2	Amps Phase 3	Phase 3	Single phase	Three phase
2	0.3400	0.7129	0.3443	0.7251	0.3761	0.7905	8%	8%
3	0.0758	0.1589	0.1080	0.2274	0.1853	0.3895	21.6%	Not stated
4	0.0954	0.2001	0.1628	0.3427	0.1677	0.3526	4%	4%
5	0.1600	0.3355	0.0686	0.1445	0.1221	0.2567	10.7%	10.7%
6	0.0072	0.0151	0.0792	0.1668	0.0774	0.1626	2.67%	2.67%
7	0.0886	0.1859	0.0678	0.1428	0.0321	0.0674	7.2%	7.2%
8	0.0537	0.1125	0.1351	0.2845	0.1271	0.2672	2%	2%
9	0.1250	0.2622	0.0692	0.1458	0.0756	0.1589	3.8%	Not stated
10	0.1042	0.2186	0.1300	0.2738	0.1318	0.2771	1.6%	1.6%
11	0.1646	0.3452	0.0708	0.1490	0.0955	0.2008	3.1%	3.1%
12	0.0110	0.0230	0.0226	0.0477	0.0224	0.0470	1.33%	1.33%
13	0.0740	0.1552	0.0774	0.1631	0.0910	0.1912	2%	2%
THD	N/A	1.04%	N/A	1.05%	N/A	1.17%	23%	13%
PWHD	N/A	1.52%	N/A	1.69%	N/A	1.75%	23%	22%

Voltage Fluctuations and Flicker as per EN 61000-3-11								
	Starting			Stopping			Running	
	dmax	dc	d(t)	dmax	dc	d(t)	Pst	Plt 2 hours
Measured Values	3.85%	0.41%	0.00%	3.04%	2.88%	0.00%	0.320	0.189
Limits set under EN 61000-3-11	4%	3.3%	3.3% 500ms	4%	3.3%	3.3% 500ms	1.0	0.65
Test impedance	R		0.15Ω		XI		0.15Ω	
Test start date	3.2.2015			Test end date			3.2.2015	
Test location	Audix Technology (Wujiang) Co., Ltd. EMC Dept							

Power factor *			
Test Voltage level	210 V	230 V	253 V
Measured value at 100%Pn	0.998	0.999	0.999
Limit	>0.95	>0.95	>0.95

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* Measured at three voltage levels and at full output. The voltage maintained within $\pm 1.5\%$ of the stated level during the test.

Under/Over frequency protection

Function	Limit		Actual setting		Trip test	
	Frequency[Hz]	Time[s]	Frequency[Hz]	Time[s]	Frequency[Hz]	Time[s]
U/F Stage 1	47.5	0.2	47.5	0.16	47.51	0.162
O/F Stage 1	50.6	0.2	50.6	0.16	50.61	0.169

Under/Over voltage protection

Function	Limit		Actual setting		Trip test	
	Voltage [V]	Time [s]	Voltage [V]	Time [s]	Voltage [V]	Time [s]
U/V Stage 1_phase 1	184.0	0.2	184.0	0.12	184.2	0.131
U/V Stage 1_phase 2	184.0	0.2	184.0	0.12	184.5	0.137
U/V Stage 1_phase 3	184.0	0.2	184.0	0.12	184.2	0.130
O/V Stage 1*_phase 1	253.0	600	253.0	600	257.6	494
O/V Stage 1*_phase 2	253.0	600	253.0	600	257.6	501
O/V Stage 1*_phase 3	253.0	600	253.0	600	257.6	498
O/V Stage 2_phase 1	264.5	0.2	264.5	0.12	264.2	0.132
O/V Stage 2_phase 2	264.5	0.2	264.5	0.12	263.8	0.119
O/V Stage 2_phase 3	264.5	0.2	264.5	0.12	264.3	0.130

*Over voltage – stage 1: 10 min mean value corresponding to EN 50160. The voltage is set to 100%Un and held for 600s. After that, the voltage is set to 112%Un. It must be switched off within 600s.

Loss of mains test

Method used	Reactive power disturbed		
	25% Pn	50% Pn	100% Pn
Limit according to VDE 0126-1-1	5s	5s	5s
Trip time (L:+5%)	0.186s	0.138s	0.181s
Trip time (L:+4%)	0.153s	0.135s	0.182s
Trip time (L:+3%)	0.174s	0.125s	0.115s
Trip time (L:+2%)	0.130s	0.240s	0.181s
Trip time (L:+1%)	0.164s	0.241s	0.181s
Trip time (L:+0%)	0.240s	0.202s	0.220s
Trip time (L:-1%)	0.248s	0.233s	0.182s
Trip time (L:-2%)	0.281s	0.210	0.114s
Trip time (L:-3%)	0.120s	0.207	0.112s

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Trip time (L:-4%)	0.153s	0.128s	0.111s
Trip time (L:-5%)	0.172s	0.147s	0.100s

Reconnection time measurement

Reconnection time	Under/over Voltage	Under / over Frequency	Loss of Mains
Limit	60s	60s	60s
Actual setting	60s	60s	60s
Recorded value	78s	77s	78s

DC current monitoring

A direct current feed to the low voltage grid due to a defective generator operation must lead to a disconnection within 0.2 s. (according to VDE 0126-1-1)

Function	Limit		Trip test	
	DC current [A]	Time [ms]	DC current [A]	Time [ms]
Positive DC current	1.0	200	0.98	188
Negative DC current	1.0	200	0.99	190

Residual current monitoring

Test for correct triggering in event of steadily rising residual current

PV connection	Limit		Trip test	
	Fault current [mA]	Time [ms]	Test Current [mA]	Time [ms]
PV+	300	300	201	209.5
PV-	300	300	196	199.0

Test for correct triggering in event of sudden rising residual current

PV connection	Limit		Trip test	
	Fault current [mA]	Time [ms]	Test Current [mA]	Time [ms]
PV+	30	300	29.6	242.5
PV+	60	150	58.3	96.5
PV+	150	40	151.4	25.4
PV-	30	300	29.3	224.0
PV-	60	150	60.2	113.0
PV-	150	40	149.5	29.4

Array insulation resistance detection

The value of the total resistance, including the intentional resistance for array functional grounding, the expected insulation resistance of the array to ground, and the resistance of any other networks connected to ground (for example measurement networks) must not be lower than $R = (V_{MAX.PV}/30 \text{ mA})$ ohms. (according to

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EN 62109-2)			
PV connector	Test resistance value	Activation(Yes/No)	Display
PV+	40KΩ	Yes	Isolation Fault
PV-	40KΩ	Yes	Isolation Fault

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