



**SMA New Energy Technology (Jiangsu) Co., Ltd**  
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## 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 types listed below table meet the requirement of the French code of practice UTE C 15-712-1.

<b>Brand</b>	zeversolar		
<b>Type reference</b>	Zeverlution 2000S	Zeverlution 1500S	Zeverlution 1000S
<b>Nominal AC Power</b>	2000W	1500W	1000W
<b>Maximum AC Power</b>	2200W	1650W	1100W

The inverters meet 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 inverters meet the requirements of the French code of practice UTE C 15-712-1.
- The automatic disconnection devices integrated within the inverters with single-phase mains surveillance meet 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 61000-3-2			
Harmonic	Test Value in Amps	% of fund	Limit in Amps
2	0.014	0.16	1.080
3	0.099	1.14	2.300
4	0.009	0.10	0.430
5	0.040	0.46	1.140
6	0.015	0.17	0.300
7	0.006	0.07	0.770
8	0.010	0.11	0.230
9	0.016	0.19	0.400
10	0.006	0.07	0.184
11	0.005	0.06	0.330
12	0.004	0.05	0.153
13	0.020	0.23	0.210
14	0.004	0.04	0.131
15	0.004	0.05	0.150
16	0.006	0.07	0.115
17	0.019	0.22	0.132
18	0.009	0.10	0.102
19	0.006	0.07	0.118
20	0.012	0.13	0.092
21	0.012	0.14	0.107
22	0.016	0.18	0.084
23	0.009	0.11	0.098
24	0.018	0.21	0.077
25	0.007	0.08	0.090
26	0.021	0.24	0.071
27	0.008	0.10	0.083
28	0.021	0.25	0.066
29	0.008	0.09	0.078
30	0.022	0.25	0.061
31	0.015	0.17	0.073
32	0.018	0.20	0.058
33	0.010	0.12	0.068

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34	0.011	0.13	0.054
35	0.016	0.18	0.064
36	0.003	0.03	0.051
37	0.005	0.06	0.061
38	0.009	0.10	0.048
39	0.010	0.11	0.058
40	0.015	0.17	0.046
THD	-	1.57%	-

Voltage fluctuations and flicker as per EN 61000-3-3								
	Starting			Stopping			Running	
	dmax	dc	d(t)	dmax	dc	d(t)	Pst	Plt 2 hours
Measured Values	2.00%	0.00%	2.00%	1.97%	0.00%	1.97%	0.126	0.123
Limits set under EN 61000-3-3	4%	3.3%	3.3% 500ms	4%	3.3%	3.3% 500ms	1.0	0.65
Test start date	09/06/2015			Test end date			09/06/2015	
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	0.995	0.998	0.998
Limit	>0.95	>0.95	>0.95

\* 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	47.50	0.160
O/F Stage 1	50.6	0.2	50.6	0.16	50.59	0.168

### 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	184.0	0.2	184.0	0.12	184.2	0.147
O/V Stage 1 *	253.0	600	253.0	600	257.6	598
O/V Stage 2	264.5	0.2	264.5	0.12	264.9	0.135

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\*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	The optimized Slip-Mode Frequency Shift (SMS) method		
	25% Pn	50% Pn	100% Pn
Output power level			
Limit according to VDE 0126-1-1	5s	5s	5s
Trip time (L:+5%)	0.365s	0.286s	0.293s
Trip time (L:+4%)	0.612s	0.298s	0.323s
Trip time (L:+3%)	0.382s	0.319s	0.546s
Trip time (L:+2%)	0.422s	0.301s	0.352s
Trip time (L:+1%)	0.329s	0.378s	0.329s
Trip time (L:+0%)	0.396s	0.427s	0.374s
Trip time (L:-1%)	0.362s	0.359s	0.378s
Trip time (L:-2%)	0.306s	0.365s	0.289s
Trip time (L:-3%)	0.345s	0.356s	0.278s
Trip time (L:-4%)	0.307s	0.307s	0.266s
Trip time (L:-5%)	0.312s	0.340s	0.252s

### 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	68s	69s	67s

### 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	0.99	160
Negative DC current	1.0	200	1.00	144

### 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]

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PV+	300	300	89	136
PV-	300	300	97	116

<b>Test for correct triggering in event of sudden rising residual current</b>				
PV connection	Limit		Trip test	
	Fault current [mA]	Time [ms]	Test Current [mA]	Time [ms]
PV+	30	300	29.7	143
PV+	60	150	58.8	108
PV+	150	40	150.0	35
PV-	30	300	30.1	145
PV-	60	150	59.8	115
PV-	150	40	149.0	29

### 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 EN 62109-2)

PV connector	Test resistance value	Activation(Yes/No)	Display
PV+	200kΩ	Yes	Isolation Fault
PV-	200kΩ	Yes	Isolation Fault

### Additional comments

Zeverlution 1000S, Zeverlution 1500S are similar to Zeverlution 2000S in circuit and construction except for the output rating of current and power. The test result can refer to Zeverlution 2000S.

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