Certificate CE 10/11

Manufacturer declaration and Type testing of compliance with the regulations of the Belgium on connection of photovoltaic installations to the low voltage network.

Type reference number	*Eversol TLC10K* *Eversol TLC15K* *Eversol TLC17K* *Eversol TLC20K*		
Type	*Photovoltaic Inverter*		
Manufacturer:	*Jiangsu Zeversolar New Energy CO., LTD.*		
Address	*No. 198 Xiangyang Road, Suzhou, 215011 China*		
Tel	*+86 512 6937 0998*	Fax	*+86 512 6937 0630*
E:mail	*service.china@zeversolar.com*	Web site	*www.zeversolar.com*

Test house details:	*Jiangsu Zeversolar New Energy CO., LTD.* *R&D Department,Suzhou*

Type reference	Nominal AC power	Max.AC power
Eversol TLC10K	*10.0kW*	*10.0kW*
Eversol TLC15K	*15.0kW*	*15.0kW*
Eversol TLC17K	*17.0kW*	*17.0kW*
Eversol TLC20K	*20.0kW*	*20.0kW*

Jiangsu Zeversolar New Energy CO., LTD hereby declares that the inverter listed above meet the regulations of the Belgium on connection of photovoltaic installations to the low voltage network.
The inverters conforming to the regulations of the Belgium are characterized, along with the specification in the datasheet and the CE declaration, by the following features:
- There are two certificate of VDE 0126-1-1/A1:2012 and VDE 0126-1-1:2013 issued by an accredited institute. Those certificates can be downloaded from the website http://www.zeversolar.com/.
- The automatic disconnection devices integrated within the inverters meet the requirements of DIN VDE 0126-1-1/A1:2012 with the deviation of CE 10/11, as required in Annex 4 of C10/11.
- These parameters can't be changed by user, an installer or by any person other than Zeversolar (password protected).

The results of VDE 0126-1-1/A1:2012 and the deviation of CE 10/11 tests are summarized in this certificate. Complete documentation on test details is available at Zeversolar on demand.
The models TLC10K, TLC15K, TLC17K are similar to TLC20K on hardware except that the output power was decreased. The function was achieved by software..

Name of signatory and title	*Sandy Gong* *Manager of Safety Dept*	Date and Place	*2014.06.24* *Suzhou*
Signed		On behalf of	*Jiangsu Zeversolar New Energy CO., LTD.*

POWER QUALITY

Harmonic current emissions as per EN 61000-3-12								
Harmonic	Test Value in Amps Phase 1	% of fund Phase 1	Test Value in Amps Phase 2	% of fund Phase 2	Test Value in Amps Phase 3	% of fund Phase 3	Limit	
							Single phase	Three phase
2	0.057	0.20	0.092	0.32	0.049	0.17	8%	8%
3	0.047	0.16	0.121	0.42	0.077	0.27	21.6%	Not stated
4	0.059	0.20	0.080	0.28	0.028	0.10	4%	4%
5	0.142	0.49	0.108	0.37	0.209	0.72	10.7%	10.7%
6	0.049	0.17	0.045	0.16	0.011	0.04	2.67%	2.67%
7	0.063	0.22	0.081	0.28	0.098	0.34	7.2%	7.2%
8	0.064	0.22	0.064	0.22	0.024	0.08	2%	2%
9	0.030	0.10	0.046	0.16	0.021	0.07	3.8%	Not stated
10	0.058	0.20	0.060	0.21	0.038	0.13	1.6%	1.6%
11	0.111	0.38	0.113	0.39	0.084	0.29	3.1%	3.1%
12	0.020	0.07	0.022	0.08	0.006	0.02	1.33%	1.33%
13	0.096	0.33	0.101	0.35	0.085	0.29	2%	2%
THD	N/A	1.10	N/A	1.18	N/A	1.14	23%	13%
PWHD	N/A	0.03	N/A	0.03	N/A	0.03	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	2.05%	2.22%	0.00%	1.95%	2.21%	0.00%	0.24	0.11
Limits set under EN 61000-3-11	4%	3.3%	3.3% 500ms	4%	3.3%	3.3% 500ms	1.0	0.65
Test Impendance	R		0.15Ω		XI		0.15Ω	
Test start date	2014.2.14			Test end date			2014.2.14	
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	0.997	0.998
Limit	>0.95	>0.95	>0.95

* Measured at three voltage levels and at full output. The voltage maintained within ±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	0.1	47.5	0.06	47.52	0.090
O/F Stage 1	51.5	0.1	51.5	0.06	51.49	0.091

ACTIVE POWER FEED-IN AT OVER FREQUENCY

PM =100% of Prated				
Freq. (Hz)	Actual frequency (Hz)	Measured active output power Pnow(W)	ΔP as per measured data (=PM- Pnow) (W)	Actual gradient (%/Hz)
50,00	50,00	19958	-	-
50,25	50,25	19644	-	-
50,70	50,70	16076	3882	38.9
51,15	51,15	12526	7432	39.2
50,70	50,70	16096	3862	38.7
50,25	50,25	19637	-	-
50,00	50,00	19965	-	-
The max. gradient over the whole power derating transient is 39.2P_M % per Hz.				
PM =50% of Prated				
Freq. (Hz)	Actual frequency (Hz)	Measured active output power Pnow(W)	ΔP as per measured data (=PM- Pnow) (W)	Actual gradient (%/Hz)
50,00	50,00	10090	-	-
50,25	50,25	9940	-	-
50,70	50,70	8116	1974	39.1
51,15	51,15	6352	3738	39.0
50,70	50,70	8115	1975	39.1
50,25	50,25	9942	-	-
50,00	50,00	10005	-	-
The max. gradient over the whole power derating transient is 39.1P_M% per Hz.				

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 L 1	184.0	0.1	184.0	0.06	184.6	0.061
U/V Stage 1 L 2	184.0	0.1	184.0	0.06	183.9	0.060
U/V Stage 1 L 3	184.0	0.1	184.0	0.06	184.4	0.066

O/V Stage 1* L1	253.0	600	253.0	600	257.6	572
O/V Stage 1* L2	253.0	600	253.0	600	257.6	576
O/V Stage 1* L3	253.0	600	253.0	600	257.6	581
O/V Stage 2 L1	264.5	0.1	264.5	0.06	264.8	0.072
O/V Stage 2 L2	264.5	0.1	264.5	0.06	264.3	0.068
O/V Stage 2 L3	264.5	0.1	264.5	0.06	265.2	0.067

*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		
Output power level	25% Prated	50% Prated	100% Prated
Limit according to VDE 0126-1-1	5s	5s	5s
Trip time (L:+5%)	2.16s	2.18s	2.17s
Trip time (L:+4%)	2.20s	1.91s	2.39s
Trip time (L:+3%)	2.24s	2.52s	2.22s
Trip time (L:+2%)	2.18s	2.55s	2.26s
Trip time (L:+1%)	2.61s	2.49s	2.52s
Trip time (L:+0%)	2.12s	2.72s	2.54s
Trip time (L:-1%)	2.25s	2.35s	2.62s
Trip time (L:-2%)	2.18s	2.18s	2.54s
Trip time (L:-3%)	2.44s	2.06s	2.22s
Trip time (L:-4%)	2.30s	2.14s	2.39s
Trip time (L:-5%)	2.27s	2.37s	2.31s

RECONNECTION TIME MEASUREMENT

Reconnection time	Under/over Voltage		Under / over Frequency		Loss of Mains	
	time	gradient	time	gradient	time	gradient
Limit	60s	10%Pn/min	60s	10%Pn/min	60s	10%Pn/min
Actual setting	60s	9% Pn/min	60s	9% Pn/min	60s	9% Pn/min
Recorded value	60s	9.3% Pn/min	60s	9.3% Pn/min	60s	9.5%Pn/min

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 L1	0.29	200	0.29	186
Positive DC current L2	0.29	200	0.28	178
Positive DC current L3	0.29	200	0.27	183
Negative DC current L1	0.29	200	0.28	184
Negative DC current L2	0.29	200	0.27	179
Negative DC current L3	0.29	200	0.28	185

RESIDUAL CURRENT MONITORING

Test for correct triggering in event of steadily rising residual current				
	Limit		Trip test	
PV connection	Fault current (mA)	Time (ms)	Test Current (mA)	Time (ms)
PV+	300	300	105	235.4
PV-	300	300	103	214.5

Test for correct triggering in event of steadily rising residual current				
	Limit		Trip test	
PV connection	Fault current (mA)	Time (ms)	Test Current (mA)	Time (ms)
PV+	30	300	30.6	222.5
PV+	60	150	59.5	108.0
PV+	150	40	150.2	25.2
PV-	30	300	30.5	205.5
PV-	60	150	60.5	105.0
PV-	150	40	150.2	24.4

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 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