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Product Service

Compliance Document

No. D 044913 1064 Rev. 00

Holder of Certificate: **ZTE Corporation**
ZTE Plaza
Keji Road South, Hi-Tech Industrial Park
Nanshan District
518057 Shenzhen
PEOPLE'S REPUBLIC OF CHINA

Product: **PV inverter**
GRID-CONNECTED PV INVERTER

This Compliance document confirms the compliance with the listed standards on a voluntary basis. It refers only to the sample submitted for testing and certification and does not certify the quality or safety of the serial products. For details see: www.tuvsud.com/ps-cert

Test report no.: 704092346207-00

Date, 2023-06-19

(Zhengdong Ma)

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Model(s): **ZXEPG S050E, ZXEPG S060E**

Parameters:
Please see pages 3 to 5.

Tested according to: EN 50549-1:2019/AC:2019

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Model	ZXEPG S050E	ZXEPG S060E
DC-Input		
Max. Input Voltage	1100 Vd.c.	
Max. Input Current	32/32/32/32/32 Ad.c.	32/32/32/32/40 Ad.c.
Isc PV Current	50 Ad.c.	
MPPT Voltage Range	200-1000 Vd.c.	
AC-Output		
Rated Output Voltage	3/N/PE~ 400/230 Va.c.	
Rated Output Frequency	50 Hz	
Rated Output Power	50 kW	60 kW
Max. Output Apparent Power	55 kVA	66 kVA
Max. Output Current	79.7 Aa.c.	95.7 Aa.c.
Power Factor Range	0.8(leading)-0.8(lagging)	

Interface protection system default settings and power controls in inverter

(based on EN 50549-1:2019)

Clause(s) / subclause(s) of EN 50549	Ref	Parameter	Typical value range	Value default	
4.3.2 Interface switch	n.a.	Single fault tolerance for interface switch required	yes | no	YES	
4.4.2 Operating frequency range	A,B	47.0 – 47.5 Hz Duration	0 – 20 s	0.1 s	
	A,B	47.5 – 48.5 Hz Duration	30 – 90 min	Unlimited	
	A,B	48.5 – 49.0 Hz Duration	30 – 90 min	Unlimited	
	A,B	49.0 – 51.0 Hz Duration	not configurable	Unlimited	
	A,B	51.0 – 51.5 Hz Duration	30 – 90 min	Unlimited	
	A,B	51.5 – 52 Hz Duration	0 – 15 min	0.1 s	
4.4.3 Minimal requirement for active power delivery at underfrequency	A,B	Reduction threshold	49 Hz – 49,5 Hz	N/A	
	A,B	Maximum reduction rate	2 – 10 % P_M/Hz	N/A	
4.4.4 Continuous operating voltage range	n.a.	Upper limit	not configurable	110%	
	n.a.	Lower limit	not configurable	85%	
4.5.2 Rate of change of frequency (ROCOF) immunity	A,B	ROCOF withstand capability (defined with a sliding measurement window of 500 ms)	not defined	2 Hz/s	
		non-synchronous generating technology:			
		synchronous generating technology:		N/A	
4.5.3.2 Generating plant with non-synchronous generating technology	B	Maximum power resumption time	not defined	1 s	
	B	Voltage-Time-Diagram	see Figure 6	Time [s]	U [p.u.]
				0	0.05
				0.25	0.05
				3.00	0.85
4.5.3.3 Generating plant with synchronous generating technology	B	Maximum power resumption time	not defined	N/A	
	B	Voltage-Time-Diagram	see Figure 7 (N/A)	Time [s]	U [p.u.]
				-	-
				-	-

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				-	-
4.5.4 Over-voltage ride through (OVRT)	n.a.	Voltage-Time-Diagram	not configurable	Time [s]	U [p.u.]
				0	1.25
				0.1	1.25
				0.1	1.20
				5	1.20
				5	1.15
				60	1.15
				60	1.10
4.6.1 Power response to overfrequency	A,B	Threshold frequency f_1	50.2 Hz – 52 Hz	50.2 Hz	
	A,B	Droop	2 % – 12 %	5 %	
	A,B	Power reference	P_M | P_{max}	P_M	
	n.a.	Intentional delay	0 – 2 s	0s	
	n.a.	Deactivation threshold f_{stop}	50,0 Hz – f_1	Deactivated	
	n.a.	Deactivation time t_{stop}	0 – 600 s	-	
	A	Acceptance of staged disconnection	yes | no	Yes	
4.6.2 Power response to underfrequency	n.a.	Threshold frequency f_1	49.8 Hz – 46 Hz	N/A	
	n.a.	Droop	2 – 12 %	N/A	
	n.a.	Power reference	P_M | P_{max}	N/A	
	n.a.	Intentional delay	0 – 2 s	N/A	
4.7.2.2 Capabilities	B	Active factor range overexcited	0.9 – 1	0.8	
	B	Active factor range underexcited	0.9 – 1	0.8	
4.7.2.3 Control modes	n.a.	Enabled control mode	Q setp. Q(U) cos φ setp. cos φ (P)	Q setpoint	
4.7.2.3.2 Setpoint control modes	n.a.	Q setpoint and excitation	0 – 60 % S_{max}	0	
	n.a.	cos φ setpoint and excitation	1 – 0.9	1	
4.7.2.3.3 Voltage related control modes	n.a.	Characteristic curve	-	-	
	n.a.	Time constant	3 s – 60 s	10 s	
	n.a.	Min cos φ	0.0 – 1	0.8	
	n.a.	Lock in power	0 % – 20 %	20 %	
	n.a.	Lock out power	0 % – 20 %	5%	
4.7.2.3.4 Power related control mode	n.a.	Characteristic curve	-	-	
4.7.4.2.2 Zero current mode for converter connected generating technology	n.a.	Enabling	enable | disable	Disable	
	n.a	Static voltage range overvoltage	100 % U_n – 120 % U_n	115% Un	
	n.a	Static voltage range undervoltage	20 % U_n – 100 % U_n	85% Un	
4.9.2 Requirements on voltage and frequency protection	n.a	Threshold for protection as dedicated device [in A or kW, kVA]	16 A – 250 kVA	Interface protection integrated	
	B	Undervoltage threshold stage 1	0.2 U_n – 1 U_n	0.85 Un	
	B	Undervoltage operate time stage 1	0.1 s – 100 s	10 s	
	B	Undervoltage threshold stage 2	0.2 U_n – 1 U_n	0.4 Un	
	B	Undervoltage operate time stage 2	0.1 s – 5 s	1.5 s	
	B	Overvoltage threshold stage 1	1.0 U_n – 1.2 U_n	1.15 Un	
	B	Overvoltage operate time stage 1	0.1 s – 100 s	10 s	
	B	Overvoltage threshold stage 2	1.0 U_n – 1.3 U_n	1.25 Un	
	B	Overvoltage operate time stage 2	0.1 s – 5 s	0.1 s	

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	B	Overvoltage threshold 10 min mean protection	1.0 U_n – 1.15 U_n	1.1 Un
	B	Underfrequency threshold stage 1	47.0 Hz– 50.0 Hz	47.5 Hz
	B	Underfrequency operate time stage 1	0.1 s – 100 s	5 s
	B	Underfrequency threshold stage 2	47.0 Hz – 50.0 Hz	47 Hz
	B	Underfrequency operate time stage 2	0.1 s – 5 s	0.1 s
	B	Overfrequency threshold stage 1	50.0 Hz – 52.0 Hz	51.5 Hz
	B	Overfrequency operate time stage 1	0.1 s – 100 s	5 s
	B	Overfrequency threshold stage 2	50.0 Hz – 52.0 Hz	52 Hz
	B	Overfrequency operate time stage 2	0.1 s – 5 s	0.1 s
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47.0 Hz – 50.0 Hz	49.5Hz
	B	Upper frequency	50.0 Hz – 52.0 Hz	50.2Hz
	B	Lower voltage	50 % U_n – 100 % U_n	85%Un
	B	Upper voltage	100 % U_n – 120 % U_n	110%Un
	B	Observation time	10 s – 600 s	60 s
	B	Active power increase gradient	6 % – 3000 %/min	10%Pn/min
4.10.3 Starting to generate electrical power	A,B	Lower frequency	47.0 Hz – 50.0 Hz	49.5Hz
	A,B	Upper frequency	50.0 Hz – 52.0 Hz	50.1Hz
	A,B	Lower voltage	50 % – 100 % U_n	85%Un
	A,B	Upper voltage	100 % – 120 % U_n	110%Un
	A,B	Observation time	10 s – 600 s	60s
	A,B	Active power increase gradient	6 % – 3000 %/min	10%Pn/min
4.11.1 Ceasing active power	A,B	Remote operation of the logic interface	yes | no	Can be achieved by PGU. (Logic interface shall be specified by DNO)
4.11.2 Reduction of active power on set point	B	Remote operation NOTE: If yes further definition is provided by the DSO	yes | no	Can be achieved by PGU. (Definition shall be specified by DNO)
4.12 Remote information exchange	B	Remote information exchange required NOTE: If yes further definition is provided by the DSO	yes | no	No
The Column Ref specifies if a parameter is relevant for COMMISSION REGULATION 2016/631 and for what type of generating module the parameter is relevant. If n.a. is set, this parameter is: not applicable for 2016/631, but is introduce into EN50549-1 for local DSO network management reasons and is not considered as cross border issues.				

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