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Product Service

Compliance Document

No. D 118897 0020 Rev. 00

Holder of Certificate: **Zhejiang Hyxi Technology Co., Ltd.**
9-10F, Building 3, Jiuyao Commercial Center
Zhuantang Street
Xihu District
310008 Hangzhou, Zhejiang
PEOPLE'S REPUBLIC OF CHINA

Product: **Converter**
Single Phase Hybrid 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.: 5040923020804-00

Date, 2023-08-16

(Zhengdong Ma)

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Model(s): **HYX-H3K-HS, HYX-H3K6-HS, HYX-H4K-HS, HYX-H4K6-HS, HYX-H5K-HS, HYX-H6K-HS, HYX-H8K-HS**

Parameters:

Please see pages 3 to 7.

Tested according to: EN 50549-1:2019

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Models	HYX-H3K-HS	HYX-H3K6-HS	HYX-H4K-HS
PV Input Parameters			
Max. Input Voltage	DC 600 V		
MPPT Voltage Range	DC 80 V, …, 560 V		
Max. Current per MPPT	DC 2*16 A		
Isc PV(absolute max.)	DC 2*24 A		
Battery Input Port Parameters			
Battery Type:	Lithium-ion		
Battery Voltage Range:	DC 80 V, …, 490 V		
Max. Charge/Discharge Current:	DC 35 A		
On-grid(AC Input/Output) Parameters			
Rated Grid Voltage:	1/N/PE, AC 230 V		
Rated Grid Frequency:	50 Hz		
Rated Output Power:	3000 W	3600 W	4000 W
Max. Continuous current:	AC 15 A	AC 18 A	AC 20 A
Max. Continuous Apparent Power:	3300 VA	4000 VA	4400 VA
Power Factor	0.8 leading, …, 0.8 lagging		

Models	HYX-H4K6-HS	HYX-H5K-HS	HYX-H6K-HS
PV Input Parameters			
Max. Input Voltage	DC 600 V		
MPPT Voltage Range	DC 80 V, …, 560 V		
Max. Current per MPPT	DC 2*16 A		
Isc PV(absolute max.)	DC 2*24 A		
Battery Input Port Parameters			
Battery Type:	Lithium-ion		
Battery Voltage Range:	DC 80 V, …, 490 V		
Max. Charge/Discharge Current:	DC 35 A		
On-grid(AC Input/Output) Parameters			
Rated Grid Voltage:	1/N/PE, AC 230 V		
Rated Grid Frequency:	50 Hz		
Rated Output Power:	4600 W	5000 W	6000 W
Max. Continuous current:	AC 23 A	AC 25 A	AC 30 A
Max. Continuous Apparent Power:	5060 VA	5500 VA	6600 VA
Power Factor	0.8 leading, …, 0.8 lagging		

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Models	HYX-H8K-HS
PV Input Parameters	
Max. Input Voltage	DC 600 V
MPPT Voltage Range	DC 80 V, …, 560 V
Max. Current per MPPT	DC 2*16 A
Isc PV(absolute max.)	DC 2*24 A
Battery Input Port Parameters	
Battery Type:	Lithium-ion
Battery Voltage Range:	DC 80 V, …, 490 V
Max. Charge/Discharge Current:	DC 35 A
On-grid(AC Input/Output) Parameters	
Rated Grid Voltage:	1/N/PE, AC 230 V
Rated Grid Frequency:	50 Hz
Rated Output Power:	8000 W
Max. Continuous current:	AC 40 A
Max. Continuous Apparent Power:	8800 VA
Power Factor	0.8 leading, …, 0.8 lagging

Interface protection system default settings and power controls in inverter

Clause(s) / subclause(s) of this EN	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	10 s	
	A,B	47.5 – 48.5 Hz Duration	30 – 90 min	30 min	
	A,B	48.5 – 49.0 Hz Duration	30 – 90 min	30 min	
	A,B	49.0 – 51.0 Hz Duration	not configurable	unlimited	
	A,B	51.0 – 51.5 Hz Duration	30 – 90 min	30 min	
	A,B	51.5 – 52 Hz Duration	0 – 15 min	1 min	
4.4.3 Minimal requirement for active power delivery at underfrequency	A,B	Reduction threshold	49 Hz – 49.5 Hz	No reduction	
	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%Un	
	n.a.	Lower limit	not configurable	85%Un	
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:		2 Hz/s	
		synchronous generating technology:		N/A	
4.5.3.2 Generating plant with non-synchronous generating technology	B	Maximum power resumption time	not defined	1s	
	B	Voltage-Time-Diagram	see Figure 6	Time [s]	U [p.u.]
				0	0.05

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				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.]
				-	-
				-	-
				-	-
				-	-
				-	-
4.5.4 Over-voltage ride through (OVRT)	n.a.	Voltage-Time-Diagram	not configurable	Time [s]	U [p.u.]
				0.0	1.25
				0.1	1.25
				0.1	1.20
				5.0	1.20
				5.0	1.15
				60.0	1.15
				60.0	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_{max} for EESS	
	n.a.	Intentional delay	0 – 2 s	0 s	
	n.a.	Deactivation threshold f_{stop}	50,0 Hz – f_1	50.1 Hz	
	n.a.	Deactivation time t_{stop}	0 – 600 s	30 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	49.8 Hz	
	n.a.	Droop	2 – 12 %	5 %	
	n.a.	Power reference	P_M | P_{max}	P_{max}	
	n.a.	Intentional delay	0 – 2 s	0 s	
4.7.2.2 Capabilities	B	Active factor range overexcited	0.9 – 1	1	
	B	Active factor range underexcited	0.9 – 1	1	
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 – 48.4 % P_D	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	1	
	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	-	disable	
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 % U_n	
	n.a	Static voltage range undervoltage	20 % U_n – 100 % U_n	85 % U_n	
4.9.2 Requirements on voltage and frequency	n.a	Threshold for protection as dedicated device [in A or	16 A – 250 kVA	Interface protection intergrated	

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protection		kW, kVA]		
	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	3 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	1.5 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
	B	Overvoltage threshold 10 min mean protection	1.0 U_n – 1.15 U_n	1.10 Un
	B	Underfrequency threshold stage 1	47.0 Hz– 50.0 Hz	47.50 Hz
	B	Underfrequency operate time stage 1	0.1 s – 100 s	5.0 s
	B	Underfrequency threshold stage 2	47.0 Hz – 50.0 Hz	47.00 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	51.50 Hz
	B	Overfrequency operate time stage 1	0.1 s – 100 s	5.0 s
	B	Overfrequency threshold stage 2	50.0 Hz – 52.0 Hz	52.00 Hz
	B	Overfrequency operate time stage 2	0.1 s – 5 s	0.1s
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47.0 Hz – 50.0 Hz	49.5 Hz
	B	Upper frequency	50.0 Hz – 52.0 Hz	50.2 Hz
	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	60s
	B	Active power increase gradient	6 % – 3000 %/min	9 %/min
4.10.3 Starting to generate electrical power	A,B	Lower frequency	47.0 Hz – 50.0 Hz	49.5 Hz
	A,B	Upper frequency	50.0 Hz – 52.0 Hz	50.1 Hz
	A,B	Lower voltage	50 % – 100 % U_n	85% U_n
	A,B	Upper voltage	100 % – 120 % U_n	110 % U_n
	A,B	Observation time	10 s – 600 s	60s
	A,B	Active power increase gradient	6 % – 3000 %/min	Disable

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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	N/A

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.

Unauthorised access to factory safety parameters setting and software should be prohibited.
A reset to the factory safety parameters requires retesting and verification in conjunction with the end-use system.

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