TÜV SÜD
Product Service

Compliance Document

No. D 118897 0023 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**
Model(s):	**HYX-H3K-HS, HYX-H3K6-HS, HYX-H4K-HS, HYX-H4K6-HS, HYX-H5K-HS, HYX-H6K-HS, HYX-H8K-HS**
Parameters:	See next pages.
Tested according to:	ANRE Order no. 3:2023

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.:	5040924020803-00

Date, 2024-11-15

(Zhengdong Ma)

TÜV SÜD Product Service GmbH • Certification Body • Ridlerstraße 65 • 80339 Munich • Germany

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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, …, 1, …, +0.8		

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, …, 1, …, +0.8		

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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, …, 1, …, +0.8

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Interface protection settings and power controls in inverter (based on EN 50549-1:2019 and ANRE Order no. 3:2023)				
Clause(s) / subclause(s) of this EN	Ref	Parameter	Typical value range	Value default
4.4.2 Operating frequency range	A.B	47.0 – 47.5 Hz Duration	0 – 20 s	100s
	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	100 s
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 % PM/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) non-synchronous generating technology: synchronous generating technology:	not defined	2Hz/s 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.]: - / -; - / -; - / -; - / -; - / -; - / -; - / -
4.5.4 Over-voltage ride through (OVRT)	n.a.	Voltage-Time-Diagram	not configurable	Time [s] / Time [s]: 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 f1	50.2 Hz – 52 Hz	50.2Hz
	A.B	Droop	2 % – 12 %	5%
	A.B	Power reference	PM | Pmax	Pmax for EESS
	n.a.	Intentional delay	0 – 2 s	0s
	n.a.	Deactivation threshold fstop	50.0 Hz – f1	50.1Hz
	n.a.	Deactivation time tstop	0 – 600 s	30s

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	A	Acceptance of staged disconnection	yes | no	yes
4.6.2 Power response to underfrequency	n.a.	Threshold frequency f1	49.8 Hz – 46 Hz	49.8Hz
	n.a.	Droop	2 – 12 %	5%
	n.a.	Power reference	PM | Pmax	Pmax
	n.a.	Intentional delay	0 – 2 s	0s
4.7.2.2 Capabilities	B	Reactive power range overexcited	0 – 0.6	1
	B	Reactive power range underexcited	0 – 0.6	1
4.7.2.3 Control modes	n.a.	Enabled control mode	Q setp. Q(U) Q(P) cos φ setp. cos φ (P)	Q setpoint
4.7.2.3.2 Setpoint control modes	n.a.	Q setpoint and excitation	0 – 60 % Smax	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	10s
	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 % Un – 100 % Un	85% Un
4.9.3 Requirements on voltage and frequency protection – inverter self-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 Un – 1 Un	0.85Un
	B	Undervoltage operate time stage 1	0.1 s – 100 s	3.2s
	B	Undervoltage threshold stage 2	0.2 Un – 1 Un	-
	B	Undervoltage operate time stage 2	0.1 s – 5 s	-
	B	Overvoltage threshold stage 1	1.0 Un – 1.2 Un	1.15Un
	B	Overvoltage operate time stage 1	0.1 s – 100 s	0.5s
	B	Overvoltage threshold stage 2	1.0 Un – 1.3 Un	-
	B	Overvoltage operate time stage 2	0.1 s – 5 s	-
	B	Overvoltage threshold 10 min mean protection	1.0 Un – 1.15 Un	1.10Un
	B	Underfrequency threshold stage 1	47.0 Hz– 50.0 Hz	47.5Hz
	B	Underfrequency operate time stage 1	0.1 s – 100 s	0.5s
	B	Underfrequency threshold stage 2	47.0 Hz – 50.0 Hz	-
	B	Underfrequency operate time stage 2	0.1 s – 5 s	-
	B	Overfrequency threshold stage 1	50.0 Hz – 52.0 Hz	52Hz
	B	Overfrequency operate time stage 1	0.1 s – 100 s	0.5s

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	B	Overfrequency threshold stage 2	50.0 Hz – 52.0 Hz	-
	B	Overfrequency operate time stage 2	0.1 s – 5 s	-
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47.0 Hz – 50.0 Hz	47.5Hz
	B	Upper frequency	50.0 Hz – 52.0 Hz	51Hz
	B	Lower voltage	50 % Un – 100 % Un	90%Un
	B	Upper voltage	100 % Un – 120 % Un	110%Un
	B	Observation time	10 s – 600 s	60s
	B	Active power increase gradient	6 % – 3000 %/min	16.69%/min
4.10.3 Starting to generate electrical power	A.B	Lower frequency	47.0 Hz – 50.0 Hz	47.5Hz
	A.B	Upper frequency	50.0 Hz – 52.0 Hz	51Hz
	A.B	Lower voltage	50 % – 100 % Un	90%Un
	A.B	Upper voltage	100 % – 120 % Un	110%Un
	A.B	Observation time	10 s – 600 s	60s
	A.B	Active power increase gradient	6 % – 3000 %/min	16.69%/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. 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.

License conditions:
1. The power generating plant must be designed in such manner that the imbalance occurring between the current generated on different phases never exceeds the limit of 16 A.
2. A three-phased connection is mandatory for small power generating plants with a maximum current exceeding 16 A, and must be designed in such a way as to limit any imbalance between the current produced on the different phases, unless some DSOs allow higher current, the applicable limit being mentioned on the website of the DSO concerned.
3. If the power generating plant consists of multiple single phase power generating units, it must be ensured that the maximum current imbalance between the various phases is lower than 16 A. Compliance with this limit must be guaranteed by the design of the installation.
4. The installation of a current imbalance protection relay is required if the power generating plant consists of multiple single phase power generating units with the risk of having a current imbalance of more than 16 A. The trip value of this current imbalance protection relay shall be set to a value of 16 A unless the DSO allows a higher limit.