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Product Service

Compliance Document

No. D 005028 0484 Rev. 00

Holder of Certificate: **Anker Innovations Limited**
Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok
Kowloon
HONG KONG

Product: **Converter**
(Hybrid Inverter)

Model(s): **X1-H5K-T, X1-H8K-T, X1-H10K-T, X1-H12K-T**

Parameters: See page 2

Tested according to:
EN 50549-1:2019/AC:2019
RfG:2016
EIFS 2018:2

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.: 64290243012101

Date, 2024-05-24

(Billy Qiu)

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Parameters:

Model	X1-H5K-T	X1-H8K-T	X1-H10K-T	X1-H12K-T
PV terminal parameters				
Maximum PV voltage [V_{DC}]	1000			
Rated voltage [V_{DC}]	600			
MPPT voltage range [V_{DC}]	140-950			
MPPT voltage range (full load) [V_{DC}]	375-850			
Maximum input current [A_{DC}]	16/16			
Isc PV [A_{DC}]	20/20			
MPPT tracker number	2			
Maximum input power [W]	10000	16000	20000	24000
Battery input/output parameters				
Battery type	Li-ion	Li-ion	Li-ion	Li-ion
Maximum voltage [V_{DC}]	450			
Battery rated voltage [V_{DC}]	400			
Battery voltage range [V_{DC}]	350-450			
Maximum charge power [W]	5250	8400	10500	12600
Maximum discharge power [W]	5250	8400	10500	12600
Maximum charge current [A_{DC}]	15	24	30	36
Maximum discharge current [A_{DC}]	15	24	30	36
Maximum charge power from grid to battery [W]	5000	8000	10000	12000
Grid input terminal parameters				
Rated input voltage [V_{AC}]	3P+N+PE, 230/400			
Rated input frequency [Hz]	50			
Maximum continuous input current from grid to battery [A_{AC}]	7.2	11.6	14.5	17.4
Maximum continuous input current [A_{AC}]	15.2	24.3	30.3	30.3
Maximum continuous input power from grid to battery [W]	5000	8000	10000	12000
Maximum continuous input active power [W]	10000	16000	20000	20000
Maximum continuous input apparent power [VA]	10000	16000	20000	20000
Grid output terminal parameters				
Rated output voltage [V_{AC}]	3P+N+PE, 230/400			
Rated output frequency [Hz]	50			
Rated output current [A_{AC}]	7.2	11.6	14.5	17.4
Maximum continuous output current [A_{AC}]	8.4	13.3	16.7	20.0
Rated output active power [W]	5000	8000	10000	12000
Maximum output active power [W]	5000	8000	10000	12000
Maximum output apparent power [VA]	5500	8800	11000	13200
Power factor range	0.8 under-excited to 0.8 over-excited			

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Scope of assessment and results

Clause of NfG	EIFS 2018:2	Requirement	Type A	Type B	Type C	Type D	Assessment Result
Article 13.1 (a)	Chapter 3(1)	Frequency range	Y	-	-	-	Pass
Article 13.1 (b)	Chapter 3(2)	Ability to withstand the frequency of change of frequency (RoCoF)	Y	-	-	-	Pass
Article 13.2	Chapter 3(3, 4, 5, 6)	Limited frequency sensitive mode — overfrequency (LFSM-O)	Y	-	-	-	Pass
Article 13.4 & 13.5	Chapter 3(7)	Maximum power capability reduction with falling frequency	Y	-	-	-	Pass
Article 13.6	N/A	Remote ceasing active power	Y	-	-	-	Pass
Article 13.7	Chapter 3(8,9)	Automatic connection to the network	Y	-	-	-	Pass

Registration information for “Rikta Rätt” requirement
Details of the inverter:

Manufacturer/Make of inverter	Anker Innovations Limited			
Type designation/Model number	Hybrid Inverter (X1-H5K-T, X1-H8K-T, X1-H10K-T, X1-H12K-T)			
Firmware (version number)	Software version: DSP: V1.0, ARM: V1.0, firmware version: V1.0.			
Connection	Three phases	Power factor (cos φ)	0.8 under-excited to 0.8 over-excited	
Can be combined with battery	Yes	The inverter can be used for backup power (island operation)	Yes	

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Protection settings:

The inverter configured with the settings below		
Protection settings	Time	Level
Overvoltage (step2)	60.0s	253.0V
Overvoltage (step1)	0.2s	264.5V
Undervoltage	0.2s	195.5V
Over frequency	0.5s	>51.5Hz
Under frequency	0.5s	<47.5Hz
Protection from unwanted island operation	Active method according to EN 62116, Max trip time <0.5s	

Information about flicker and harmonics emissions

The inverter meets the requirements below			
Electricity quality data		Value	
Flicker values	Pst	0.52	≤16A Calculated according to SS-EN 61000-3-3
	Plt	0.52	16-75A Calculated according to SS-EN 61000-3-11
Harmonics max 16A	Meets SS-EN 61000-3-2		
Harmonics 16-75A	Meets SS-EN 61000-3-12		

Remark: The flicker values are maximum values from all phases.

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Specification of harmonic currents

Manufacturer/Make of inverter	Anker Innovations Limited
Type designation/Model number	X1-H12K-T

Order	Output power	Harmonic current	Order	Output power	Harmonic current
	kW	% of In		kW	% of In
2	12	2.395%	3	12	0.200%
4	12	1.303%	5	12	0.880%
6	12	0.306%	7	12	0.838%
8	12	0.431%	9	12	0.174%
10	12	0.282%	11	12	0.674%
12	12	0.053%	13	12	0.486%
14	12	0.206%	15	12	0.049%
16	12	0.185%	17	12	0.396%
18	12	0.037%	19	12	0.362%
20	12	0.162%	21	12	0.059%
22	12	0.159%	23	12	0.275%
24	12	0.029%	25	12	0.223%
26	12	0.104%	27	12	0.037%
28	12	0.117%	29	12	0.148%
30	12	0.035%	31	12	0.200%
32	12	0.069%	33	12	0.044%
34	12	0.069%	35	12	0.169%
36	12	0.031%	37	12	0.172%
38	12	0.061%	39	12	0.041%
40	12	0.047%	41	12	0.151%
42	12	0.030%	43	12	0.139%
44	12	0.037%	45	12	0.058%
46	12	0.057%	47	12	0.150%
48	12	0.044%	49	12	0.084%
50	12	0.034%			

Remark: The harmonic values are maximum values from all phases.

Maximum rms total harmonic current expressed as % of In	2.395%
Output power (kW) at maximum rms total harmonic current	12 kW

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Requirement regarding logic interface according to EU Commission Regulation 2016/631 article 13.6

Remote ceasing active power	
Logic interface provided?	Yes
stop the generation of active power time(s)	0.0486 s

Frequency response

The inverter meets the following requirements	Reference
The inverter meets the requirement to remain connected within the following frequency ranges: • Not less than 30 minutes for frequency 47,5 – 49,0 Hz • Unlimited for frequency range 49,0 – 51,0 Hz • Not less than 30 minutes for frequency range 51,0 – 51,5 Hz	EIFS 2018:2 chapter 3 (1)
The inverter meets the requirement to remain connected to the network and operate with a rate of change of frequency up to 2.0 Hz/s	EIFS 2018:2 chapter 3 (2)
The inverter meets the requirement to reduce its active power output when the frequency exceeds 50.5 Hz	EIFS 2018:2 chapter 3 (3)
The droop setting is 8%	EIFS 2018:2 chapter 3 (4)
Active power output from the inverter is reduced by a maximum of 3.0 per cent per Hz at frequencies below 49.0 Hz	EIFS 2018:2 chapter 3 (7)
The inverter is automatically reconnected only within the frequency range 47.5 - 50.1 Hz: • Connection occurs only if the network frequency has been within this range continuously for at least 3 minutes	EIFS 2018:2 chapter 3 (8)
The inverter meets the requirement concerning the increase of active power output during automatic connection as follows: • < 49.9 Hz - rate of increase of active power output unlimited • 49.9-50.1 Hz - rate of increase of active power output is limited to 10 per cent of nominal power output per minute • > 50.1 Hz - there is no increase of active power output	EIFS 2018:2 chapter 3 (9)
State the lowest active power output (in kW) to which the inverter can be downregulated in case of over frequency: 0.14 kW	EIFS 2018:2 chapter 3 (5)

Remark: Refer to the report 64.290.24.30121.01(date 2023-05-14) for detailed data.

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