ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Product Service

CERTIFICATE

No. B 17 03 85769 019

Holder of Certificate: **SolaX Power Network Technology (Zhejiang) Co., Ltd.**

No. 288 Shizhu Road,
Tonglu Economic Development Zone
311500 Tonglu City, Zhejiang Province
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:

Product: **Converter**
Grid-Connected Photovoltaic Inverter

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition the certification holder must not transfer the certificate to third parties. See also notes overleaf.

Test report no.: 704091628006-00

Valid until: 2022-03-08

040527680504O3

Date, 2017-04-18

(Zhengdong Ma)

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Product Service

CERTIFICATE
No. B 17 03 85769 019

Model(s):

X1-Hybrid-5.0-D-E, X1-Hybrid-5.0-N-E, X1-Hybrid-4.6-D-E, X1-Hybrid-4.6-N-E, X1-Hybrid-3.7-D-E, X1-Hybrid-3.7-N-E, X1-Hybrid-3.0-D-E, X1-Hybrid-3.0-N-E, X1-Hybrid-5.0-D-C, X1-Hybrid-5.0-N-C, X1-Hybrid-4.6-D-C, X1-Hybrid-4.6-N-C, X1-Hybrid-3.7-D-C, X1-Hybrid-3.7-N-C, X1-Hybrid-3.0-D-C, X1-Hybrid-3.0-N-C, X1-Hybrid-5.0-D-I, X1-Hybrid-5.0-N-I, X1-Hybrid-4.6-D-I, X1-Hybrid-4.6-N-I, X1-Hybrid-3.7-D-I, X1-Hybrid-3.7-N-I, X1-Hybrid-3.0-D-I, X1-Hybrid-3.0-N-I

Parameters:

PV input ratings	
Max. DC voltage:	600 V DC
MPP voltage range:	125-550 V DC
Max. DC Current	
Input A/Input B):	10A/10A
Isc PV(Input A/Input B):	14A/14A
AC output ratings	
Nominal AC Voltage, Frequency:	230V~, 50/60Hz
AC input ratings	
Nominal AC Voltage, Frequency:	230V~, 50/60Hz
Battery Type:	Lithium
Battery operation voltage:	85-400VDC
Max. charge and discharge current:	20A
Max. charge and discharge power:	6000W
Operating ambient temperature range:	-20°C ... +60°C
Ingress protection:	IP 65
Overvoltage category:	III (MAINS), II(DC)
Protection class:	I
Other ratings refer to attachments	

Tested according to:

EN 62109-1:2010
EN 62109-2:2011
IEC 62109-1(ed.1)
IEC 62109-2(ed.1)

Production Facility(ies):

85769

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Model lists:
X1-Hybrid-5.0-D-E, X1-Hybrid-5.0-N-E, X1-Hybrid-4.6-D-E, X1-Hybrid-4.6-N-E, X1-Hybrid-3.7-D-E, X1-Hybrid-3.7-N-E, X1-Hybrid-3.0-D-E, X1-Hybrid-3.0-N-E
X1-Hybrid-5.0-D-C, X1-Hybrid-5.0-N-C, X1-Hybrid-4.6-D-C, X1-Hybrid-4.6-N-C, X1-Hybrid-3.7-D-C, X1-Hybrid-3.7-N-C, X1-Hybrid-3.0-D-C, X1-Hybrid-3.0-N-C
X1-Hybrid-5.0-D-I, X1-Hybrid-5.0-N-I, X1-Hybrid-4.6-D-I, X1-Hybrid-4.6-N-I, X1-Hybrid-3.7-D-I, X1-Hybrid-3.7-N-I, X1-Hybrid-3.0-D-I, X1-Hybrid-3.0-N-I

Nomenclature for model X1-Hybrid-XXX-Y-Z
xxx: maybe 3.0, 3.7, 4.6, 5.0;
Y: maybe D, or N, D indicate with integrated DC switch, N indicate without DC switch
Z: maybe E, or I or C, E indicates EPS function available only with external changeover device installed, I indicate integrated EPS function, C indicates without EPS function

Electrical ratings for various models:

Models	**X1-Hybrid-5.0-D-E, X1-Hybrid-5.0-N-E**	**X1-Hybrid-4.6-D-E, X1-Hybrid-4.6-N-E**	**X1-Hybrid-3.7-D-E, X1-Hybrid-3.7-N-E**	**X1-Hybrid-3.0-D-E, X1-Hybrid-3.0-N-E**
PV input ratigns:				
Max. DC voltage:	600 V DC			
MPP voltage range:	125 – 550V DC			
Max. DC current (input A/input B):	10A/10A			
Isc PV (input A/input B):	14A/14A			
Max. DC power (@cos φ=1):	6000W	6000W	5000W	4000W
AC output				
Nominal AC voltage:	230V~			
Nominal AC frequency:	50/60Hz			
Max. Continuous AC current:	21.7A	21A	16A	14.4A
Nominal AC Apparent Power (@cos φ=1):	4999VA	4600VA	3680VA	3000VA
Power factor at rated power:	1			
Power factor range:	0.8 leading – 0.8 lagging			
AC input				
Nominal AC voltage:	230V~			
Nominal AC frequency:	50/60Hz			
Max. Continuous AC current:	21.7A	21A	16A	14.4A
Battery				
Battery type:	Lithium			
Battery Operation Voltage	85 – 400VDC			
Max. Charge and discharge current:	20A			
Max. Charge and discharge power:	6000W			
EPS output:				
Nominal voltage:	230V~			
Nominal frequency:	50/60Hz			
Nominal apparent power:	5000VA	5000VA	4000VA	4000VA
EPS Rated current:	21.7A	21.7A	17.4A	17.4A

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	X1-Hybrid-5.0-D-I, X1-Hybrid-5.0-N-I	X1-Hybrid-4.6-D-I, X1-Hybrid-4.6-N-I	X1-Hybrid-3.7-D-I, X1-Hybrid-3.7-N-I	X1-Hybrid-3.0-D-I, X1-Hybrid-3.0-N-I
PV input ratings:				
Max. DC voltage:	600 V DC			
MPP voltage range:	125 – 550V DC			
Max. DC current (input A/input B):	10A/10A			
Isc PV (input A/input B):	14A/14A			
Max. DC power (@cos φ=1):	6000W	6000W	5000W	4000W
AC output				
Nominal AC voltage:	230V~			
Nominal AC frequency:	50/60Hz			
Max. Continuous AC current:	21.7A	21A	16A	14.4A
Nominal AC Apparent Power (@cos φ=1):	4999VA	4600VA	3680VA	3000VA
Power factor at rated power:	1			
Power factor range:	0.8 leading – 0.8 lagging			
AC input				
Nominal AC voltage:	230V~			
Nominal AC frequency:	50/60Hz			
Max. Continuous AC current:	47.7A	47A	37.7A	36.1A
Battery				
Battery type:	Lithium			
Battery Operation Voltage:	85 - 400VDC			
Max. Charge and discharge current:	20A			
Max. Charge and discharge power:	6000W			
EPS output:				
Nominal voltage:	230V~			
Nominal frequency:	50/60Hz			
Nominal apparent power:	5000VA	5000VA	4000VA	4000VA
EPS Rated current:	21.7A	21.7A	17.4A	17.4A

Models	X1-Hybrid-5.0-D-C, X1-Hybrid-5.0-N-C	X1-Hybrid-4.6-D-C, X1-Hybrid-4.6-N-C	X1-Hybrid-3.7-D-C, X1-Hybrid-3.7-N-C	X1-Hybrid-3.0-D-C, X1-Hybrid-3.0-N-C
PV input ratings:				
Max. DC voltage:	600 V DC			
MPP voltage range:	125 – 550V DC			
Max. DC current (input A/input B):	10A/10A			
Isc PV (input A/input B):	14A/14A			
Max. DC power (@cos φ=1):	6000W	6000W	5000W	4000W
AC output				
Nominal AC voltage:	230V~			
Nominal AC frequency:	50/60Hz			
Max. Continuous AC current:	21.7A	21A	16A	14.4A
Nominal AC Apparent Power (@cos φ=1):	4999VA	4600VA	3680VA	3000VA
Power factor at rated power:	1			
Power factor range:	0.8 leading – 0.8 lagging			
AC input				
Nominal AC voltage:	230V~			
Nominal AC frequency:	50/60Hz			
Max. Continuous AC current:	21.7A	21A	16A	14.4A

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Battery	
Battery type:	Lithium
Battery Operation Voltage:	85 - 400VDC
Max. Charge and discharge current:	20A
Max. Charge and discharge power:	6000W

Conditions of acceptability--

1. When installing the equipment, all requirements of the mentioned standards must be fulfilled.

2. In order to protect the installation against electrical and fire hazard, all branch circuits in an installation, switch gear, cables etc., must be short-circuit and over-current protected according to the national/international regulations.

3. When install PV system generation system, double/reinforced insulation cable shall be installed with mechanical protection or basic insulation cable routed in earthed metal conduit or in cable trucking system buried in soiled.

Recommended conductor cross-section area and installation method shall refer to installation manual.

Recommendation of minimum requirement for PV cable: Cu, 2,5mm^2 – 6mm^2 @max. 90°C ambient temperature;

AC output cables: Cu, L, N+PE, cross-section refer to below table:

model	**X1-Hybrid-3.0-D-E, X1-Hybrid-3.0-N-E X1-Hybrid-3.0-D-C, X1-Hybrid-3.0-N-C**	**X1-Hybrid-3.7-D-E, X1-Hybrid-3.7-N-E X1-Hybrid-3.7-D-C, X1-Hybrid-3.7-N-C**	**X1-Hybrid-4.6-D-E, X1-Hybrid-4.6-N-E X1-Hybrid-4.6-D-C, X1-Hybrid-4.6-N-C**	**X1-Hybrid-5.0-D-E, X1-Hybrid-5.0-N-E X1-Hybrid-5.0-D-C, X1-Hybrid-5.0-N-C**
cross-section	4-5 mm^2	4-5 mm^2	4-5 mm^2	5 mm^2
External AC output cable protection	20 A	20 A	25 A	32A
model	**X1-Hybrid-3.0-D-I, X1-Hybrid-3.0-N-I**	**X1-Hybrid-3.7-D-I, X1-Hybrid-3.7-N-I**	**X1-Hybrid-4.6-D-I, X1-Hybrid-4.6-N-I**	**X1-Hybrid-5.0-D-I, X1-Hybrid-5.0-N-I**
cross-section (	6-8 mm^2	6-8 mm^2	6-8 mm^2	10-13 mm^2
External AC output cable protection	50 A	50 A	55 A	63A

All type of PV inverter shall be installed with operating time of the fuse is less than 5 seconds, installation method B2 according to EN 60204-1:2006, Annex D: cable in conduit cable trunking system, number of loaded circuit only one. Use H07RN-F (cord designation 60245 IEC 66) for an ambient temperature of 40 °C or less and use 90 °C wire for ambient temperature between 40 °C and 60 °C. If any higher temperature environment used or for decrease the power loss in wire runway, it shall increase the conductor current carrying capacity and recalculation.

4. When installing storage battery for self-use, battery type: Lithium.

Recommendation of minimum requirement for battery input cables: Cu, 5 mm^2 - 35 mm^2@max. 105°C ambient temperature;

external battery input cable (over current) protection: 32A, external DC rated disconnection device shall be installed between solar inverter and storage battery output in end use based on the solar inverter battery circuit output ratings.

Batteries installation shall comply with applicable battery standard and applicable national or local electrical code.

Specific End Uses Installation for lithium battery and battery management function or system shall evaluated according to the requirement stated in standard IEC 62619, secondary cells and batteries containing alkaline 69 or other non-acid electrolytes safety requirements for secondary lithium cells and 72 batteries, for use in industrial applications, if applicable.

5. Maximum inverter backfeed current form grid to the array is 0A based on test/circuit topology analysis and manufacturer's declaration. And due to design, more than three strings can be connected to inverter, so backfeed current can form others strings to the fault string when short-circuit occurs, PV fuse need to be installed in end-system according to system requirement based on solar irradiation, local temperature and environment, e.g. ratings 600V, 1.5Isc.

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6. Serial – RS485 are used for telecommunication interface ports with circuitry intended for connection to a Network Environment 0 per manufacturer's instruction manual, according to CLC TR 62102(ed.2.2).

RS 485 circuit is classed to be as SELV, Only PELV or SELV voltages may be connected at RS 485 terminals.

7. The grid-connected inverter is intended to be used with appropriate PV-generator, switchgear, SPDs, distribution board, electrical protection components and other device to form complete end systems. Compliance with safety regulations depends upon installing and configuring inverter correctly, including using the specified emergency stop device adjacent to solar inverter. The unit must be installed only by professional assemblers who are familiar with requirements for safety and EMC. The assembler is responsible for ensuring that the end product or system complies with all the relevant laws in the country where it is to be used. Refer to instruction manual.

8. Additional equipment connected to the inverter must comply with the respective IEC, EN or ISO standards (e.g. IEC 60950(ed.2.2) or EN 60950-1 for data processing equipment, IEC 60439 or EN 60439 for switchgear).

9. For safety reasons, install the emergency stop devices at station adjacent to solar inverter in the end-system. Pressing the stop function on the control panel of the inverter does not generate an emergency stop and separate the inverter from dangerous potential.

10. To allow maintenance of PV inverter, means of isolating the PV inverter from the DC side and the AC side shall be provided at the end-use application.

11. Not intended for use with connection to plug socket!