

# TEST REPORT

**Applicant** : **Shenzhen SOFAR SOLAR Co., Ltd.**  
**Address** : 5/F, Building 4, Antongda Industrial Park, No.1 Liuxian Avenue. Xin'an Street , Bao'an District, Shenzhen, P.R, China

**Report No** : 180903076GZU-001 **Issue Date** : 16 Oct 2018

## Sample Description

*Name of Sample* : Hybrid Inverter  
*Model Number* : HYD 3000-ES, HYD 3600-ES, HYD 4000-ES, HYD 5000-ES, HYD 6000-ES  
*Quantity of Sample(s)* : 1  
*Date of Receival* : 10 Oct., 2018  
*Date of test Conducted* : 10 Oct., 2018

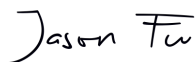
## Test

*Test Requested* : IP65  
*Test Method* : Refer to IEC 60529:2001-02(Ed.2.1) clause 13 and clause 14  
*Test Observation:* : See appendix test condition for details  
*Test Conclusion:* : **Pass**  
*Other information* : --  
*Remark* :

- This test report is only for evaluation of the specified standard clauses listed in Test Requested.
- When determine the test result, measurement uncertainty has been considered.

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Tested by:



Jason Fu  
Senior Project Engineer

Approved by:



Tommy Zhong  
Assistant Technical Manager




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Rating:



 Hybrid Inverter	
<b>Model No.</b>	<b>HYD 3600-ES</b>
Max.DC Input Voltage	600V
Operating MPPT Voltage Range	90V-580V
MAX.PV Isc	2x15A
Battery Type	Lead-acid,Lithium-ion
Battery Voltage Range	42-58V
Max.Charging Current	65A
Max.Discharging Current	70A
Max.Charging&Discharging Power	3000VA
Nominal Grid Voltage	230Vac
Nominal Output Voltage	230Vac
Max.Output Current	16A
Nominal Grid Frequency	50/60Hz
Power Factor	1(adjustable+/-0.8)
Nominal Output Power	3680VA
Backup Rated Current	13.2A
Backup Rated Apparent Power	3000VA
Ingress Protection	IP65
Operating Temperature Range	-25-+60°C
Protective Class	Class I
Manufacturer: Shenzhen SOFARSOLAR Co., Ltd. Address:5/F, Building 4, Antongda Industrial Park, NO.1Liuxian Avenue, Xin'an Street, Bao'an District, shenzhen City, Guangdong Province, P.R.China	
 VDE0126-1-1,VDE-AR-N 4105,G83/2,EN50438,C10/11, ASA4777,RD1699,UTE C15-712-1	
	

 Hybrid Inverter	
<b>Model No.</b>	<b>HYD 3000-ES</b>
Max.DC Input Voltage	600V
Operating MPPT Voltage Range	90V-580V
MAX.PV Isc	2x15A
Battery Type	Lead-acid,Lithium-ion
Battery Voltage Range	42-58V
Max.Charging Current	65A
Max.Discharging Current	70A
Max.Charging&Discharging Power	3000VA
Nominal Grid Voltage	230Vac
Nominal Output Voltage	230Vac
Max.Output Current	13.7A
Nominal Grid Frequency	50/60Hz
Power Factor	1(adjustable+/-0.8)
Nominal Output Power	3000VA
Backup Rated Current	13.2A
Backup Rated Apparent Power	3000VA
Ingress Protection	IP65
Operating Temperature Range	-25-+60°C
Protective Class	Class I
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SOFAR SOLAR Hybrid Inverter		SOFAR SOLAR Hybrid Inverter	
Model No.	HYD 4000-ES	Model No.	HYD 5000-ES
Max.DC Input Voltage	600V	Max.DC Input Voltage	600V
Operating MPPT Voltage Range	90V-580V	Operating MPPT Voltage Range	90V-580V
MAX.PV Isc	2x15A	MAX.PV Isc	2x15A
Battery Type	Lead-acid,Lithium-ion	Battery Type	Lead-acid,Lithium-ion
Battery Voltage Range	42-58V	Battery Voltage Range	42-58V
Max.Charging Current	65A	Max.Charging Current	65A
Max.Discharging Current	70A	Max.Discharging Current	70A
Max.Charging&Discharging Power	3000VA	Max.Charging&Discharging Power	3000VA
Nominal Grid Voltage	230Vac	Nominal Grid Voltage	230Vac
Nominal Output Voltage	230Vac	Nominal Output Voltage	230Vac
Max.Output Current	18.2A	Max.Output Current	22.8A
Nominal Grid Frequency	50/60Hz	Nominal Grid Frequency	50/60Hz
Power Factor	1(adjustable+/-0.8)	Power Factor	1(adjustable+/-0.8)
Nominal Output Power	4000VA	Nominal Output Power	5000VA
Backup Rated Current	13.2A	Backup Rated Current	13.2A
Backup Rated Apparent Power	3000VA	Backup Rated Apparent Power	3000VA
Ingress Protection	IP65	Ingress Protection	IP65
Operating Temperature Range	-25+60°C	Operating Temperature Range	-25+60°C
Protective Class	Class I	Protective Class	Class I
Manufacturer: Shenzhen SOFARSOLAR Co., Ltd. Address:5/F,Building 4,Antongda Industrial Park,NO.1Luxian Avenue,Xin'an Street, Bao'an District,shenzhen City,Guangdong Province,P.R.China		Manufacturer: Shenzhen SOFARSOLAR Co., Ltd. Address:5/F,Building 4,Antongda Industrial Park,NO.1Luxian Avenue,Xin'an Street, Bao'an District,shenzhen City,Guangdong Province,P.R.China	
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SOFAR SOLAR Hybrid Inverter	
Model No.	HYD 6000-ES
Max.DC Input Voltage	600V
Operating MPPT Voltage Range	90V-580V
MAX.PV Isc	2x15A
Battery Type	Lead-acid,Lithium-ion
Battery Voltage Range	42-58V
Max.Charging Current	65A
Max.Discharging Current	70A
Max.Charging&Discharging Power	3000VA
Nominal Grid Voltage	230Vac
Nominal Output Voltage	230Vac
Max.Output Current	27.3A
Nominal Grid Frequency	50/60Hz
Power Factor	1(adjustable+/-0.8)
Nominal Output Power	6000VA
Backup Rated Current	13.2A
Backup Rated Apparent Power	3000VA
Ingress Protection	IP65
Operating Temperature Range	-25+60°C
Protective Class	Class I
Manufacturer: Shenzhen SOFARSOLAR Co., Ltd. Address:5/F,Building 4,Antongda Industrial Park,NO.1Luxian Avenue,Xin'an Street, Bao'an District,shenzhen City,Guangdong Province,P.R.China	
 VDE0126-1-1,VDE-AR-N 4105,G83/2,EN50438,C10/11, ASA4777,RD1699,UTE C15-712-1	
	

**Model differences:**

All the models have same structure, components and circuit layout, except that the quantities of bus capacitor, value of inverter chock, and also power derated by software.

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Appendix test condition :

Number	Test items	Test condition	Test result
<u>1</u>	IP6X	The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump, The suction connection shall be made to a hole specially provided for the test.	No deposit of dust is observable inside the enclosure.
<u>2</u>	IPX5	Internal diameter of the nozzle: 6.3 mm Delivery rate: 12.5 L/min Core of the substantial stream: circle of approximately 40 mm diameter at 2.5 m distance from nozzle Test duration: 3 min Distance from nozzle to enclosure surface: between 2.5 m and 3 m.	No water inside the enclosure

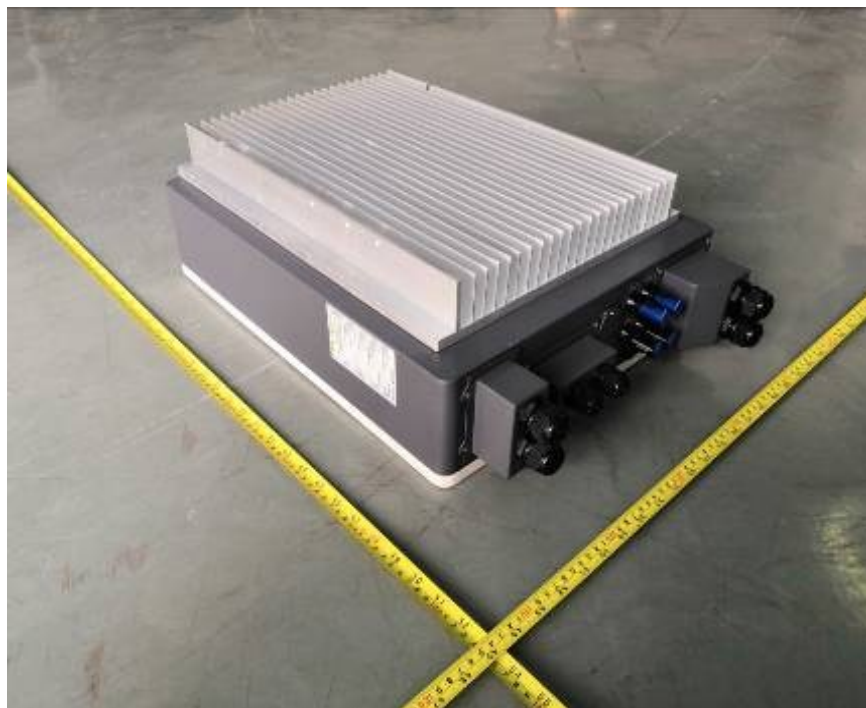
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**Appendix Photos:**

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Overview



Bottom view

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**Appendix Photos:**

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Test setup of IP6X



Test setup of IPX5

Appendix Photos:

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Checked after test finish

\*\*\*\*\*End of report\*\*\*\*\*