G100 declaration of conformance

Type test detail

Manufacturer: Shenzhen Growatt New Energy Technology CO.,LTD

No.28 Guangming Road, Shiyan Street, Bao'an District, Shenzhen, P.R.China

Product: Hybrid inverter.

Model: SPH 3000, SPH 3600 SPH 4000,SPH 4600,SPH 5000,SPH 6000

Use in accordance with regulations:

Technical Guidance for Customer Export Limiting Schemes G100 for photovoltaic systems with a single-phase parallel coupling via an inverter in the public mains supply.

Applied rules and standards :

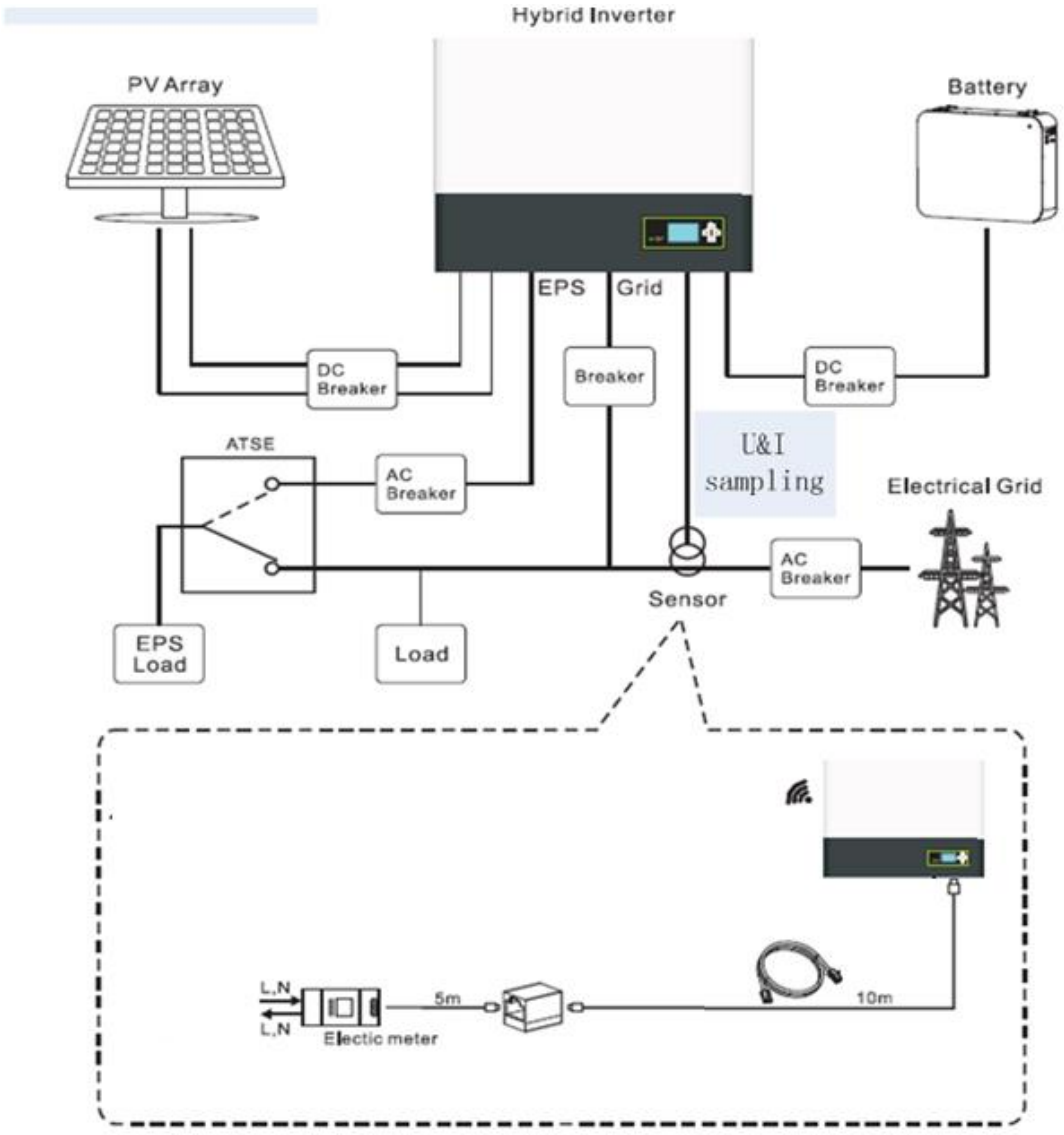
The result according to G100 engineering recommendation.

The safety concept of an aforementioned representative product complies at the time of issue of this certificate of valid safety specifications for the specified use in accordance with G100 recommendations.

Compliant with BSEN 61000-3-2

Signature	Approved by	Place and Date
		Shenzhen. PRC 2018-09-10

System Connecton Diagram



1. Setting Protection Test

Requirement	Result	Note
The settings is password protected, and cannot be changed by anyone other than got written agreement of the DNO;	Pass	

2. CT Fail Safe Test

Method: Set 50% export limit, implement the test before start or in running

Criteria: Fall time is less than 5s, the inverter's output active power is less than set limit.After fail safe test , disconnect AC, the reconnect time delay is fault reconnect time.

No	Component	test	Active Power	Response Time	Fall Time	Reconnect time	Pass/ Fail
1	Power Monitoring Unit(PMU)	Remove power supply to PMU	2906W	2S	2S	41S	Pass
		Remove CT	2930W	2S	2S	41S	Pass
2	Control Unit (CU)	Remove power supply to any CU	NA	NA	NA	NA	NA
3	Generator Interface units (GIU)	Remove power supply to all GIUs	NA	NA	NA	NA	NA
4	Demand Control	Remove	NA	NA	NA	NA	NA

	Unit (DCU)	power supply to all DCUs					
5	Network hub / switches	Remove power supply	NA	NA	NA	NA	NA
6	PMU → CU communication cable	Unplug cable	2917W	2S	2S	41S	Pass
7	CU → GIU communication cable	Unplug cable (repeat where additional GIU units)	NA	NA	NA	NA	NA
8	GIU → Generator communication cable	Unplug cable (repeat where additional GIU units)	NA	NA	NA	NA	NA
9	CU → DCU	Unplug cable	NA	NA	NA	NA	NA

	communication cable	(repeat where additional DCU units)					
10	DCU → load communication cable	Unplug cable (repeat where additional DCU units)	NA	NA	NA	NA	NA
11	Controlled Load(s)	Turn off load (e.g. activate thermostat)	NA	NA	NA	NA	NA

3. Power Limit Test

Method: Set export limit, implement the test before start, then start the inverter.

Criteria: fall time is less than 5s, the inverter's export active power is less than limit power.

0%export limit [% Inverter Rating]					
Input / Load / Export/Time		Input supply [% Inverter Rating]			
		25%	50%	75%	100%
Load [% Inverter Rating]	0%	-54W/0.54S/1.58S	-63W/0.96S/1.96S	-66W/0.92S/3.48S	-63W/0.66S/1.54S
	25%	NA	-128W/0.28S/1.92S	-174W/0.64S/2.32S	-96W/0.94S/3.28S
	50%	NA	NA	-158W/0.94S/2.26S	-38W/0.48S/2.74S
	75%	NA	NA	NA	-16W/0.28S/2.32S

25%export limit [% Inverter Rating]					
Input / Load / Export/Time		Input supply [% Inverter Rating]			
		25%	50%	75%	100%
Load [% Inverter Rating]	0%	NA	-1553W/0.1S/3.7S	-1450W/0.1S/3.62S	-1545W/0.1S/2.04S
	25%	NA	NA	-1398W/0.1S/3.82S	-1589W/0.1S/2.94S
	50%	NA	NA	NA	-1403W/0.1S/4.1S
	75%	NA	NA	NA	NA

50%export limit [% Inverter Rating]					
Input / Load / Export/Time		Input supply [% Inverter Rating]			
		25%	50%	75%	100%
Load	0%	NA	NA	-2943W/0.1S/3.66S	-3040W/0.1S/3.24S

[% Inverter Rating]	25%	NA	NA	NA	-2883W/0.1S/4.68S
	50%	NA	NA	NA	NA
	75%	NA	NA	NA	NA

75%export limit [% Inverter Rating]					
Load / Input	Export/Time	Input supply [% Inverter Rating]			
		25%	50%	75%	100%
Load [% Inverter Rating]	0%	NA	NA	NA	-4396W/0.1S/3.98S
	25%	NA	NA	NA	NA
	50%	NA	NA	NA	NA
	75%	NA	NA	NA	NA

4. decreasing Load test

Method: Set export limit, the load be decreased from 100% of the inverter rating.

Criteria: response time is less than 1s, fall time is less than 5s, the inverter's export active power is less than Agreed limit.

0%export limit [% Inverter Rating]					
Load / Input	Export/Time	Input supply [% Inverter Rating]			
		100%	75%	50%	25%

Load [% Inverter Rating]	75%	-32W/0.6S/3.42S	NA	NA	NA
	50%	-84W/0.44S/2.14S	-71W/0.84S/1.3S	NA	NA
	25%	-112W/0.72S/2.84S	-83W/0.6S/2.72S	-98W/0.44S/2.64	NA
	0%	-49W/0.9S/3.08S	-72W/0.86S/3.32S	-155W/0.68S/3.8S	-110W/0.78S/3.42S

25%export limit [% Inverter Rating]					
Input / Load / Export/Time		Input supply [% Inverter Rating]			
		100%	75%	50%	25%
Load [% Inverter Rating]	75%	NA	NA	NA	NA
	50%	-1572W/0.84S/2.56S	NA	NA	NA
	25%	-1406W/0.84S/2.78S	-1481W/0.78S/3.04S	NA	NA
	0%	-1468W/0.78S/3.16S	-1490W/0.86S/4.38S	-1482W/0.68S/1.98S	NA

50%export limit [% Inverter Rating]					
Input / Load / Export/Time		Input supply [% Inverter Rating]			
		100%	75%	50%	25%
Load	75%	NA	NA	NA	NA

[%	50%	NA	NA	NA	NA
Inverter	25%	-2974W/0.56S/2.52S	NA	NA	NA
Rating]	0%	-3064W/0.8S/2.96S	-2908W/0.76S/2.1S	NA	NA

75%export limit [% Inverter Rating]					
Input		Input supply [% Inverter Rating]			
Load	Export/Time	100%	75%	50%	25%
Load	75%	NA	NA	NA	NA
[%	50%	NA	NA	NA	NA
Inverter	25%	NA	NA	NA	NA
Rating]	0%	-4556W/0.8S/1.86S	NA	NA	NA

Comments

The test result is based on SPH 6000. All the series of inverters electrical character are the same. So the test result can cover all series.