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# Certificate of compliance

**Certificate No.:** 2088AP0511N080050  
**Equipment:** Solar Grid-tied Inverter

**Brand Name:**



**Model:** SOFAR 15KTLX-G3, SOFAR 17KTLX-G3, SOFAR 20KTLX-G3,  
SOFAR 22KTLX-G3, SOFAR 24KTLX-G3

**Applicant:** Shenzhen SOFARSOLAR Co., Ltd.  
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XinAn Street, BaoAn District, Shenzhen, China

**Report No.:** PVSP200511N080-7

## Applied rules and standards

### UNE 217001 IN:2015

Requirements and testing of systems to avoid energy emissions to distribution networks  
Royal Decree No. 244 / 2019 of 5 April sets out the administrative, technical and economic conditions for  
self generation. Annex I: systems to prevent energy emissions to the network.



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**Technical Manager / New Energy Team**  
**Date: 2021-03-25**

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Information given in this document is related to the tested specimen of the described electrical sam



**Annex to the UNE 217001 IN certificate of compliance No. 2088AP0511N080050**

<b>Ratings..... :</b>	<b>SOFAR 15KTLX-G3</b>	<b>SOFAR 17KTLX-G3</b>	<b>SOFAR 20KTLX-G3</b>	<b>SOFAR 22KTLX-G3</b>	<b>SOFAR 24KTLX-G3</b>
Input DC voltage [V] .....	Max. 1100Vd.c.				
MPP DC voltage range [V] .....	140-1000Vd.c.				
Input DC current [A].....	26,0A / 26,0A				
Isc PV [A] .....	36,0A / 36,0A				
Output AC voltage [V].....	380/400Va.c., 3W+N+PE; 50/60Hz				
Rated Output AC current [A].....	21,7	24,6	29,0	31,9	34,8
Max. Output AC current [A] .....	23,9	27,1	31,9	35,1	38,3
Rated Output power [kW].....	15,0	17,0	20,0	22,0	24,0
Max Output power [kVA].....	16,5	18,7	22,0	24,2	26,4

<b>General information of external current transductor/ power meter</b>	
<b>Power meter</b>	
<b>Model .....</b>	<b>DTSU666</b>
<b>Electrical parameter</b>	
Regulated working voltage range Phase to neutral [Vac] .....	0,9-1,1Un
Support network Single Phase / three Phase.....	Three Phase
self -consumption .....	Max.1,5W
<b>communication</b>	
Supported communication interfaces .....	RS485
Communication protocol.....	ModBus
Reaction time.....	1s



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<b>General information of external current transducer/ power meter</b>	
<b>Current transducer</b>	
<b>Model</b> ..... :	<b>HY94C5-200</b>
Rate Primary current,RMS,Ipr ..... :	I <sub>pn</sub> = 200 A
Rated secondary current,RMS,I <sub>sr</sub> :	I <sub>out</sub> = 5 A
Rate frequency ..... :	50/60Hz
Working humidity ..... :	≤90%RH
Max cable outer diameter(mm) ..... :	Φ24
Weight ..... :	90g
R.m.s.voltage for AC isolation test :	2kV(@50Hz,1min)
Altitude ..... :	≤1000m
Accuracy class@RL≤20 Ω ..... :	0,5%
Rate Overload..... :	1,2 x I <sub>pr</sub>
Highest voltage for equipment..... :	720V
Connecting wires of secondary winding ..... :	RVB 2*1.5mm <sup>2</sup> Red & Black (UL2468-16A)
Working temperature..... :	-30°C ..+75°C
Storage temperature ..... :	-40°C ...+85°C
<b>Model</b> ..... :	<b>AKH-0.66-K-Φ24</b>
Rated operation Voltage ..... :	AC 0.66kV
Rate frequency ..... :	50-60Hz
Working temperature..... :	-30°C ..+70°C
Height above sea level..... :	≤3000m
Power frequency withstand voltage:	3000v/1min 50Hz
Max cable outer diameter(mm) ..... :	Φ24
Precision degree..... :	1



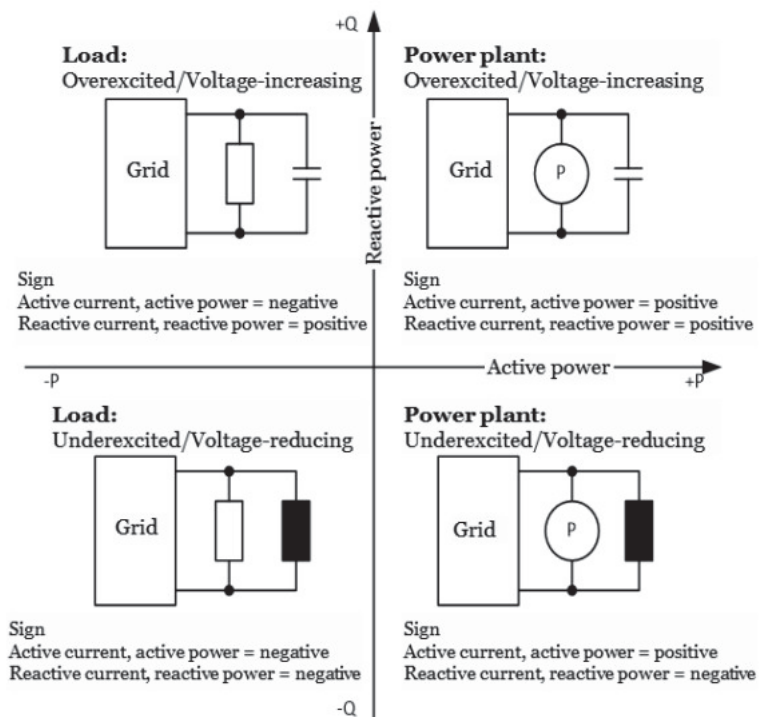
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**Description of the vector system to depict test results:**

The regarded system of the voltage and current vectors is the generator reference system:

- If the inverter feeds to the grid the active power is measured with positive sign.
- If the load consumes from grid the active power is measured with negative sign.



**Figure 1 – Generator reference arrow system**

**General product information:**

The Solar Grid-tied Inverter converts DC voltage into AC voltage.

The DC input of Solar Grid-tied Inverter can be supplied from PV array.

The Solar Grid-tied Inverter is a three-phase type.

The unit is providing EMC filtering at the output toward mains. The unit does not provide galvanic separation from input to output (transformerless). The output is switched off redundant by the high power switching bridge and a two relays. This assures that the opening of the output circuit will also operate in case of one error.

**Description of the electrical circuit**

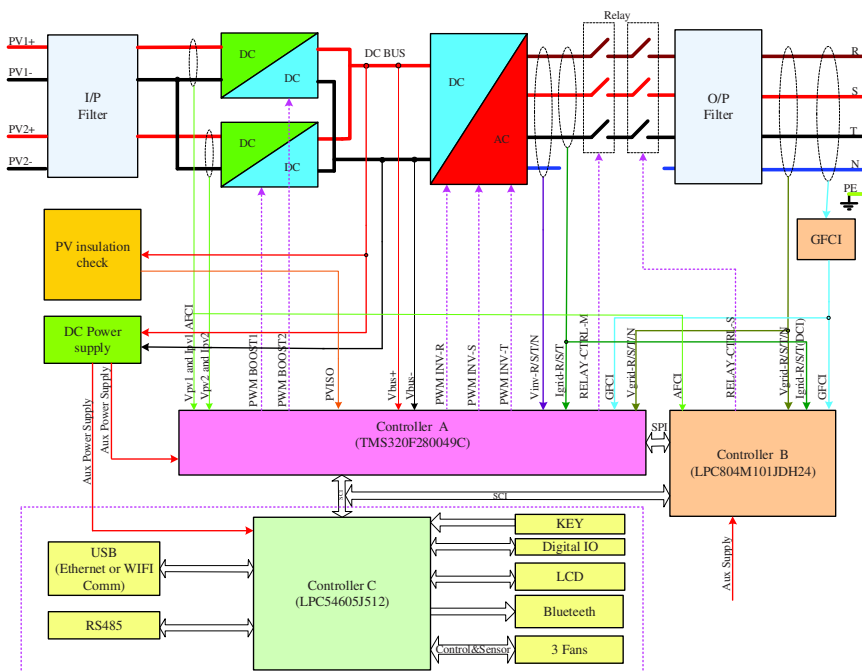
The internal control is redundant built. It consists of Microcontroller DSP (U30) and DSP (U23).

The Main DSP(U30) control the relays by switching signals; measures the PV voltage, PV current, Bus voltage, grid voltage, frequency, AC current with injected DC and the array insulation resistance to ground. In addition it tests the Current Transformers and the RCMU circuit before each start up.

The slave DSP (U23) is measures the grid voltage, grid frequency, DCI and residual current, also can switch off the relays independently, and communicate with the Main DSP (U30) each other.

The current is measured by a Current Transformer. The AC current signal and the injected DC current signal are sent to the Main DPU (U30). The Main DSP (U30) tests and calibrates before each start up all Current Transformers.

The unit provides two relays in series in all output conductors. When single fault applied to one relay, alarm an error code in display panel, another redundant relay provides basic insulation maintained between the PV array and the mains. All the relays are tested before each start up.



**Figure 2 – Block diagram**

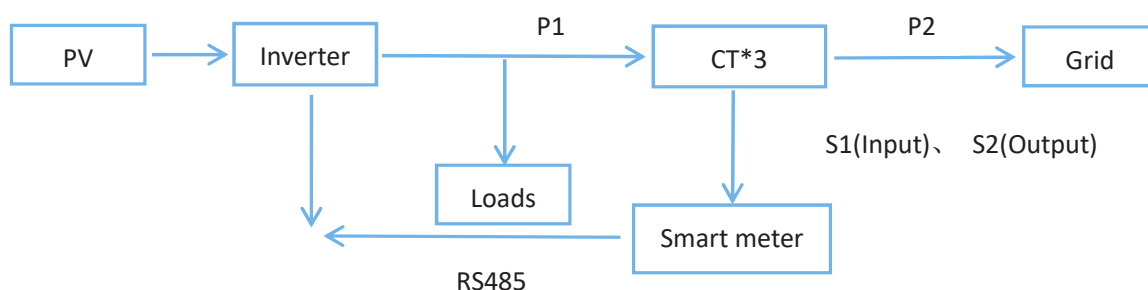


**Annex to the UNE 217001 IN certificate of compliance No. 2088AP0511N080050**

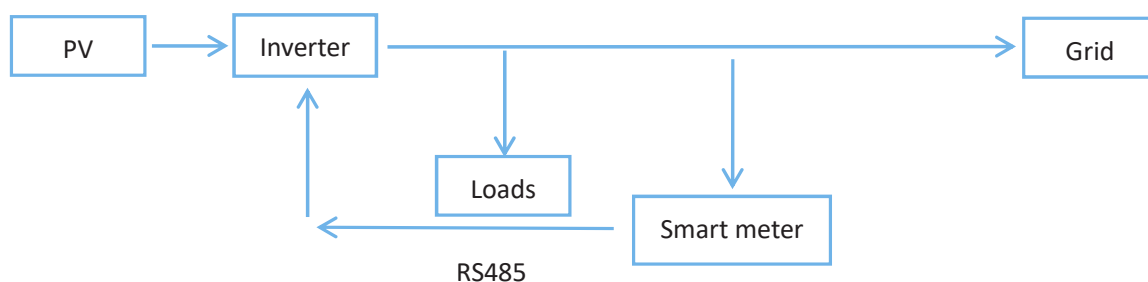
**Application Scenarios:**

Scheme of Single machine photovoltaic power generation system: Solar inverter + Energy Meter + Current Transformer.

The smart Energy Meter is used to realize power restriction for household energy management. It adopts RS485 communication, which can realize the electrical quantity measurement, energy metering function and in respond to the upper host for the real-time data query.



**Figure 3 (Use CT)**



**Figure 4 (Direct connection)**