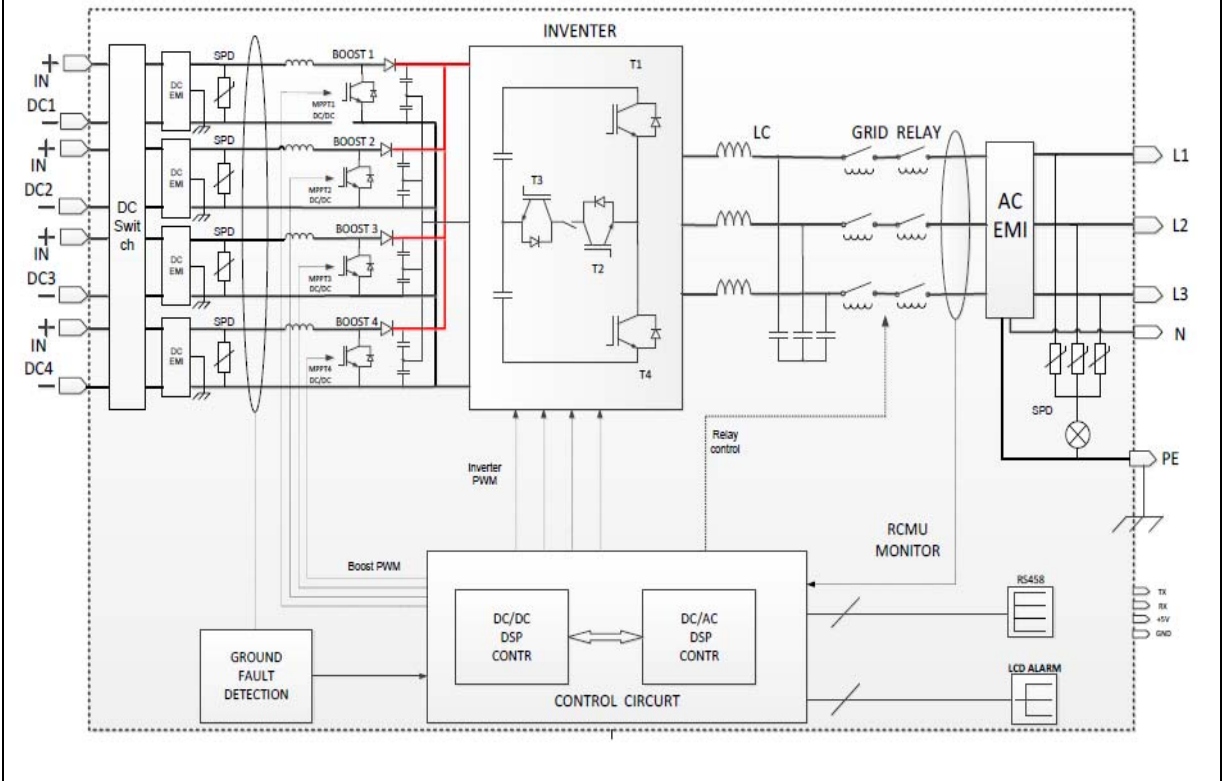


G.2 Certificate of conformity for power generation units



Certificate of conformity Power generation unit	<u>No. 20190915</u>	
Manufacturer	Ningbo Ginlong Technologies Co.,Ltd. No.57,Jintong Road ,Binhai(seafront) Industrial Park,Xiangshan,Ningbo,Zhejiang 315712,P.R.China	
Type power generation unit	Grid-Connected Photovoltaic Inverter	
Model	Solis-40K/ Solis-50K Solis-60K-4G	
Assessment values	Max. active power $P_{E_{max}}$	66000VA
	Max. apparent power $S_{E_{max}}$	66000W
	Rated voltage	<u>a.c.3/N/PE 230V</u>
Network connection rules	VDE-AR-N 4105 “Power generation systems connected to the low-voltage network” Technical minimum requirements for connection and parallel operation of power generation systems connected to the low-voltage network	
Firmware version	Master DSP: V25, Slave: V03, ARM: 0F	
Period of measurement	<u>From 2019.09.21 to 2019.09.21</u>	
The above mentioned power generation unit meets the requirements of VDE-AR-N 4105.		
Description of the structure and schematic set-up of the generating unit. (including single fault check) The generating unit integrated EMC filter on both PV and AC side converts direct current optimized by photovoltaic DC conditioner to alternating current and it is intended to be connected in parallel with the low-voltage mains to supply common load. The generating unit has no electrical isolation between DC input and AC output. The output is switched off by the failsafe inverter bridge and two relays in series. This allows a safe separation from generating unit to the network, also in case of failure. Refer to below illustration.		

Block diagram:



G.3 Certificate of conformity of the network and system protection

Certificate of conformity NS protection	<u>No. 20190915</u>		
Manufacturer	Ningbo Ginlong Technologies Co.,Ltd. No.57,Jintong Road ,Binhai(seafront) Industrial Park,Xiangshan,Ningbo,Zhejiang 315712,P.R.China		
Type of NS protection	Solis-40K/ Solis-50K Solis-60K-4G		
Central NS protection	<input type="checkbox"/>		
Integrated NS protection	<input checked="" type="checkbox"/>	Assigned to power generation unit type	Grid-Connected Photovoltaic Inverter
Network connection rules	VDE-AR-N 4105 “Power generation systems connected to the low-voltage network” Technical minimum requirements for connection and parallel operation of power generation systems connected to the low- voltage network		
Firmware version	Master DSP: V25, Slave: V03, ARM: 0F		
Type of integrated interface switch	<u>Relay: AZSR-190T-1A-12D or HE1aN-W-DC12V-Y6</u>		
Period of measurement	<u>From 2019.09.21 to 2019.09.21</u>		
The network and system protection mentioned above meets the requirements of VDE-AR-N 4105.			
Protection function	Setting value	Tripping value ^c	Break time ^a
Voltage drop protection $U <$	0,8 * Un	185,0 V	≤154 ms
Rise-in-voltage protection $U >$	1,1 * Un	253,0 V	≤ 200,0 ms ^b
Rise-in-voltage protection $U >>$	1,15 * Un	264,0V	≤160 ms
Frequency decrease protection $f <$	47,5 Hz	47,51 Hz	≤146 ms
Frequency increase protection $f >$	51,5 Hz	51,50 Hz	≤180 ms
Proper time of interface switch	N/A (maximum break time recorded above)		
<p>Remark:</p> <p>“a”: The break time (sum of tripping time plus proper time of interface switch) shall not exceed 200 ms. Max. break times are recorded.</p> <p>“b”: Verification disconnecting time of moving 10min-average value.</p> <p>Disconnecting time as below:</p> <ol style="list-style-type: none"> 566 s(from 600s@Un to 112%Un) Continuous operation(from 600s@Un to 108%Un) 359s(from 600s@106%Un to 114%Un) <p>“c”: The maximum deviation from the required values are recorded, within the admissible tolerance between setting value and trip value of the voltage at maximum ± 1 % and for the frequency at maximum ± 0,1 %.</p>			
Description of the structure and schematic set-up of the generating unit. (including single fault check)			
The generating unit integrated EMC filter on both PV and AC side converts direct current optimized by photovoltaic DC conditioner to alternating current and it is intended to be connected in parallel with the low-voltage mains to supply common load. The generating unit has no electrical isolation between DC input and AC output. The output is switched off by the failsafe inverter bridge and two relays in series. This allows a safe separation from generating unit to the network, also in case of failure. Refer to below illustration.			

Block diagram:

