

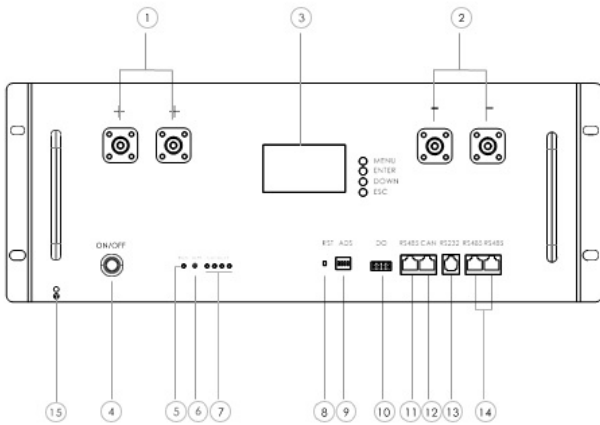
Battery Pack Parameters

No.	Items	General Parameter	Remark
1	Combination method	15S	
2	Nominal Voltage	48V	
3	Rated Capacity	Typical	100Ah
		Minimum	100Ah
4	Energy	4800Wh	
5	Factory Voltage	48~51V	Mean Operation Voltage
6	Voltage at end of Discharge	37.5~42V	Discharge Cut-off Voltage
7	Voltage at end of Charge	52.5~55.5V	Charge Cut-off Voltage
8	Standard charge	Constant Current 20A Constant Voltage see No.7 0.02CA cut-off	Charge time : Approx 5~6 h
9	Limiting current	20A	BMS Limited (Charge current is ≥100A to open the current Limit)
10	Standard discharge	Constant current: 20A end voltage see NO.6	
11	Maximum Continuous Charge Current	100A	50°C≥T≥5°C
12	Maximum Continuous Discharge Current	100A	55°C≥T≥0°C
13	Operation Temperature Range	Charge:0~55°C	60±25%R.H. No matter what mode the battery is in, once the temperature is found to exceed the absolute temperature range, stop charging or discharging immediately
		Discharge:-20~60°C	
14	Storage Temperature Range	Less than 6 months: -10~35°C	60±25%R.H. at the shipment state
		Less than 3 months: -10~45°C	
		Less than 1 months: -20~55°C	
15	Dimensions(W*D*H)	442*480*178mm	Include case
16	Net Weight	46Kg	Include case
17	Internal Impedance	≤45mΩ	Internal resistance measured at AC 1KHz after 50% charge. The measure must uses the new batteries that within one week after shipment and cycles less than 5 times.

Battery Management System

Function	
Cell over-charge voltage	Cell charge low temperature
Cell over-discharge voltage	Cell charge over temperature
Pack over-charge voltage	Cell discharge low temperature

Alarm	Pack over-discharge voltage	Cell discharge over temperature
	Over-current charge	Environment low temperature
	Over-current discharge	Environment over temperature
	Mos over temperature	
Protection	Cell over-charge voltage	Cell charge over temperature
	Cell over-discharge voltage	Cell discharge low temperature
	Pack over-charge voltage	Cell discharge over temperature
	Pack over-discharge voltage	Environment low temperature
	Over-current charge	Environment over temperature
	Over-current discharge	Short circuit
	Mos over temperature	Fault
	Cell charge low temperature	
Others	Cell balance function	
	Communicate function	
	Total capacity function	
	Storage history function	
	Current limiting function	
	Dry contact function	



No.	Items	Description
1	+ Power terminal	Power cable terminals: one connect to equipment, the other one paralleling to other battery module for capacity expanding
2	- Power terminal	
3	LCD Screen	Display the battery's data
4	Power Switch	To turn ON/OFF while battery
5	Working indicator light	Display state information
6	ALM alarm indicator light	Red-trouble-light on
7	Capacity volume indicator	Display the battery's capacity
8	Reset Key	Sleep /Activation /Reset

9	ADS Dialer	4 ADD switches, to definite different address code for each battery module when multiple modules are cascaded, up to 15 addresses.
10	Dry Contact Terminal	1/2 Normally open, closed during fault protection; 3/4 Normally open, closed when a low battery alarm
11	RS485	RJ45 Port,used to connect to the inverter's RS485 port

12	CAN	RJ45 Port,used to connect to the inverter's CAN port
13	RS232	RJ11 Port,used battery condition monitoring or manufacturer to debug or service
14/15	RS485	RJ45 Port,used communication in parallel
16	Grounding Point	Safety

Shingled bifacial module

TH530~555PMB6 58SDC



Features of Module



Shingling Technology
Innovative structure, low-temperature adhesive bonding, high-density layout.



Beautiful Appearance
Uniform layout, better aesthetic.



Superior Safety and Reliability
No hidden welding crack, low operating temperature, high pressure resistance.



Low System Cost
High module efficiency, reducing system cost.



Low Hot Spot Risk
Parallel circuit design reduces shading loss.



Low Shading Loss
Full parallel arrangement brings high effective power generation hours.

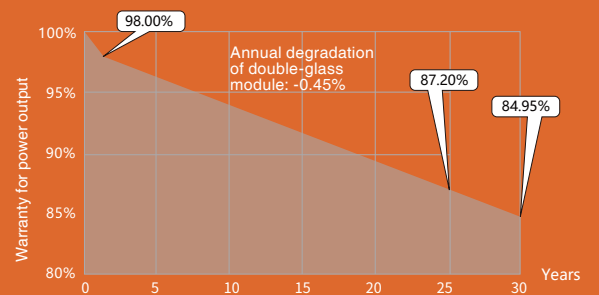


Eco-friendly
Adhering to green philosophy, no fluorine and low lead.

Linear Power Output Warranty

15 15-year warranty for materials.

30 30-year warranty for linear power output.



Quality Management System and Product Certification

IEC61215/61730、IEC62804(PID)、IEC61701(Salt)、
IEC62716 (Ammonia)、IEC60068-2-68(Sand)
ISO 9001:2015 / quality management system
ISO 14001:2015 / environmental management system
ISO 45001:2018 / occupation health safety management system
ISO 50001:2011 / energy management system
IEC TS 62941—2016 / PV industry quality management system



Electrical Characteristics (STC)

Module Type: TH***PMB7-46SC	555	550	545	540	535	530
Maximum Power - Pm (W)	555	550	545	540	535	530
Open Circuit Voltage - Voc (V)	47.2	47.1	47.0	46.9	46.8	46.7
Short Circuit Current-Isc [A]	15.07	14.97	14.86	14.76	14.65	14.55
Maximum Power Voltage-Vm [V]	39.2	39.1	39.0	38.9	38.8	38.8
Maximum Power Current-Im [A]	14.17	14.07	13.98	13.89	13.79	13.67
Module Efficiency-η [%]	21.2	21.0	20.9	20.7	20.5	20.3

Electrical Characteristics at NMOT

Maximum Power-Pm [W]	416	413	409	405	401	398
Open Circuit Voltage-Voc [V]	44.9	44.8	44.7	44.6	44.5	44.4
Short Circuit Current-Isc [A]	12.14	12.06	11.97	11.89	11.80	11.72
Maximum Power Voltage-Vm [V]	37.3	37.3	37.2	37.1	37.0	37.0
Maximum Power Current-Im [A]	11.15	11.07	10.99	10.92	10.84	10.76

Note: 1. Standard Test Conditions (STC): irradiance 1000 W/m²; AM 1.5; ambient temperature 25°C according to EN 60904-3;
 2. Nominal Module Operating Temperature (NMOT): Irradiance 800W/m²; wind speed 1m/s, ambient temperature 20°C.
 3. Tolerance of Pm: 0~+5W, Measuring uncertainty of power: ±3%. Performance deviation of Voc [V], Isc [A], Vm [V] and Im [A]: ±3%.

Mechanical Parameters

Dimensions	2384 × 1096 × 35mm
Weight	32.5kg
Front glass	tempered glass, 2.0mm
Frame	Anodized aluminum profile
Cells	Mono-crystalline solar cell
Cell Orientation	345 (69°*5)
Junction Box	IP68, three diodes
Cable	4mm ² , +300mm/-1000mm(Vertical), +220mm/-180mm
Packaging	(Horizontal)31pcs/box; 620pcs/40'container; 868pcs/flat car

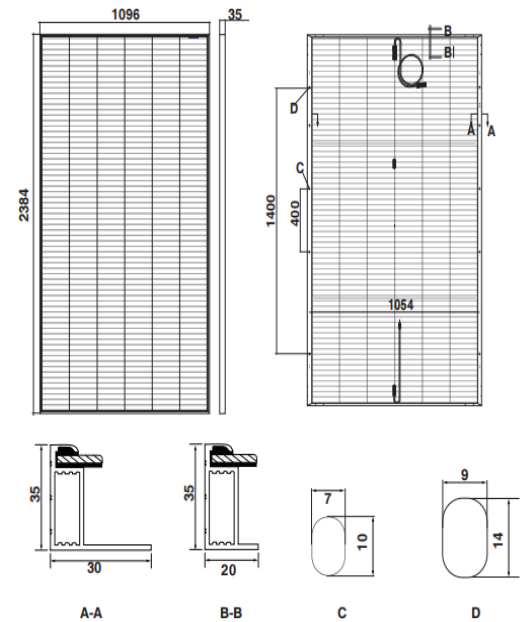
Temperature Parameters

NMOT	42.30 °C (±2°C)
Temperature Coefficient of Voc	-0.27%/°C
Temperature Coefficient of Isc	+0.04%/°C
Temperature Coefficient of Pm	-0.34%/°C

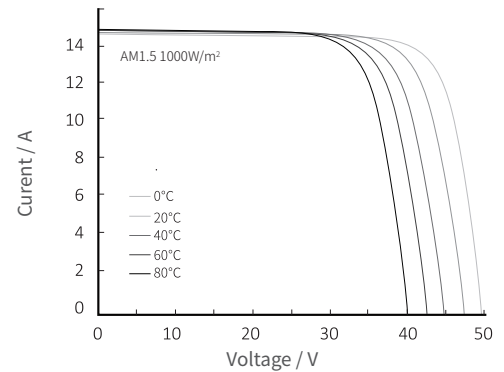
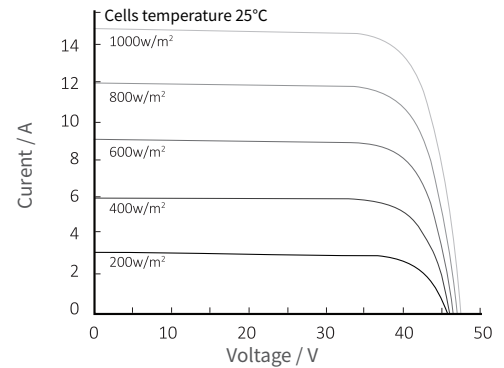
Maximum Ratings

Maximum System Voltage [V]	DC1500 (IEC)
Series Fuse Rating [A]	30
Maximum Surface Load Capacity [Pa]	Front 5400 / Back 2400
Temperature Range [°C]	-40 ~ + 85
Withstanding Hail	Maximum diameter of 25 mm with impact speed of 23 m/s

Drawings



I-V Curve



Declaration:
 With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers, TW Solar reserves the final right of interpretation.

OFF-GRID INVERTER

SONAR 3K/4K/5K

SONAR 3K/4K/5K WPV



Support Li-ion battery, advanced battery management integrated for Lead-acid battery



Advanced paralleling technical to support 9 units paralleling



2 MPPT charger controllers integrated with HV and LV MPPT models



WIFI/GPRS remote monitoring, setting and upgrade

Local monitoring, setting, upgrade supported



Flexible working modes with settable charge and load power supply priority

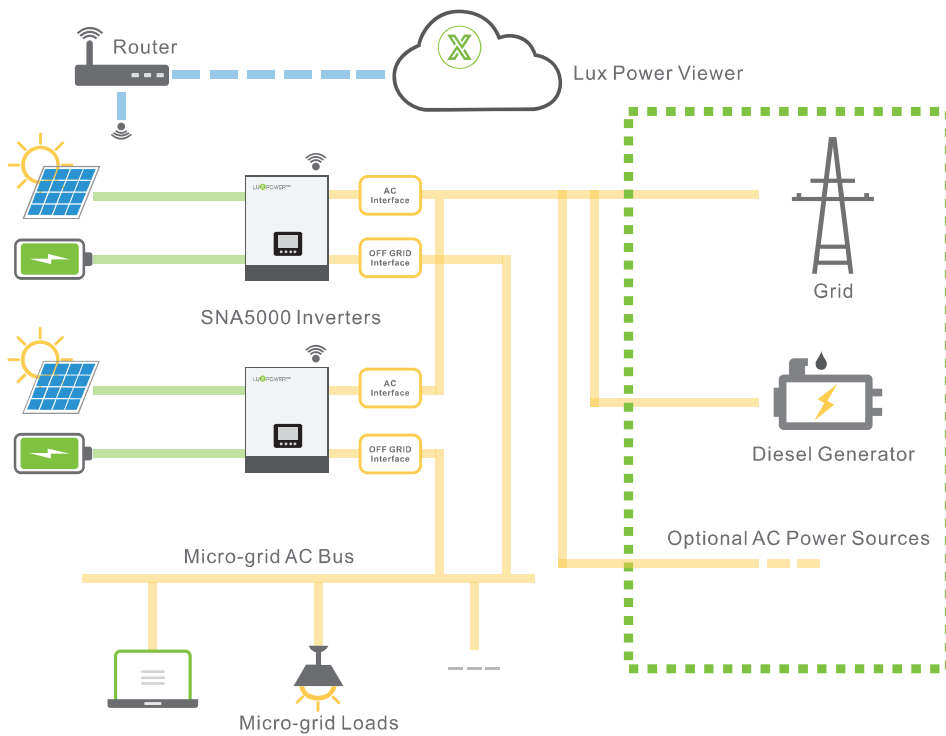
Support solar and AC take the load jointly, working as hybrid



Support mirco grid system with seperate generator input terminal, and can remote control generator



Solution



Off grid system is a good solution for the area where is no electricity, shortcomings or with unstable power

Advantage of photovoltaic power:

- ▶ economic
- ▶ clean
- ▶ environmentally friendly
- ▶ noise-free

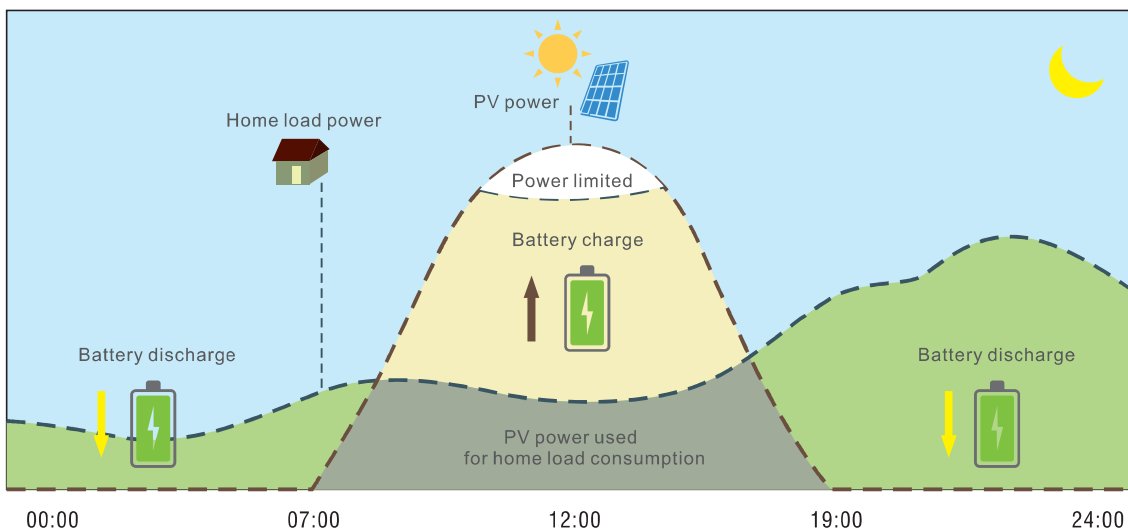
Can partially or completely replace diesel generator. System Capacity: 3-50kW

Working Modes

SNA5k serial off grid inverters can support the system to work as a back-up power or a replacement of diesel generator. Since the inverter support paralleling function, the capacity of system can range from 3kW to 50kW. The inverter support several working modes.

Pure off-grid working mode: working as traditional off grid inverters, can set output to utility first, battery first or solar first.

Hybrid working mode: working as a hybrid, support solar and utility jointly take the load, can set to self consumption mode or charge priority mode.



Output Data	SNA 3000 WPV	SNA 4000 WPV	SNA 5000 WPV
Rated power	3000W/3000VA	4000W/4000VA	5000W/5000VA
Parallel capacity	YES	YES	YES
Normal output voltage	230/240, Split phase 220/110 Vac *	230/240, Split phase 220/110 Vac *	230/240, Split phase 220/110 Vac *
Normal output frequency	50/60Hz	50/60Hz	50/60Hz
Surge power	6000VA	8000VA	10000VA
Switch time	10ms	10ms	10ms
Waveform	Pure sine wave	Pure sine wave	Pure sine wave

Battery Data			
Battery Type	Lithium/Lead-Acid	Lithium/Lead-Acid	Lithium/Lead-Acid
Normal Voltage	51.2V/48V	51.2V/48V	51.2V/48V
Max. Charge Voltage	59V	59V	59V

Solar Charger Data			
Max. Recommended PV Power	6000W	6000W	6000W
MPPT Tracker	2	2	2
Max. PV Open Circuit Voltage	480Vdc	480Vdc	480Vdc
MPPT Voltage Range	100-385Vdc	100-385Vdc	100-385Vdc
Max. Solar Charge Current	100A	100A	100A
Max. MPPT Efficiency	>98%	>98%	>98%
Parallel MPPT Charger	YES	YES	YES

AC Charger Data			
Normal Voltage	230Vac	230Vac	230Vac
AC Voltage Range	110-280Vac	110-280Vac	110-280Vac
Max. Charge Current	60A	60A	60A
Frequency Range	50/60Hz(Auto Sensing)	50/60Hz(Auto Sensing)	50/60Hz(Auto Sensing)

General Data			
Dimensions(W/H/D)	504x330x135mm	504x330x135mm	504x330x135mm
Weight	14Kg	14Kg	14Kg
Protection Degree	IP 20	IP 20	IP 20
Relative Humidity	5%~95% Relative Humidity(Non-condensing)		
Operating Temperature	0~50°C	0~50°C	0~50°C
Storage Temperature	-15°C~60°C	-15°C~60°C	-15°C~60°C

Interfaces			
Display	LCD+LED	LCD+LED	LCD+LED
Lithium Battery Communication	CAN/RS485	CAN/RS485	CAN/RS485
RS485/Dry Connector	YES/YES	YES/YES	YES/YES
Wifi/GPRS	YES/YES	YES/YES	YES/YES
Warranty	2years	2years	2years

* For split phase version