



Dongguan Shengyang industrial Co., Ltd.



SY-GWV-500W Grid Tie Inverter User Manual



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System Function

- **Wide voltage input(15-60VDC)**
Achieve wide voltage input.
1、DC voltage input: 15-60VDC
2、Second level power variable voltage conversion
- **High-frequency two-way and one-way grid function**
1、High frequency direct modulation, AC half wave synthesis
2、Two-way grid means: Load consume directly. And can reverse AC current transmission.
3、One-way grid means: Load consume directly. And banned reverse AC current transmission.
- **Kinds of frequency output function.**
It can apply to 50Hz and 60Hz frequency of AC.
Frequency range: 45Hz ~ 63Hz
- **AC 0 angle with high precision auto-detection**
AC phase angle of 0 through isolation amplifier then input to the MCU for high-precision detection and analysis.
The phase shift rate is less than 1%, thus achieve high-precision with phase modulation AC output together.
1、AC phase shift: < 1%
2、Over-zero protection: 0.2 VAC

Synchronous High-frequency Modulation

In the process of the grid, usually adapt the same phase angle in parallel. (ie, When the two-phase alternating current total is equal to 0. Use switch to combination the two AC fusion) and the product is rectified AC half-frequency AC to 100Hz first, then the machine use the high frequency current in the circuit and semi-100Hz frequency alternating current generated combination, to achieve high-frequency modulation.

- 1、Modulation synthesis: half wave and full-bridge modulation synthesis (100Hz / 120Hz)
- 2、Synthetic way: MOSFET full-bridge
- 3、High frequency: 50KHz

Pure Sine Wave Output

Use SPWM directly to make pure sine wave output.

- 1、Output waveform: Adopt complementary PWM to push-pull pure sine wave.
- 2、Generate means: enhancement-mode SPWM

- **Automatic Sensing Function Solar Luminosity**

Use the latest luminosity perception operation technology. The different illuminate angle and intensity of the solar panel will produce different current output. Use advanced CPU to operate the different illuminance and the data can be directly displayed on the LCD. Then you can visually see the sense of the strength of the sun unit. Used more convenient.

- 1、Luminosity sampling point : power sampling point
- 2、High precision AD sampling: integral AD sampling method

Power Automatically Locked (APL)

In different current fluctuations, we should use the MPPT function. When the MPPT function adjusted to the maximum power point, the product automatically powers locked in maximum power point, then made the output power more stable.

- 1、Power lock: The biggest sampling point of MPPT.

Automatically Adapt To Different Load Power Factor

Adapt to any of the power load.

- **Constant Current, Constant Power**

This product is constant current, constant output power, without any overload, over-current phenomenon.

- **Automatically Shut Down When The Power Output Of a Fault**

When the city power system is in failure, the inverter will automatically turn off the output.

Current Limit Protection

Current limit

- **Stack Multiple Machines**

- Multiple small power inverters in parallel can achieve large output power.

- **High-Frequency High Conversion Rate**

Adapt high frequency converter, the output more efficient.

- **Maximum Power Point Tracking (MPPT)**

Current intensity, voltage constantly changes, if there is no power point tracking, then there will be a lot of problems in the past usually adopted a solar controller, this product uses high-precision MPPT computing power, automatic and immediate to solar panels output power adjustment in the maximum output point, in order to achieve a stable output purposes.

Parameter Table

SY-GWV Grid-series models	500Watt
Recommend use solar panels	36V/550Wp
DC MAX input current	50A
AC MAX output power	530Watt
DC MAX Open-circuit input-voltage	100VDC
DC input voltage range	15~60VDC
MAX output power factor	>98%
DC input Reverse voltage protection	FUSE
AC output voltage range	120V versions: 90~140VAC
AC frequency range	120VAC 60Hz
Output current total harmonic distortion	THDIAC <3%
AC Phase	<1%
Islanding protection	VAC; f AC
Output short circuit protection	Current-limiting
Show	LED mode: power instruction; voltage instruction; AC frequency instruction; over-voltage instruction
Standby Power	<1W
Night Power	<1W
Ambient temperature range	-25 °C~65°C
Humidity	0~99%(no Dew)
Waterproof	Indoor Type Design
Electromagnetic Compatibility	EN50081.part1 EN50082.part1
Power System Disturbance	EN61000-3-2 EN62109
Network test	DIN VDE 1026
Certificate	CE
Fire prevention level(PCB)	94 V0
DC TO AC Conversion efficiency	>85%

Packing and weight

Net weight	1.3kg
G weight	2.0kg
Size (L x W x H)	21 x 16.5 x 5.3cm
Package (L x W x H)	Inner box: 34x25x15.5CM Carton : 51x37x33CM 6PCS/Carton
Installation	Wall hanging
AC power cord length	1.8m
Cooling	Fan

User Guide

1、Installation Connection

1、Red terminal: Connect DC positive, black terminal: Connect DC negative. Show in Figure 1.



Figure 1

2、AC socket: Connect to the mains. Put the side of the AC cord which has holes into the inverter with 3 foot outlet and the other side of the AC cord to home 3PIN AC outlet. Show in below Figure



3、Switch: Connect the connections in right way, then turn on the switch. The inverter starts to work.

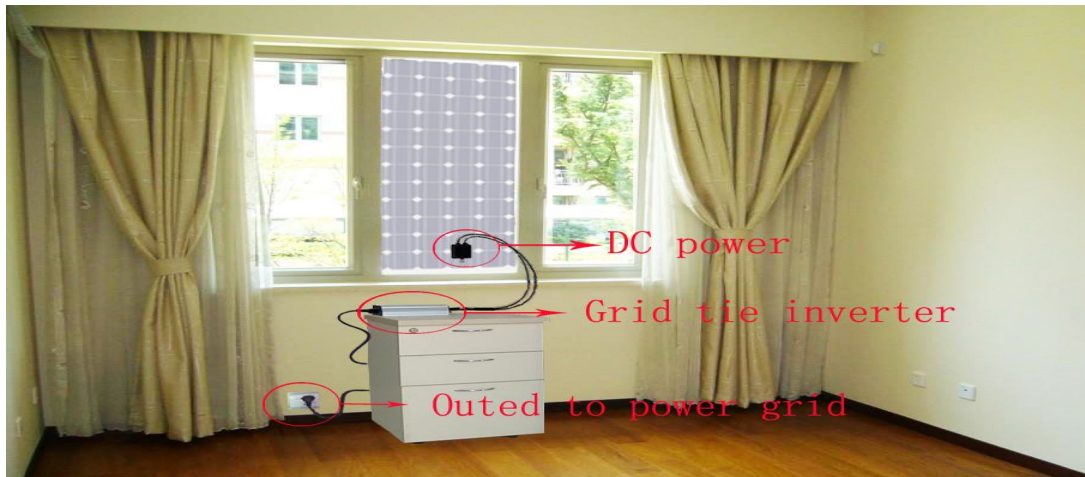


Figure 3

2、Grid tied inverter used in the wind and solar street lights.

Use this product, do not need to add solar panel controller, battery.

Connection Method 1 (Figure 4 below):

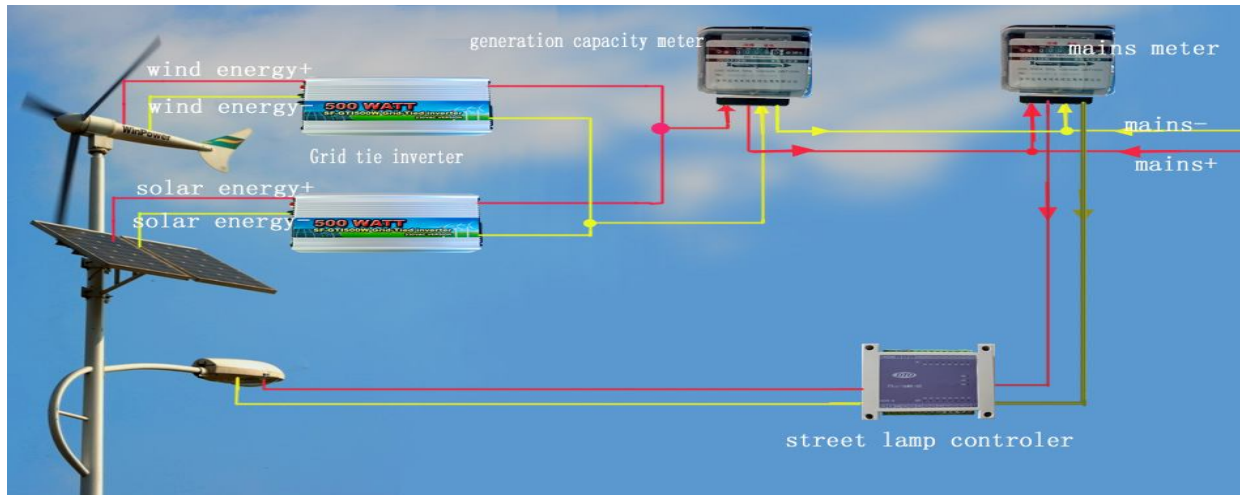
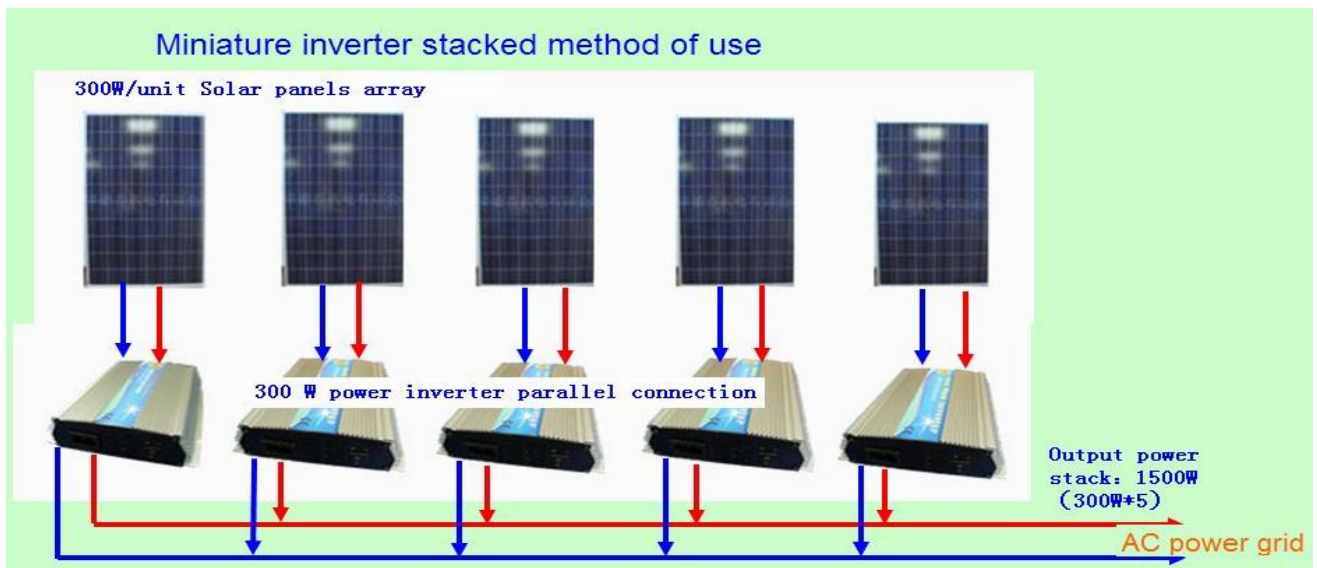


Figure 4

Connection Method 1: Wind energy, solar energy can supply to the grid at the same time, then achieve the highest efficiency. First consider this connection method. Figure 4

3、Stack using

In order to achieve higher power use requirements, this product can be stacked, such as: 5 grid inverter 300W stacking can achieve 1500W. And the number of the stacking is unlimited. Used as Show in below Figure



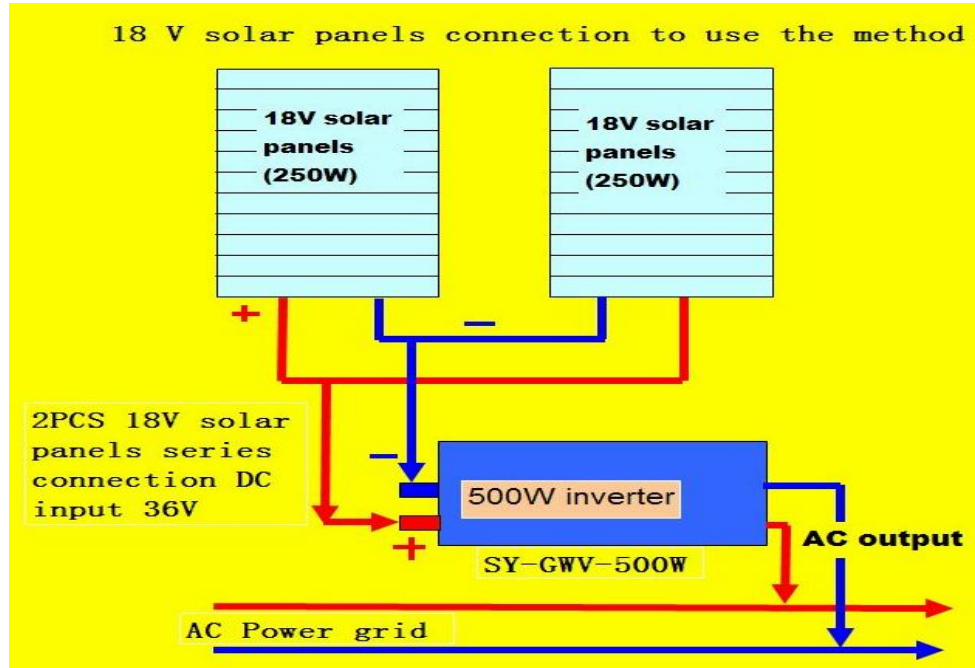
4、Input and output

1、DC input limit

- ✧ Input voltage range: 15V to 60V

Solar Panel: Recommend using the power more than 500W and the standard voltage of 36V PV panels.

If use other types of solar panels, For example: 18V solar panlar:

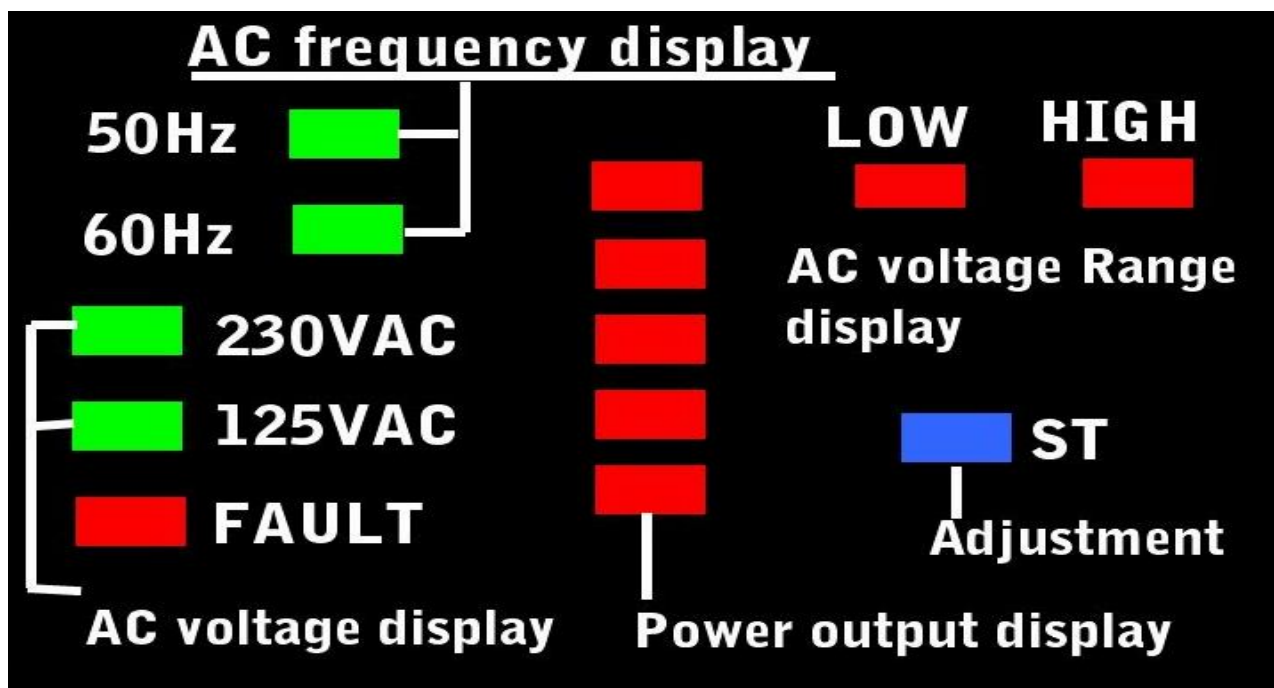


- ✧ Wind turbine system: Rated voltage 24VDC, maximum voltage 60VDC.
- ✧ storage battery: A, $12V \times 3 = 36VDC$ (or $12V \times 4 = 48VDC$) Three groups series connection.
B, $24V \times 2 = 48VDC$ (or $24V + 12V = 36VDC$)

2、AC output:

- ✧ Voltage range of the inverter whose output is 220V AC.: 190V - 260V, 50Hz&60HZ
- ✧ Voltage range of the inverter whose output is 110V AC.: 90V - 140V, 50Hz&60HZ

5、LED Indicator:



1、Red LED:

- 1、Low-voltage protection (input DC voltage is less than 15VDC).
- 2、High-voltage protection (Input DC voltage is greater than 60VDC).
- 3、FAULT: Power grid failure or inverter their own fault.
- 4、Power output display: Follow the inverter power output size flow flashing quickly or slowly.

2、Green LED:

- 1、AC voltage display: Display the power grid voltage.
125VAC: 90VAC-140VAC
230VAC: 190VAC-260VAC
- 2、AC frequency display: Display the power grid frequency.

Notes

- Non-professionals do not disassemble. Only qualified personnel may repair this product.
- Please install inverter in the low humidity and well-ventilated place to avoid the inverter over-heating, and clear around the inflammable and explosive materials.
- When using this product, avoid children touching, playing, to avoid electric shock.
- Recommended Maximum DC input 4AWG cable capable of handling more than 50A of the cable size.
- Optimal length of the DC input line 1.8M or less, long cable will allow solar panels to the inverter DC voltage drop caused by wear and tear.
- Connected to a power outlet to provide AC.
- Connected solar panels, battery or wind generators DC input DC power supply cable.
- Proposed wind power plant with its own charge controller and load dump.