YSmart Technology Co.,Ltd

GWV Series

Grid Tie Microinverter

User Manual

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catalogue

YSmart SmartMicroinverter Introduction

Grid tie inverter is a device which directly converts direct current into sine wave, frequency and phase are same as power grid alternating current and feed into power grid. It is a key device of power generation system such as PV power generation system, small power wind power generation system. YSmart SmartMicroinverter optimized design for modularization modular power generation systems. They can use with DC power source such as the mainstream solar module such as 18V, 24V and 36V monocrystal and/or Polycrystalline solar panels, small power wind generator as well as battery for converting into alternating current which suitable for feeding into utility grid. Product is stable and reliable as well as high conversion efficiency. It is best choice for PV power generation systems and small power wind power generation systems.

YSmart SmartMicroinverter can be easy placed and attached to the rack of solar panels. No need space for independent installation and low voltage DC wire of side of solar panel connecting to Smart Microinverter can eliminate the risk of high DC voltage which cause of high power centralized inverter's series string and/or parallel connections. Distributed modularization design philosophy for YSmart SmartMicroinverter will ensure the productiveness of the whole system will not affect by a single point of failure. Each Smart Microinverter is individually connected to one PV module in your array. This unique configuration means that an individual Maximum Peak Power Point Tracker (MPPT) controls each PV module. This ensures that the maximum power available from each PV module is exported to the utility grid regardless of the performance of the other PV modules in the array. That is, although individual PV modules in the array may be affected by shading, soiling, orientation, or PV module mismatch, the Smart Microinverter ensures top performance for its associated PV module. The result is maximum energy production from your PV system and gets return on investment in less time.

Advantages of YSmart SmartMicroinverter

1. Unique circuit design, choice of import industrial electronic components, higher efficiency, more stable performance.

2. Creative MPPT technology, efficiency more than 99%, faster reaction, more sensitive of reaction and more reliable of Maximum power point locking.

3. Parallel modular design, small volume, distributed installation, easy for system configuration, flexible for combination, strong expansibility of system.

4. Adopting high-frequency isolation transformer type, high efficiency, high security.

5. Perfect electrical protection function.

6. Aluminum alloy housing, not rust, heat-resisting and cold-resistant as well as anti-corrosion.

7. Getting electronic circuit design, appearance design and other core technology patents.

8. Wide input voltage (15-60VDC), suit for different DC power supply.

Important Safety Information

Read this First

This manual contains important instructions for use during installation and maintenance of the YSmart SmartMicroinverter. To reduce the risk of electrical shock, and to ensure the safe installation and operation of the YSmart SmartMicroinverter, the following safety symbols appear throughout this document to indicate dangerous conditions and important safety instructions.

DANGER! This indicates a hazardous situation, which if not avoided, will result in death or serious injury.

WARNING! This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and

NOTE: This indicates information particularly important for optimal system operation.

Follow instruction closely.

Safety Instruction

- Do not use Smart microinverter in a manner not specified by the manufacturer. Doing so may cause death or injury to persons, or damage to equipment.
- Perform all electrical installations in accordance with all applicable local electrical codes.
- Be aware that only qualified personnel should disassemble and repair the Smart Microinverters and non-qualified personnel should not install and/or repair.
- Do not attempt to repair the Smart Microinverter; it contains no user-serviceable parts. If it fails, contact YSmartcustomer service to claim a return merchandise authorization and start the replacement process. Tampering with or opening the Smart Microinverter will void the warranty.
- If the AC cable connector on the microinverter is damaged or broken, do not install the unit.
- Before installing or using the Smart Microinverter, read all instructions and cautionary markings in the technical description and on the Smart Microinverter System and the PV equipment.
- Connect the Smart Microinverter to the utility grid only after you have completed all installation procedures and after receiving prior approval from the local electrical utility company.
- Be aware that the body of the Smart Microinverter is the heat sink. Under normal operating conditions, the temperature is 15°C above ambient, but under extreme conditions the microinverter can reach a temperature of 75°C. To reduce risk of burns, use caution when working with microinverters.
- Do NOT disconnect the PV module from the Smart Microinverter without first removing AC power.

  The better disconnect DC terminal first. It may cause of components damaged if removing AC power first when Smart Microinverter still operation. It is available to disconnect AC power first when Smart Microinverter is not working but the better to disconnect the DC terminal first.
- Keep away from children, no touching, no playing so as not to electric shock when using.
- Please installed in place of low humidity and well-ventilated so as to avoid inverter overheating, as well as clear around the inflammable and explosive materials.

SY-GWV Series Smart Grid Tie Microinverter Technical Parameters: (Suit for 72 cells solar panel which Vmp is 35-37V as well as Voc is 44-46V.)

Power	200W	300W	400W	500W	600W
Solar panels	≥200W	≥300W	≥400W	≥500W	≥600W
DC MAX input	240W	360W	480W	600W	720W
DC input range	15-60VDC				
MPPT Voltage	31-40V				
DC MAX current	15A	20A	30A	45A	50A
AC MAX output	230W	330W	430W	550W	650W
AC output range	120VAC(90-140VAC) or 230VAC(190-260VAC)				
Frequency range	50Hz/60Hz(Auto control)				
Power Factor	>97.5%				
THD	<5%				
Phase Shift	<2%				
Efficiency	120VAC(90-140VAC)				
Peak Efficiency	>88%	>88%	>86%	>85%	>85%
Stable Efficiency	>86%	>86%	>85%	>84%	>83%
Efficiency	230VAC(190-260VAC)				
Peak Efficiency	>90%	>90%	>88%	>88%	>85%
Stable Efficiency	>88%	>88%	>86%	>86%	>84%
Protection	Islanding; Short-circuit; converse connection; Low Voltage; Over Voltage; Over temperature Protection				
Work Temperature	'-25℃-65℃				
Work Humidity	0%~90%RH non-condensing				
Grade of Waterproof	Indoor design				
Show	LED				
Cooling	Fan				
Stand-by Power	2-3W				
EMC	EN61000-6-3:2007 EN61000-6-1:2007				
Grid Disturbance	EN 50178+EN 62109-1+VDE0126-1-12				
Grid Detection	DIN VDE 1026 UL1741				
Certificate	CE				

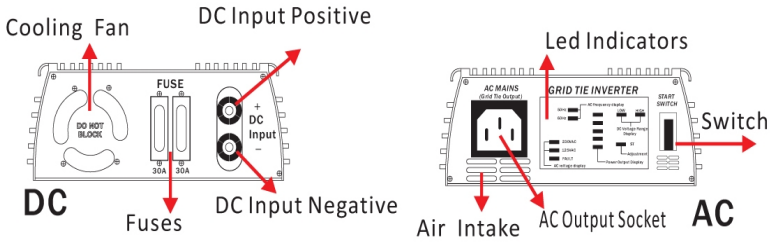
Mounting dimension	16*13CM

Package:

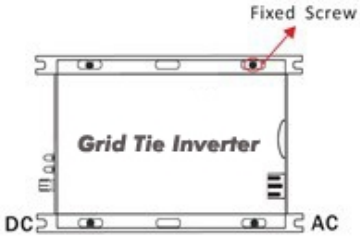
Net Weight	1.3KGS/PCS
Gross Weight	2.0KGS/PCS
Inner Box (L x W x H)	30*20.3*11.3CM
Carton(L x W x H)	42*31.5*35.5CM

Installation

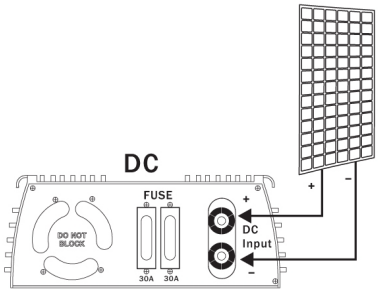
1. Diagrammatize DC input and AC output terminals,



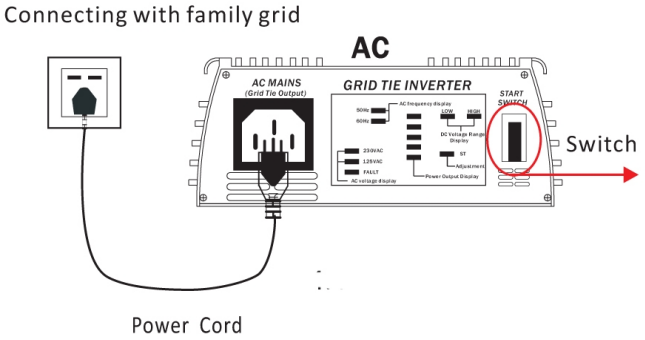
2. Attach the Smart Microinverter to the racking or fix onto the wall,



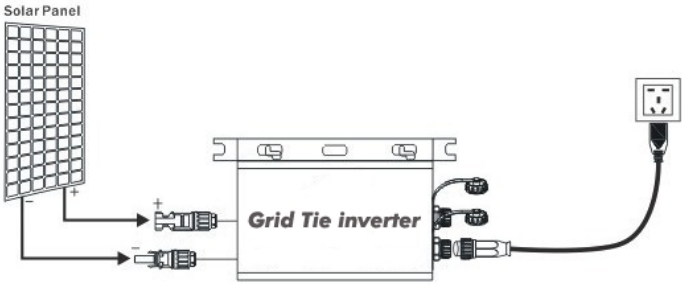
3. Properly connect the positive and negative of solar panel and Smart Microinverter,



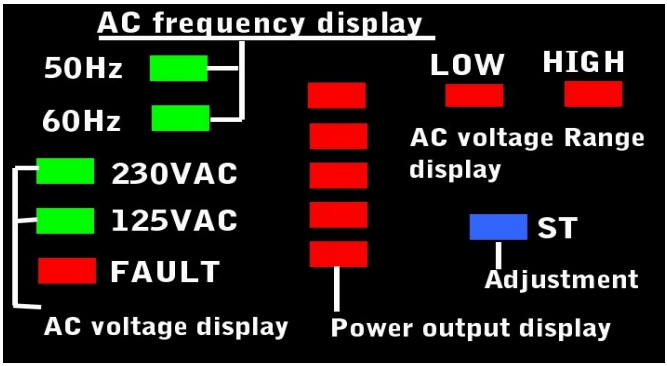
4. AC power cable connects with Smart Microinverter and residential power grid which refers to low voltage civilian single-phase power grid.



5. Switch on power grid after check for input and output connections are correct and then switch on the Smart Microinverter. Red/green LED lights up first, and red LED lights off follow on and green LED lights on and flash fast, next LED flash slowly which indicates that Smart Microinverter is in processing of MPPT operation for tracking down the Maximum power point from solar module. Finally, green LED last lights on and indicates that maximum power point lock-in. Smart Micro inverter proper functioning and output steady.



Status Indications of LED



1. Red LED

1.1 Red FAULT LED indicator lights up under any conditions as listed below:

a) Low-voltage protection(DC input voltage lower than Min. input voltage of inverters)

b) Over-voltage protection(DC input voltage higher than Max. input voltage of inverters)

c) Over-temperature protection (inverters will be shut down for power output when the temperature of body of inverters higher than 65-75℃.) And inverter will be automatically restart up when the temperature of body of the inverter down to 40-50℃.

d) Power grid fault protection (when 110VAC or 220VAC grid power outage and/or tripped

e) Islanding protection: inverter will be automatically shut down for power output when disco power grid.

1.2 Red LOW indicator: DC input voltage lower than 37VDC

1.3 Red High indicator: DC input voltage higher than 37VDC

1.4 Red Power LED indicator: Follow the inverter power output size flow flashing quickly or slowly.

2. Blue ST LED:

a) Blue LED flash: adjusting for power output, MPPT operating for tracking.

b) Blue LED long light: indicates inverter locking-in Max. output power operation status.

3. Green LED：

c) AC voltage display: Display the power grid voltage.
125VAC: 90VAC-140VAC
230VAC: 190VAC-260VAC

d) AC frequency display: Display the power grid frequency.

4. **Please note that above operations only run at grid-connected status.**

Troubleshooting a non-operating Smart microinverter

System halted and /or without power output

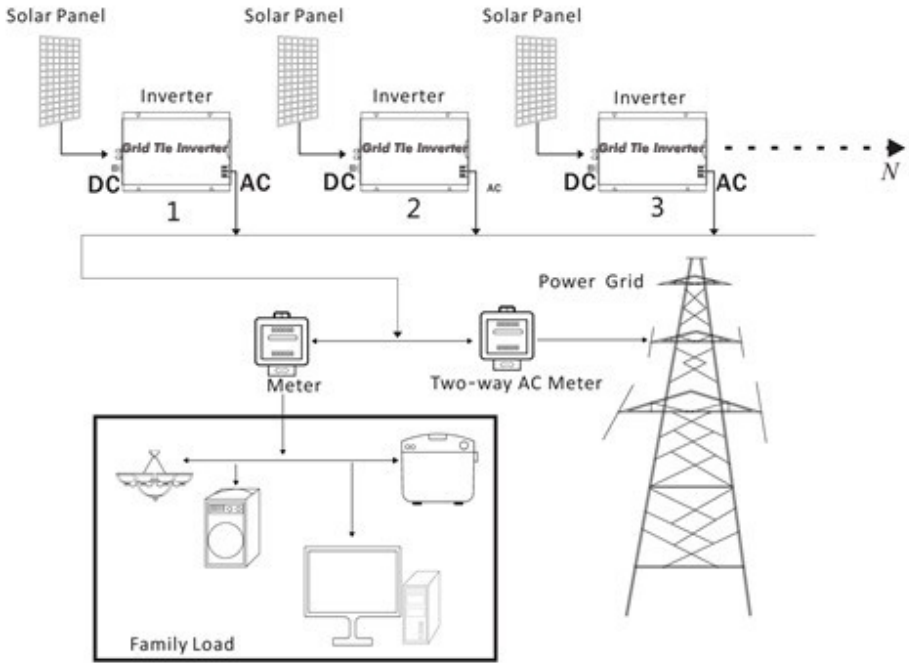
1. Check if switch of Smart Microinverter is turn on or not,
2. Check if the DC connections to Smart Microinverter are correct or not,
3. Check if any reverse DC connections for positive or negative or not,
4. Check if DC input voltage is within the range of the Smart Microinverter's not,
5. Check if the utility grid voltage and frequency are fit in with the serviceable range of Smart Microinverte or not,
6. Check if fuses of DC side are fusing or not,
7. Check if utility grid voltage properly connecting to Smart Microinverters or not,

DC power supply is normal but no power output:

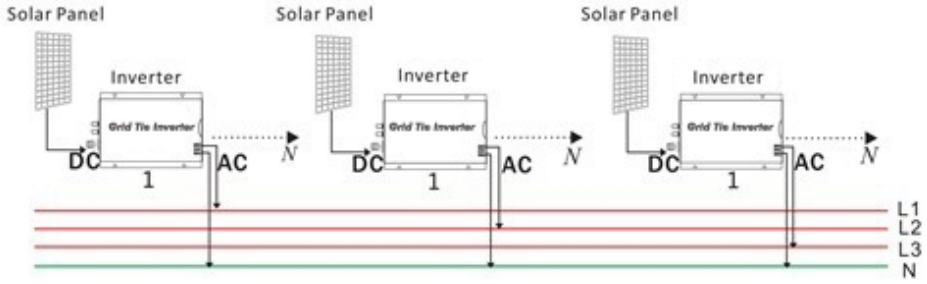
1. Check if utility grid voltage is connecting to Smart Microinverter or not,
2. Check if utility grid voltage is fit in with the serviceable range of Smart Microinverte or not,
3. Please visual inspection for the LED operation status, red LED will turn off and green LED will flash or run when inverter connecting with DC power source which input voltage is fit in with the range as specified and power grid properly. If still no power output when green LED flash or run, probably internal components are damaged, in such case, please turn the defective inverter back for further analyze.
4. Please visual inspection for the LED operation status, red LED still turn on and green LED without any flash or run when inverter connecting with DC power source which input voltage is fit in with the range as specified and power grid properly, probably internal components are damaged, in such

case, please turn the defective inverter back for further analyze.

YSmart SmartMicroinverter Stack Wiring Diagram



YSmart SmartMicroinverter Three Phase output Wiring Diagram



Warranty

Warranty Conditions

Warranty Period: 15-year limited warranty period.

Warranty Evidence: The B/L,Tracking no, and a completed warranty card.

YSmartgrants an implied warranty of 1 year to the inverter from date of purchase for repair or replace the Defective Product free of charge includes freight cost. Furthermore, YSmartprovides an additional limited warranty for 14 years for repair or replace the Defective Product free of charge but non-free of freight charge. If your device has a defect or malfunction during the warranty period, please also contact your retailer or installer.

Warranty claims are excluded for:

- Alterations or repairs to the unit without prior authorization
- Improper use or operation of device
- Improper and non-standard installation
- operating the equipment with defective safety devices
- Impact of foreign objects and force majeure (lightning, surge, storm, fire)
- Inadequate or nonexistent ventilation of the device
- disregarding of safety regulations
- shipping damage
- The Product has been improperly stored or was damaged while in possession of the Dealer or end user;

WARNING! Only qualified electrical professionals can do the trouble shooting of the Smart Microinverter system.

WARNING! Do not disconnect the microinverter from its PV module when the inverter is still operating. Disconnect the inverter from the PV module during running may damage the microinverter and bring electrical hazard to the person nearby.

WARNING! Disconnect the AC grid first before disconnecting the inverter from the PV module.

WARNING: Do not attempt to repair the Smart Microinverter. This may bring electrical hazard to the person and it will also void the Microinverter warranty. If troubleshooting methods fail, please contact YSmartcustomer support to return the Microinverter and initiate for replacement process.

Product Warranty Card（Invalid Duplicate）

Customer Feedback:

Name	
Country and/or Territory	
Telephone	
Email	
Purchase Channels and/or Sources	
Models	

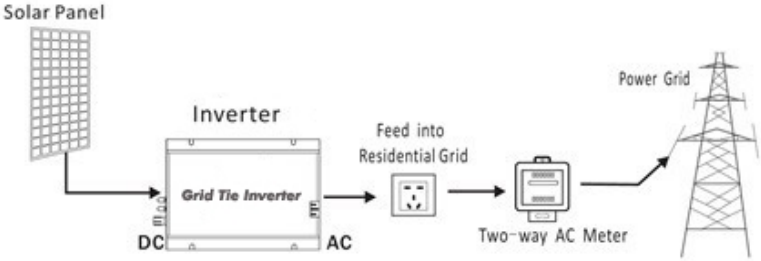
Date of Purchase	
Date of Installation	
Time of Using	
Brief Fault Description	
Improvement Suggestions	

Distributor and/or Sales Representative

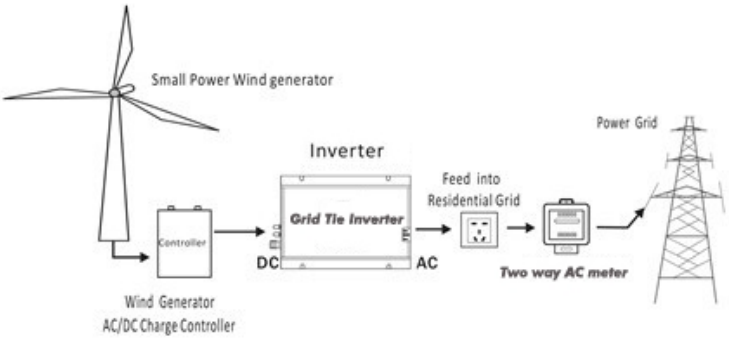
Distributor Name			
Telephone and/or Email			
Sales Representative		Date of Customer Feedback	
Date of finish Disposal		Disposal	
YSmartQC		Technician	
Others			

Connect method

1.Work with 72cell solar panel(Vmp: 35-37V,Voc: 44-46V)



2.Work with wind turbine,if the wind trbine do not build in wind charge controller,need add wind charge controller(24V)



3.work with battery,you can use solar and wind to charge the battery,and the battery release the power to the grid through inverter