



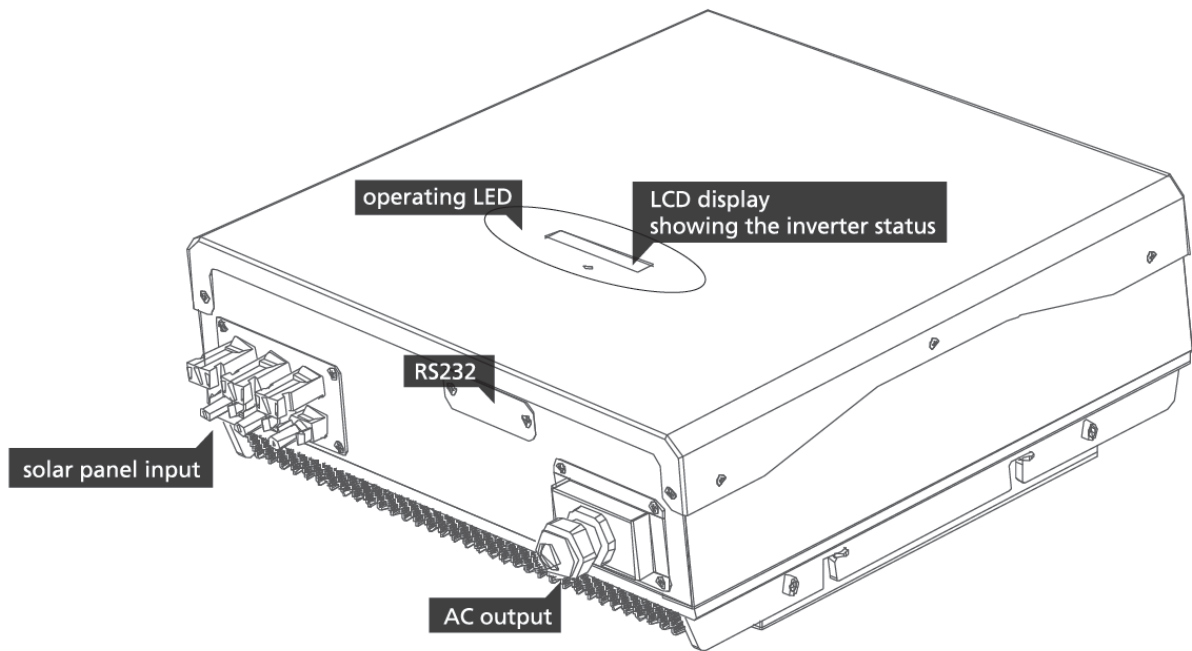
## Before you start

Congratulations on choosing our Grid PV Inverter, Our Grid PV Inverter are a highly reliable products due to their innovative design and perfect quality control. Such inverters are used in high demand, grid-linked PV systems. This manual contains important information regarding installation and safe operation of this unit. Be sure to read this manual carefully before using. If you encounter any problems during installation or operation of this unit, first check this manual before contacting your local dealer or representative. Instructions inside this manual will help you solve most installation and operation difficulties.

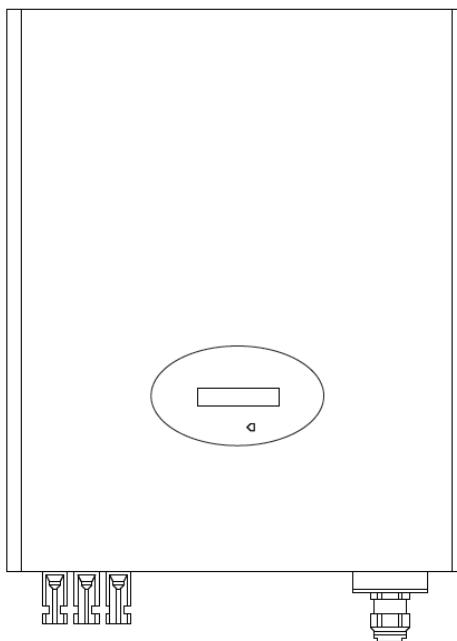
<b>1</b>	<b>CONTENT</b>	
<b>2</b>	<b>MODES OF OPERATION</b>	2.1 Normal mode 2.2 Fault mode 2.3 Shutdown mode 2.4 Sound control LCD display
<b>3</b>	<b>INVERTER STATUS</b>	
<b>4</b>	<b>COMMUNICATIONS</b>	4.1 Communications software 4.2 instructionsMonitor 4.3 Detailed information
<b>5</b>	<b>TROUBLE SHOOTING</b>	
<b>6</b>	<b>Growatt Factory warranty</b>	

# 1 CONTENTS

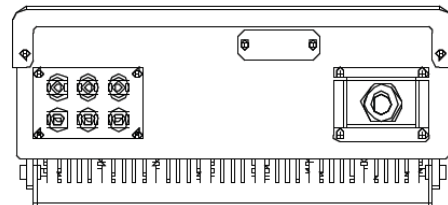
## Design overview



Front View



Bottom View



## Opening the package

After opening the package, please check the contents of the box. It should contain the following:

<b>Item</b>	<b>Name</b>	<b>Quantity</b>
1	solar inverter	1
2	Mounting frame	2
3	Mounting screws	6
4	safety-lock screws	4
5	Mounting frame screws sleeve	6
6	AC socket	1
7	AC socket assembly screws	4
8	installation manual	1
9	operation manual	1

# 2 MODES OF OPERATION

There are 3 different modes of operation.

## 2.1 Normal mode:

In this mode, Inverter works normally. Whenever the supplied power from PV panel is sufficient (voltage>150VDC), Inverter converts power to the grid as generated by the PV panel. If the power is insufficient, (voltage<100VDC) Inverter enters a "waiting" state. Whilst "waiting" Inverter uses just enough power from the PV panel monitor internal system status. In normal mode the LED is green.

## 2.2 Fault mode

The internal intelligent controller can continuously monitor and adjust the system status. If Inverter finds any unexpected conditions such as grid problems or internal failure, it will display the information on its LCD and the LED will be red.

## 2.3 Shutdown mode

During periods of little or no sunlight, Inverter automatically stops running. In this mode, Inverter does not take any power from the grid. The display and LED's on the front panel do not work.

### Notes

Operating inverter is quite easy. During normal operation, Inverter runs automatically. However, to achieve maximum conversion efficiency of Inverter please read the following information:

## a Automatic ON-OFF: Inverter starts up automatically when DC-power from the PV panel is sufficient.

Once the PV-Inverter starts it enters one of the following 3 states:

1. Standby: The PV string can only provide just enough voltage to minimum requirements of the controller.
2. Waiting: When the PV string DC voltage is greater than 100V, Inverter enters a "waiting" state and attempts to connect to the grid.
3. Normal operation: When PV string DC voltage is greater than 150V, Inverter operates in the normal state.

## b Starting-up display sequence: Once the PV power is sufficient, Inverter displays information as shown in the flow chart as follow:

```
SerNo: xxxxxxxxx  
Module: xxxxxx  
FW Version: x.x.x  
Connect in xxS  
Connect OK  
Power: xxx.xW
```

LCD backlight control:

To save power, the LCD display's backlight automatically turns off after 30 seconds.

### The First Line Of LCD

STATE	DISPLAY CONTENT	REMARK
Wait State	Standby	PV voltage low
	Waiting	Initial waiting
	Connect in xxS	System checking
	Reconnect in xxS	System checking
Inverter State	Connect OK	Connect to Grid
	Power: xxxx.xW	Inverter watt at working
Fault State	Error: xxx	System Fault
Auto Test State	Auto Testing	Protection auto test
Program State	Programming	Update Software

### The Second Line Of LCD

SerNO	CYCLE DISPLAY	DISPLAY TIME/S	REMARK
1	Etoday:xx.x KWh	4	the Energy today
2	Eall:xxx.x KWh	4	the total Energy
3	Tall:xx.x h	4	the total work time
4	PV:XXX/XXX. B:XXX	4	the PV1 & PV2 voltage
5	AC:XXX VHzF:xx.x	4	the AC Voltage and Frequency
6	SerNO:XXXXXXX	4	the Serial Number
7	Module:PX UX MX SX	4	the Inverter Model
8	FW Version:x.x.x	4	the software version
9	Enable Auto Test	4	the Enable Auto test
10	Set language	4	Set LCD language
11	Set Contrast	4	Set LCD Contrast
12	System F:XX Hz	4	the Grid system
13	COM Address:xx	4	the communication Address

## 2.4 Sound control LCD display

The display on the inverter can be control by Knock on the front of it. Sound control can define the display language, luminance of the display, auto-test and frequency.

### When the LCD is dark

Knock and double knock make it becomes bright.

### When the LCD is bright

Knock to make it display next information or change the set situation.

Double knock make the display stand for 30 second on 1-5. And enter set menu on 6-12.

### Set the display

Set language

Knock to make the display bright → knock to “set language” →double knock to enter “language: English” → knock to select the language you need and wait until the display become dark.

Set luminance of the display

Knock to make the display bright → knock to “set LCD contrast” →double knock to enter “ LCD contrast 2” → knock to select the luminance you need and wait until the display become dark.

Auto test

Knock to make the display bright → knock to “Enable Auto test” →double knock to enter “Waiting to start” → knock to start auto test and wait for the test result.

Frequency

Knock to make the display bright → knock to “System F: xxHz” →double knock to enter “System F: xxHz” → knock to select the Frequency you need and wait until the display become dark.

set COM address

Knock to make the display bright-->knock to “COM Address:xx” -->double knock to change the Address model-->clock to set address.

# 3 INVERTER STATUS

Inverter is designed to be user-friendly; therefore, the status of the Inverter can be easily understood by reading the information shown on the front panel display. All possible messages are shown in the following table.

DISPLAY	OPERATION
	system fault
Auto Test Failed	Auto Test do not pass
No AC Connection	No Utility, No Grid Connect
PV Isolation Low	Insulation Problem
Residual I High	GFCI Fault
Output High DCI	Output Current DC Offset too high
PV Voltage High	PV panel Voltage too high
AC V Outrange	Grid Voltage out of range
AC F outrange	Grid frequency out of range
	Inverter fault
Error: 100	2.5V Reference Voltage Fault
Error: 101	Communication Fault
Error: 102	Consistent Fault
Error: 116	EEPROM Fault
Error: 117	Relay Fault
Error: 118	Init Model Fault
Error: 119	GFCI Device Damage
Error: 120	HCT Fault
Error: 121	Communication Fault
Error: 122	Bus Voltage Fault



# 4 COMMUNICATIONS

## 4.1 Communications software instructions

ShineNET is a PC software that communicate with Shine Inverter to analyze the inverter work state. It is convenient for you to know the inverter real time working state and the history work information.

Spec:

- 1.Communicate with inverter by RS232 and Bluetooth.
- 2.Construct net with inverter, GROmonitor and ShineNET by RS232, Bluetooth and Internet.
- 3.Two Interfaces: Multi Inverter Interface and Wave Data Interface.
- 4.In Multi Inverter Interface: 9 inverters working data at the same time, you can select your own compare inverters and parameters.
- 5.In Wave Data Interface: Query the inverter real time and history power wave,work data and error information.
- 6.Multi languages: English, Simple Chinese, French, German, Spanish and etc.  
Support OS: WinXP/Vista/win7/2000/2003.

## 4.2 Monitor

After setting the software the user can monitoring the inverter. The right side of the main interface is the detailed information of inverter.

## 4.3 Detailed information

Detailed setting method and other functions refer to "ShineNET Manual." in the CD.

# 5 TROUBLESHOOTING

*In most situations, the Inverter requires very little service. However, if Inverter is not able to work perfectly, please refer to the following instructions before calling your local dealer.*

*Should any problems arise, the LED on the front panel will be red and the LCD displays the relevant information. Please refer to the following for a list of potential problems and their solutions.*

## SYSTEM FAULT

### Ground I Fault

1. The ground current is too high.
2. Unplug the inputs from the PV generator and check the peripheral AC system.
3. After the cause is cleared, re-plug the PV panel and check PV-Inverter status.
4. If the problem persists please call service.

### Isolation Fault

1. Check the impedance is between PV (+) & PV (-) and the PV-Inverter is earthed.  
The impedance must be greater than 8M
2. If the problem persists please call service

### Grid Fault

1. Wait for 5 minutes, if the grid returns to normal, PV-Inverter automatically restarts.
2. Make sure grid voltage and frequency meet the specifications
3. If the problem persists please call service

### No AC connection

1. Grid is not connected.
2. Check grid connection cables.
3. Check grid usability.

## INVERTER FAILURE

### PV Over Voltage

1. Check the open PV voltage, see if it is greater than or too close to 500VDC
2. If PV voltage is less than 500VDC, and the problem still occurs, please call local service.

### Consistent Fault

1. Disconnect PV (+) or PV (-) from the input, restart the PV-Inverter
2. If it does not work, call service.

*If there is no display on the panel, please check PV-input connections. If the voltage is higher than 150V, call your local service.*

*During periods of little or no sunlight, the PV-Inverter may continuously start up and shut down. This is due to insufficient power generated to operate the control circuits.*

# 6 FACTORY WARRANTY

Applies solely to the following products: Growatt 1500, Growatt 2000, Growatt 3000, Growatt 4000, Growatt 5000, Growatt 5000B. The legal guaranty obligation of the seller of your device is not affected by this warranty and remains fully valid for 24 months from the date of delivery. For the above named products, you receive the Growatt factory warranty valid for 5 years from the date of purchase. The Growatt factory warranty covers any costs which you incur for repair or replacement parts during the agreed period beginning at the date of purchase of the device, subject to the conditions listed below. This is not associated with a durability warranty. You have the possibility of purchasing an extension of this Growatt factory warranty within the 20 years term of the Growatt factory warranty, this does not apply for the PV Offset Box. The prices are based on the respective price list valid at the time the warranty extension was signed.

## Warranty conditions

If a device becomes defective during the specified Growatt factory warranty period, one of the following services, as selected by Growatt, will be performed at no charge for materials or labor costs as long as this is not impossible or inappropriate:

- repair at Growatt, or
- repair on-site, or
- exchange for a replacement device of equivalent value according to model and age.

In the latter case, the remainder of the warranty entitlement will be transferred to the replacement device. In such an event, you do not receive a new certificate, as your entitlement is documented at Growatt. Inappropriate in the above mentioned meaning is especially given in case the action would result in costs for Growatt that would be unbearable

- with respect to the value that the device would have if it were not defective,
- with respect to the importance of the defect and
- after consideration of alternative correction measures that could be conducted without severe trouble for the Growatt customer.

The factory warranty covers costs for Growatt for labour and material necessary to reestablish trouble free function at the Growatt factory or for repair work by Growatt personnel on site. All other costs, especially shipping costs, travel and boarding costs of Growatt service personnel for repairs on site as well as costs of own employees of the customer are not covered by the Growatt factory warranty. These are proportionally covered for the distance between Growatt and the location where the place of sales of the official Growatt distributor where the device was purchased.

For determination of the warranty entitlement, please submit a copy of the purchase receipt, or a copy of the warranty certificate, and if applicable, evidence of the warranty extension. The type plate on the device must be completely legible. Otherwise, Growatt is entitled to refuse to provide warranty services.

Report defective devices with a short description of the failure to the Growatt Service Line. In case we intend to exchange with a replacement device we generally ship an equivalent exchange device within 2 working days in a suitable transport packaging. The defective device in this transport packaging is to be provided for reshipping to Growatt. All warranty services are only then free of charge in case the actions are beforehand defined together with Growatt.

### Scope of the factory warranty

The factory warranty does not cover damages that occur due to;

- ▶ transport damage,
- ▶ incorrect installation or commissioning,
- ▶ failure to observe the documentation and the maintenance regulations,
- ▶ modifications, changes, or attempted repairs,
- ▶ incorrect use or inappropriate operation,
- ▶ insufficient ventilation of the device,
- ▶ failure to observe the applicable safety regulations (VDE standards, etc.),
- ▶ force injure (e.g. lightning, over voltage, storm, fire).

Neither does it cover cosmetic defects which do not influence the energy production.

Claims that go beyond the rights cited in the warranty conditions, in particular claims for compensation for direct or indirect damages arising from the defective device, for compensation for costs arising from disassembly and installation, or loss of profits are not covered by the factory warranty, insofar Growatt is not subject to statutory liability. In such cases, please contact the company that sold you the device. Eventual claims in accordance with the law on product liability remain unaffected.