



Growatt 2000HF

Growatt 2500HF

Growatt 3000HF

## Installation & Operation Manual

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### 1.1 Validity

This installation guide contains installation, commissioning, communication, trouble shooting and information of Growatt HF series inverters:

Growatt 2000HF

Growatt 2500HF

Growatt 3000HF

With this installation guide, users are able to install and operate the Growatt HF inverters easily. This manual does not cover any details concerning about equipment connected to the Growatt HF. Store this manual where accessible at all times.

### 1.2 Target Group

This manual is for qualified personnel who have received training and have demonstrated skills and knowledge in the construction and operation of this device. Qualified Personnel are trained to deal with the dangers and hazards involved in installing electric devices.

Notes: For possible changes in this manual, Growatt New Energy Co., Ltd accepts no responsibilities to inform the users.

### 1.3 Product Overview

Growatt HF series inverters are grid-tied inverters which convert DC current generated by PV modules into AC current and feed it into the public grid in single-phase. Growatt HF inverters are multi-string inverters with high frequency transformer for galvanic isolation, with the specially designed integrated high frequency transformer and wide input voltage range Growatt HF are able to be connected to different panels (e.g. monocrystal, polycrystal silicon panels and thin-film panels).

### Inverters Overview:

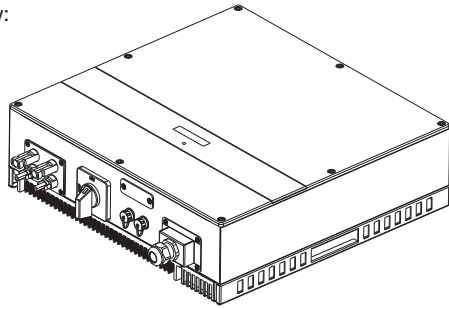


Fig 1.1

### Front and Bottom Overview:

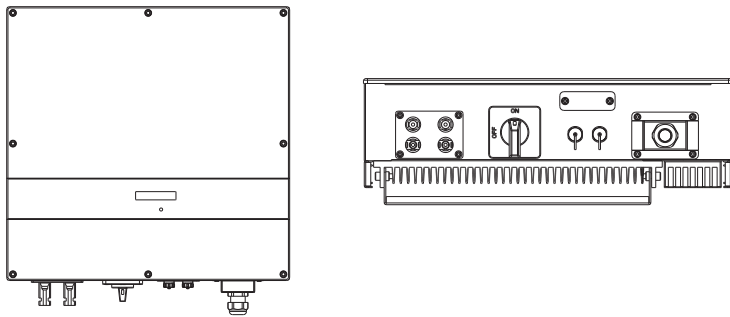


Fig 1.2

**Notes:** Growatt HF for Australia won't be equipped with DC switch

### Grid-tied PV System Overview:

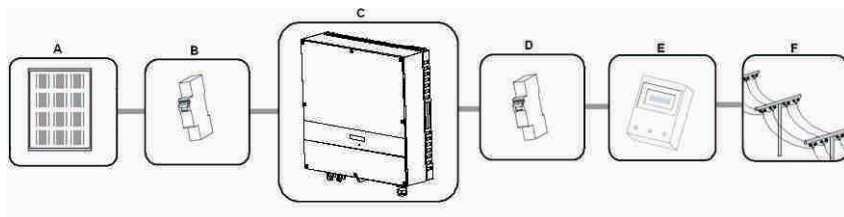


Fig 1.3

As drawings shown above, a complete grid-tied PV system consists of PV modules, PV inverters, public grid and other components. Moreover, PV inverters always act as key components.

The Growatt HF inverters may only be operated with PV generators (modules and cabling) with protective insulation. Don't connect any sources of energy other than PV modules to the Growatt HF inverters.

When your PV system contains Growatt HF inverters or any other Growatt inverters, the PV system design software ShineDesign will provide adequate supports. (Download link: [www.ginverter.com](http://www.ginverter.com))

Notes: Because of the high frequency transformer isolation and wide input voltage range, Growatt HF is very suitable for thin-film systems or any other PV systems that requires NEGATIVE GROUND or GALVANIC ISOLATION.

## 1.4 Safety

Growatt HF is designed for global consumers, and is in accordance with most of the safety standards of various countries and regions.

VDE 0126-1-1, AS4777, ETL, FCC, CE

Appropriate Usage:

**DANGER!**

Danger to life due to high voltages in the inverter!

All work on the inverter may be carried out by qualified personnel only.

The appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

Children should be supervised to ensure that they do not play with the appliance

**CAUTION!**

Danger of burn injuries due to hot enclosure parts!

During operation, the upper lid of the enclosure and the enclosure body may become hot.

Only touch the lower enclosure lid during operation.

## CAUTION!

Possible damage to health as a result of the effects of radiation!

Do not stay closer than 20 cm to the inverter for any length of time.

## CAUTION!

Possible damage the PV modules as a result of Identification of String Failure!

The Growatt HF Inverter is equipped with a system which recognizes total failure of individual strings or part-strings.

## 2 Unpacking

### 2.1 Unpacking and Inspection

Before opening the packing box of Growatt HF, please note that whether there are any visible external damages. Once open the packing box, please check the delivery for completeness and for any visible external damages of the inverter. If there are anything damaged or missing, please contact your dealer. Complete delivery should contain items as follow:

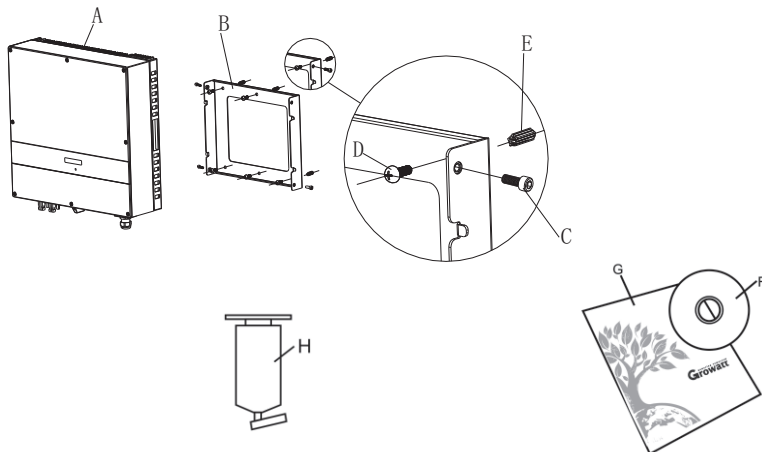


Fig 2.1

Item	Number	Description
A	1	Growatt HF inverter
B	1	Mounting frame
C	4	Mounting screws
D	6	Safety-lock screws
E	6	Mounting frame screw sleeves
F,G	1	Installation & Operation Manual
H(Optional)	1(Optional)	Bluetooth

Notes: Though the packaging box of Growatt HF is durable, please treat the packing box softly and avoid disposing the packing box.

### 2.2 Information of Label

The label contains information as below:

- The inverter type/model (Model Name);
- The certificates and approvals (Certificate Number and Logos at the bottom of the label);
- Specifications of the inverter (From  $U_{DCmax}$  to Operation Ambient Temperature).

GROWATT PV Grid Inverter	
Model Name	Growatt 2000HF
Certificate Number	
$U_{DCmax}$	600V
$I_{DCmax}$	12A
$U_{DCrange}$	100V~600V
$V_{ACnorm}$	230V
$f_{ACnorm}$	50Hz
$P_{ACnorm}$	2000W
$I_{ACnorm}$	8.7A
PF	1.0
Protection Degree	IP65
Operation Ambient Temperature	-25~+60°C
AS 4777 & AS 3100	

Fig 2.2

## Mounting 3

### 3.1 Selecting Mounting Location

This is guidance for installer to choose a suitable installation location, to avoid potential damages to devices and operators.

- A** The wall selected to install the inverter must be strong and firm enough to support and bear the weight of the inverter for a long period time. (Refer to Chapter 10 Specifications)
- B** The location selected must be suitable for dimensions of Growatt HF. (Refer to 3.2 Dimensions and Required Clearances)
- C** Do not install the inverter on structures constructed of flammable or thermolabile materials.
- D** never install the inverter in environment of little or no air flow, or environment of dust. That may derate the efficiency of heat dissipation, which will derate the conversion efficiency of inverters.
- E** The Ingress Protection rate (IP level) is IP65 which means Growatt HF can be installed both indoors and outdoors.
- F** Do not expose the inverter to direct sunlight, in order to avoid the power and efficiency derating caused by excessive heating.
- G** The humidity of location should be within 0~95% and without condensation.

- H** The ambient temperature of the inverter should be  $-25^{\circ}\text{C}\sim+60^{\circ}\text{C}$ .
- I** The installation location must be freely and safely to get for operators or electricians at all times.
- J** Vertically installation and make sure the connection of inverter is downward. Never install horizontal and avoids forward and sideways tilt, refer to drawing below.
- K** Notice the minimum clearances of the inverter. (Refer to 3.2 Dimensions and Required Clearances)
- L** Do not install Growatt HF near television antenna or any other antennas and antenna cables, for possible interferences of inverter or cables.
- M** Do not install Growatt HF in living area, the noise caused by inverter might affect on daily life.
- N** For security reasons, DO NOT install Growatt HF in place where the children can reach.

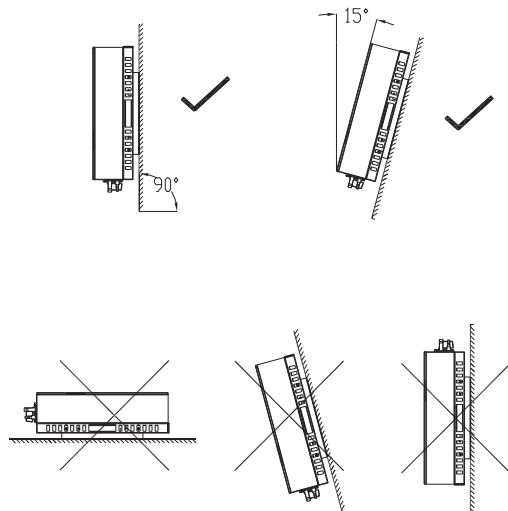


Fig 3.1

### 3.2 Dimensions and Required Clearances

Dimensions and weight :

Types	Height(H)	Width(W)	Depth(D)	Weight/kg
2000HF	452	450	130	17.06
2500HF	452	450	130	17.06
3000HF	452	450	130	17.06

Table 3.1

However, additional clearances are required to guarantee running and operation of Growatt HF inverters. Especially when several inverters are installed together, the clearances between inverters and objects are necessary.

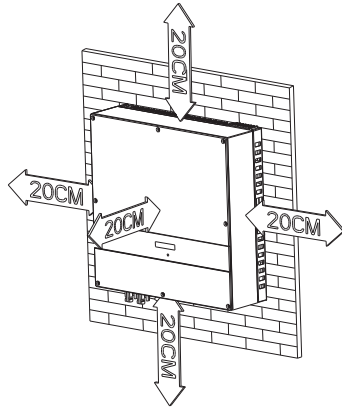


Fig 3.2

### 3.3 Mounting the Bracket

To install Growatt HF on the wall, installers should mount the bracket to the wall firmly as the first step.

#### Overview of the Bracket:

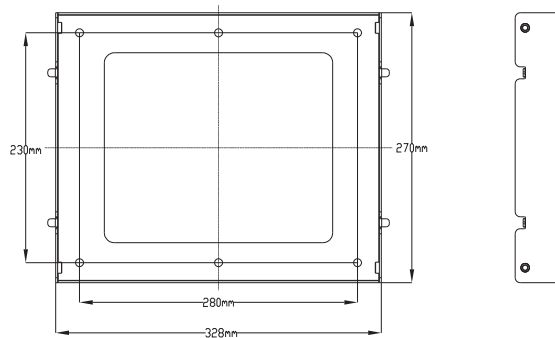


Fig 3.3

#### Steps:

- Drill holes for screws while use the mounting frame as Fig 3.4. 4 holes for Growatt 2000HF/2500HF/3000HF.
- Fix the mounting frame on the wall as Fig 3.5.

Notes: Never mount Growatt HF on the bracket before you are sure that the mounting frame is really firmly mounted on the wall after carefully checking.

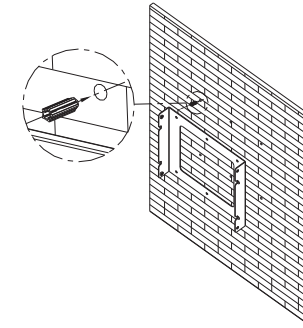


Fig 3.4

### 3.4 Mounting Growatt HF

After the bracket is firmly mounted on the wall, then install Growatt HF onto the bracket. Then mount the inverter on the bracket.

- Rise up the Growatt HF a little higher than the bracket. During the process please maintain the balance of Growatt HF.
- Hang Growatt HF onto the bracket through the match hooks on bracket and the back of Growatt HF.

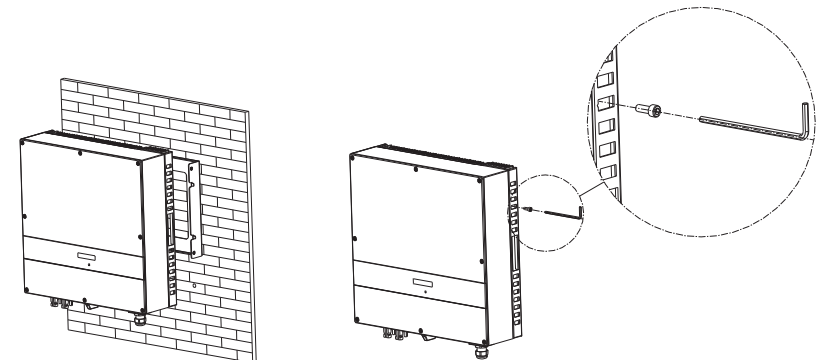


Fig 3.5

# 4 Electrical Connections

## 4.1 Wiring AC Output

- Measure the public grid voltage and frequency (Voltage: 230 Vac; Frequency: 50Hz/60Hz; in single phase).
- Open the breaker or fuse between the PV inverter and utility.
- Connect cables to relative bolts shown in figure below, specifications of cables must meet the requirements shown in the table follows;

Cable requirements:

Model	_(mm)	Area(mm <sup>2</sup> )	AWG no.
2000HF	_2.05	3.332	12
2500HF	_2.05	3.332	12
3000HF	_2.05	3.332	12

Table 4.1

Assemble the connector as figures shown below;

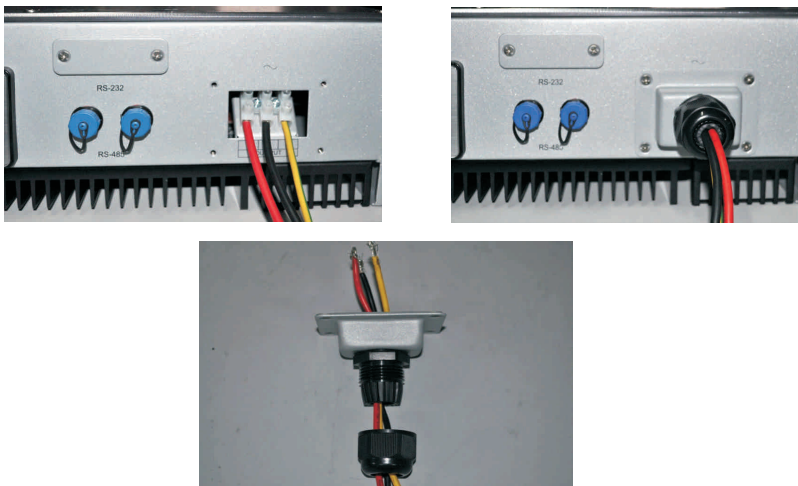


Fig 4.1

Notes: The connector must be screwed firmly. Before you operate and wire the AC output, please make sure that the AC breaker has been turned off (open).■

## 4.2 Wiring DC Input

- The open circuit voltage of each sting should never exceed 600 Vdc.
- The diagram drawing of DC side is shown as Fig 4.2, note that the connectors are in paired (male and female connectors). The connectors for PV arrays and inverters are MC (multi-connector) connectors;
- Connect the positive and negative terminal from the PV panels to positive and negative terminal on the PV inverter. The maximum string currents are varying from different inverter types;

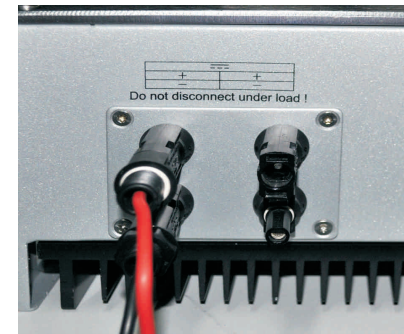


Fig 4.2

Type	Max. current
2000HF	12A/12A
2500HF	15A/15A
3000HF	15A/15A

Table 4.2



Cable requirements:

Model	_(mm)	Area(mm <sup>2</sup> )	AWG no.
2000HF	_2.05	3.332	12
2500HF	_2.05	3.332	12
3000HF	_2.05	3.332	12

Table 4.3

Notes: Under any conditions the total circuit current should never exceed the Max. Current.

Notes: To reduce the risk of electric shock, avoid touching the live components and treat the terminals carefully.

## 5 Commissioning

**A** When the PV panels are connected and their output voltage is greater than 100 VDC but the AC grid is not yet connected, the message on the LCD display produce the following messages in order: "Growatt Inverter"-> "No AC connection". The display repeats "No AC connection" and the LED will be red.

**B** Close the AC breaker or fuse between PV Inverter and grid. The normal operating sequence begins.

**C** Under normal operating conditions the LCD displays "Power: xxxx.xW". That is the power fed to the grid. The LED turns green.

**D** Finish commissioning.

### 6.1 Waiting Mode

- When the PV voltage is greater than 100V, Inverter will be powered up, and enters "waiting" mode.
- In this mode, inverter will check the system parameters. If the system is normal, and PV voltage is larger than 150Vdc, the inverter will attempt to connect to grid.

### 6.2 Normal Mode

In this mode, Growatt HF works normally and LED turns green.

- Whenever the DC voltage is higher than 150 Vdc, Growatt HF inverter converts power to grid as generated by PV panels;
- Whenever the DC voltage is lower than 120 Vdc, Growatt HF inverter will work in waiting state and attempt to connect the grid. In waiting state Growatt HF consumes just enough power generated by PV panels to monitor the internal system status;

Notes: The inverter starts up automatically when DC power from PV panels is sufficient (100 Vdc). ■

### 6.3 Fault Mode

The internal intelligent controller can continuously monitor and adjust the system status. If Growatt HF finds any unexpected conditions such as system fault and inverter fault, the fault messages will be displayed on LCD screen. In fault mode the LED turns red.

Notes: Detailed fault information refers to Chapter 9.2 ERROR messages display on LCD.

### 6.4 Shutdown Mode

Growatt HF automatically stop running during periods of little or no sunlight. In shutdown mode Growatt HF won't take any power from the grid or panels, and LCD and LED turns off.

Notes: If the PV string DC voltage is too low ( $\leq 70$  Vdc), the inverter will also turn to Shutdown Mode.

# 7 Display and Messages

## 7.1 LCD display

Once the PV power is sufficient, inverter displays information as the following sequence.

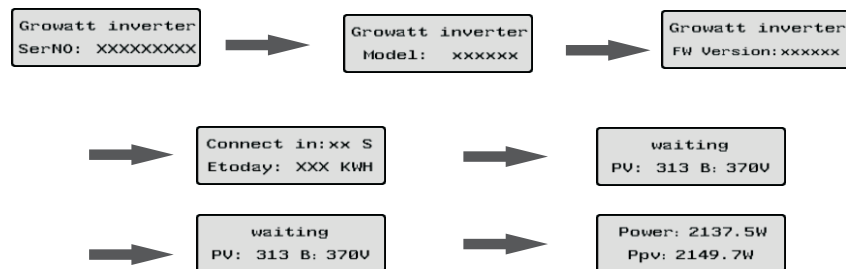


Fig 7.1

The first line of LCD display shows different status of the inverter as Table 7.1.

### The First Line of LCD

STATUS	DISPLAY CONTENT	REMARK
Waiting	Waiting	When the input voltage between 100V and 150V at start up, inverter will display waiting.
	Standby	When the input voltage fall 100V, inverter will display standby. (less than 70V, the inverter will shutdown)
	Connect in xxS	System checking
Normal	Reconnect in xxS	System checking
	Connect OK	Connecting to the grid
	Power: xxxx.xW	Inverter output power in normal modeg

STATUS	DISPLAY CONTENT	REMARK
Fault	Error: xxx	System fault
Auto Test	Auto Testing	Protecting functions' auto test
Programming	Programming	Firmware update

Notes: In fault mode, there can be different error messages displayed in the LCD due to different faults. Please refer to Chapter 9 for reference.

The first line of LCD display can be changed by knock on the LCD screen. The second line automatically changes in the interval of 2 or 4 seconds as Table 7.2.

CYCLE DISPLAY	DISPLAY TIME/S	REMARK
Power : 2013.4W model: P1U1M3S3	2	Model number of the inverter
Power : 2016.8W FW Version: H. 1. 0	2	Firmware version of the inverter
Power : 2012.8W SerNO: DK00000000	2	Serial number, which is also shown on the label of the inverter
Power : 2009.6W Etoday: 7.1kWh	4	Energy generated today

CYCLE DISPLAY	DISPLAY TIME/S	REMARK
<div style="border: 1px solid black; padding: 5px;">           Power : 2017.0W            Ea11 : 90KWH         </div>	4	Total generated energy since installation
<div style="border: 1px solid black; padding: 5px;">           Power : 2123.4W            Ppv : 2123.4W         </div>	4	PV input power
<div style="border: 1px solid black; padding: 5px;">           Power : 2103.4W            PV: 313 B: 370V         </div>	4	PV voltage (PV) and Bus voltage (B)
<div style="border: 1px solid black; padding: 5px;">           Power : 2016.2W            AC: 230V F: 50.0Hz         </div>	4	Grid voltage (AC) and frequency (F)
Enable auto test <div style="border: 1px solid black; padding: 5px;">           Power : 2021.8W            Enale Auto Test         </div>	4	Enable auto test function
Set Language <div style="border: 1px solid black; padding: 5px;">           Power : 2019.5W            Set Language         </div>	4	Set display language
Set contrast <div style="border: 1px solid black; padding: 5px;">           Power : 2008.2W            Set LCD Contrast         </div>	4	Set LCD contrast
Set COM Address <div style="border: 1px solid black; padding: 5px;">           Power : 2019.5W            COM Address: Move         </div>	4	Set communication address

## 7.2 LCD control


To save power, the LCD display's background light will turn off automatically in 10 seconds. Single knock will turn on the background light. The display on the inverter can be controlled by knocking the sound control panel in front of it.



Fig 7.2





## 7.3 Parameters Setting

Users can use sound control function to change the display language and luminance of the display, enable auto-test function and choose utility model.





Note:  Single knock

  Double knock

Language setting

 make the current display become bright →  to "set language" →  enter "language: English" →  to select the language. After setting, you need to wait a few seconds until the display becomes dark, then the setting will be saved.

Set luminance of LCD display

 make the display become bright →  to "set LCD contrast" →  enter "LCD contrast 2" →  to select the luminance. You also need to wait a few seconds after selecting. When the display becomes dark, the change is saved.

Set communication address

make the display become bright → to “COM Address: xx” →  
change the address to set model → to set address. After selecting, you need  
to wait a few seconds until the display becomes dark, then the change is saved.

Run auto test function

make the display become bright → to “Enable Auto test” →  
enter “Waiting to start” → start auto test. and then waiting several minutes  
for the test result.

## 8 Communication

### 8.1 ShineNet

ShineNet is a monitoring software applied to monitor Growatt inverters via RS232 port or Bluetooth module. With the special designed functions and friendly compact UI, it can comprehensively meet users' requirements for system monitoring and bring unprecedented user experience.

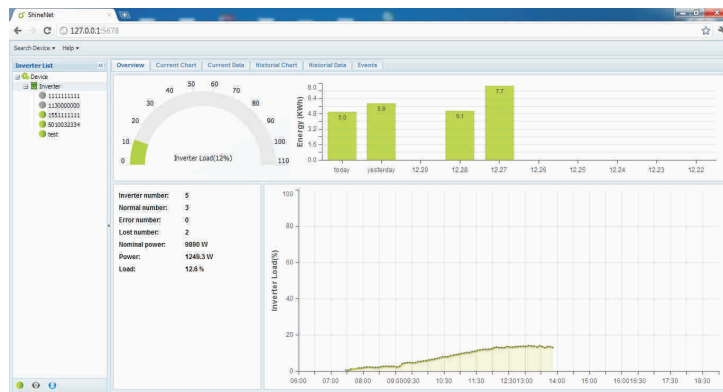


Fig 8.1

Features:

- Monitor and record current data and of inverters.
- Record historical data.
- Monitor and record event information of inverter.
- Connect computer and inverter via RS232 and RS485 port (wire connection) or Bluetooth module (wireless connection).
- Remote access available for local area network.

Notes: Users are able to monitor the inverter after the setting of software. Detailed information about setting and functions refer to the ShineNET Manual.

Notes: you can download the ShineNet YN2.0 from: <ftp://113.106.58.169>, the user name is `ftpguest` and Password is `ftpguest`

### 8.2 ShineVision

ShineVision is a wireless monitoring device, which consists of a power monitor and a number of transmitters, and one shinevision can monitoring 1 to 6 inverters. The transmitters transmit the running data collected from photovoltaic inverters to the monitor and display the data onto the monitor screen, including data of generated energy, the gross generated energy and the generation income obtained from the above-mentioned data through some simple calculations, indoor temperature, date and time, as well as CO2 emissions.



Fig 8.2

#### Features:

- Monitor and transmitter communicate via wireless communication technology.
- External transmitter, with IP65 waterproof and dustproof.
- A monitor can simultaneously communicate with six transmitters.
- Communication distance between monitor and transmitter : 30 meter.
- Power supply option: built-in battery slot, an external DC power supply.
- Easy installation, and convenient to use it.

Notes: The Monitor should be kept indoor. For detailed information, please refer to ShineVision Manual.

### 8.3 ShinePano

It is the latest intelligent monitoring master, specially designed for solar power plant. Using stable Linux operating system with high-speed CPU, it can smartly present solar system status through friendly user interface on 8-inch large color touch screen.



Fig 8.3

#### Features:

- A multi-functional and high-performance communication data logger; Keep user informed of the system's status at any time.
- Massive storage with flexible parameters setting, system information management, error prompt and record.
- Collects data and uploads information over the internet in near real-time to Growatt Shine Server platform.
- Connect with inverter: RS485 and Zigbee (Wireless module).
- 8 inches touch screen(\*option): support hand writing and USB mouse.

### 8.4 ShineWebBox

It is a cost-effective and compact monitoring device, specially designed for solar power plant. Using stable Linux operating system with high-speed CPU, it can smartly record your system features. ShineWebBox Provides local storage, easy wireless and TCP/IP configuration, and presents plant data over Internet.



Fig 8.4

### Features:

- A multi-functional and high-performance communication data logger; Keep user informed of the system's status at any time.
- Massive storage with flexible parameters setting, system information management, error prompt and record.
- Collects data and uploads information over the internet in near real-time to Growatt Shine Server platform.

## 9 Trouble Shooting

Our quality control program assures that every inverter is manufactured to accurate specifications and is thoroughly tested before leaving our factory. If you have difficulty in the operation of your inverter, please read through the following information to correct the problem.

### 9.1 General question

For General question, please visit [www.ginverter.com](http://www.ginverter.com), and find the Q&A column.

### 9.2 Error Messages displayed on LCD

An error message will be displayed on the LCD screen when a fault occurs. The faults consist of system fault and inverter fault.

You may be advised to contact Growatt in some situation, please provide the following information.

Information concerning the inverter:

- Serial number
- Model number
- Error message on LCD
- Short description of the problem
- Grid voltage
- DC input voltage
- Can you reproduce the failure? If yes, how?
- Has this problem occurred in the past?
- What was the ambient condition when the problem occurred?

Information concerning the PV panels:

- Manufacturer name and model number of the PV panel
- Output power of the panel
- Number of panels in each string

#### 9.2.1 System fault

System fault (system faults are mainly caused by system instead of inverter, please check the items as instructed below before replacing inverter)

Error message	Description	Suggestion
No AC Connection	No utility grid connected or utility grid power failure.	1.Check AC wiring, especially the ground wire. 2.Contact Growatt
AC V Outrange	Utility grid voltage is out of permissible range.	1.Check grid voltage. 2.If the error message still exists despite the grid voltage being within the tolerable range, contact Growatt.

Error message	Description	Suggestion
AC F Outrange	Utility grid frequency out of permissible range.	1.Check grid frequency. 2.If the error message is displayed despite the grid frequency being within the tolerable range, contact Growatt.
GFDI Fault	Leakage current too high	1. If panel PV- is grounded, check the impedance between the earth and the PV-, the impedance must be less than 100Ω.2. If panels PV+ is grounded, check the impedance between the earth and the PV+, the impedance must be less than 100Ω.3. If the Error message still exists despite the above checks passed, contact Growatt.
PV Voltage High	The DC input voltage is exceeding the maximum tolerable value.	Disconnect the DC wire immediately.
Auto Test Failed	Auto test didn't passed	Reboot inverter.

### 9.2.1 Inverter fault

Error code	Meanings	Suggestion
Error: 100	2.5V reference voltage fault	Contact Growatt.

Error code	Meanings	Suggestion
Error: 101	Communication fault Slave processor can't receive data from Master processor.	1.Restart inverter 2.If error message still exists, contact Growatt.
Error: 102	Consistent fault. Data received by Master and Slave processor are different. The reason can be utility grid voltage or frequency change frequently.	1.Restart inverter. 2.If error message appears frequently or error message still exists after replacement, check utility grid. If you require help, contact Growatt. 3.If error message still exists, contact Growatt.
Error: 116	EEPROM fault	Contact Growatt.
Error: 117	Relay fault	Contact Growatt.
Error: 118	HCT fault	Contact Growatt.
Error: 120	Init model fault	Contact Growatt
Error: 121	Communication fault. Master processor can't receive data from Slave processor.	1.Restart the inverter 2.If error message still exists, contact Growatt.
Error: 122	Bus voltage fault	Contact Growatt
Error: 123	Auto Test Fail	Restart inverter.

# 10 Specifications

	Growatt 2000HF	Growatt 2500HF	Growatt 3000HF
<b>Input Data</b>			
Max. DC power	2200W	2700W	3200W
Max. DC voltage	600V	600V	600V
Start voltage	150V	150V	150V
DC nominal voltage	360V	360V	360V
PV voltage range	100V - 600V	100V - 600V	100V - 600V
Number of MPP trackers /strings per MPP tracker	1 / 2	1 / 2	1 / 2
Max. input current / per string	12A/12A	15A/15A	15A/15A
<b>Output (AC)</b>			
Nominal AC output power	2000W	2500W	3000W
Max. AC power	2000W	2500W	3000W
Nominal output current	8.7A	10.8A	13A
Max. output current	10A	12A	14,3A
Max. output current	230V;207V - 263V	230V;207V - 263V	230V;207V - 263V
AC grid frequency; range	50,60HZ;±5 Hz	50,60HZ;±5 Hz	50,60HZ;±5 Hz
Phase shift (cosφ)	>0.99	>0.99	>0.99
THDI	<3%	<3%	<3%
AC connection	Single phase	Single phase	Single phase
<b>Efficiency</b>			
Max. efficiency	96.5%	96.4%	96.3%
Euro - eta	95.5%	95.5%	95.5%
MPPT efficiency	99.5%	99.5%	99.5%
<b>Protection Devices</b>			
DC reverse polarity protection	yes	yes	yes
AC short-circuit protection	yes	yes	yes
Ground fault monitoring Grid monitoring	yes	yes	yes
Integrated all-pole sensitive leakage current monitoring unit	yes	yes	yes

	Growatt 2000HF	Growatt 2500HF	Growatt 3000HF
<b>General Data</b>			
Dimensions (W / H / D) in mm	440 / 455 / 135	440 / 455 / 135	440 / 455 / 135
Weight	18KG	18KG	18.5KG
Operating temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C	-25 °C ... +60 °C
Continuous full output power temperature range	-25 °C ... +45 °C	-25 °C ... +45 °C	-25 °C ... +45 °C
Noise emission (typical)	≤25 dB(A)	≤25 dB(A)	≤25 dB(A)
Consumption: operating (standby)/ night	< 5W / < 0.5 W	< 5W / < 0.5 W	< 5W / < 0.5 W
Topology	transformer	transformer	transformer
Cooling concept	No fan	No fan	No fan
Installation: Indoors / Outdoors	yes / yes	yes / yes	yes / yes
Altitude	Up to 2000m without power derating	Up to 2000m without power derating	Up to 2000m without power derating
<b>Features</b>			
DC connection: Terminals	yes	yes	yes
AC connection: Terminals	yes	yes	yes
LCD display	yes	yes	yes
Interfaces: Bluetooth/ RS485/RS232	opt / opt / yes	opt / opt / yes	opt / opt / yes
Warranty: 5 years / 10 years	yes / opt	yes / opt	yes / opt
<b>Certificates and Approvals</b>			
SAA, UL, CE / TUV, EN50178, VDE0126-1-1, EN61000-3-2/EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4, IEC-62109, DK5940, G83, RD1663			



# 11 Growatt Factory Warranty

Applies solely to the following products: Growatt1500, Growatt2000, Growatt3000, Growatt4400, Growatt5000, Sungold1500, Sungold2000, Sungold3000, Sungold5000, Growatt3600MTL, Growatt4200MTL, Growatt5000MTL, Growatt2000HF, Growatt2500HF, Growatt3000HF, Growatt10000UE, Growatt12000UE, Growatt18000UE, and Growatt 20000UE.

For the above named products, you receive a Growatt factory warranty valid for 5 years from the date of installation and no more than five and a half years from the delivery date from Growatt New Energy Co., Ltd.

This warranty includes all defects of design, components and manufacturing.

## Excluded from warranty are damages due to:

- Breaking the product seal (opening the casing) without proper approval
- Transport damage
- Incorrect installation or commissioning
- Failure to observe the user manual, the installation guide, and the maintenance regulations
- Unauthorized Modifications, changes, or attempted repairs
- Incorrect use or inappropriate operation
- Insufficient ventilation of the device
- Failure to observe the applicable safety regulations
- Force majeure (e.g., lightning, over voltage, storm, fire)

## Warranty condition

If a device becomes defective during the agreed Growatt factory warranty period and provided that it will not be impossible or unreasonable, the device will be, as selected by Growatt:

- repaired by Growatt, or
- repaired on-site, or
- exchanged 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 this case, you do not receive a new certificate since your entitlement is documented at Growatt.

Excessiveness in the meaning above exists in particular if the cost of the measures for Growatt would be unreasonable.

- in view of the value that the device would have without the defect,
- taking into account the significance of the defect, and
- after consideration of alternative workaround possibilities that Growatt customers could revert to without significant inconvenience.

# 12 Contact

If you have technical problems concerning our products, contact your installer or Growatt. During inquiring, please provide below information:

1. Inverter type
2. Modules information
3. Communication method
4. Serial number of Inverters
5. Error code of Inverters
6. Display of inverters