Growatt
powering tomorrow

Installation
&
Operation Manual

List

1 Overview

1.1 Product Overview

This manual is aimed at providing sufficient information and installing instruction for consumers buying Shenzhen Growatt New Energy Technology Co.,Ltd (short as Growatt) MAX Series solar inverters. Please read this manual carefully before using the MAX series inverters and store the manual in a reachable place for an authorized technician. No further notice if there is any change in this manual.

1.2 Applicable Personnel

Only qualified electrical technicians are allowed to install MAX series inverter. With read- ing through this manual and following all the precautions, qualified electrical technician can properly install MAX serial inverter, finish trouble shooting and communication setti- ngs.
If there is any problem during the installation, the installer can either log on www.ginverter.com and leave a message or call consumer service hotline +86 755 27471942.

2 Safety Precautions

2.1 Safety Overview

1>Before installation please make sure reading through this manual, any damage caused by improper installation, Growatt reserve the right to disclaim any warranty.
2>All the operations and connections must be done by trained qualified electrical techn- ician.
3>During installation except for terminals, do not touch any inside part of the inverter
4>All the electrical connections must meet local country's safety regulations
5>If you need maintenance for this inverter, please contact our local authorized installi- ng and maintenance technician.
6>You must get the local power supplier's permit before connecting this inverter to the grid.

Handle Process :

⚠️ WARNING	•The inverter is heavy,please treat with care while handling,in case of crushing injury.

Installation :

⚠️ NOTICE	•Before installation,please read through this manual,any damage cause by improper installation,Growatt reserve the right to disclaim any warranty.
⚠️ DANGER	•Ensure that the MAX is not connected to a power supply and is not power on before installation.

⚠️ WARNING	•Please follow this installation manual as installation condition environ- ment,space and so on. •Please install the inverter in a dry and ventilated environment,otherwi- se may affect the performance of the inverter. •Please follow the installation procedures in this manual.

Electrical Connections:

⚠️ DANGER	•Before electrical connection, please ensure the inverter DC switch is at " OFF" also disconnect AC switch, otherwise the high voltage from inverter may cause life risk. •Only trained authorized electrical technician can do the electric connection also please follow the connection procedures in this manual along with local country's regulations. •High voltage may cause electric shocks and serious injury please do not touch the inverter. •Please do not store inverter in area with flammable and explosive material.
⚠️ WARNING	•Each inverter must install one AC breaker; AC breaker is forbidden to share with other inverters. •It is forbidden to add load between inverter and breaker. •If the cable is thick, after tightening the cable do not shake it and ensure the cable is well-connected and then start the inverter. Loose connection may cause overheat. •Before connecting between PV panels and inverter please ensure the positive and negative poles are correct connected.

Maintenance and replacement:

⚠️ DANGER	•Must be installed by trained and authorized electrical technician and accurately follow this manual. •Please disconnect the DC and AC switch for at least five minutes, all the operations should be carried after power disconnection. •If there is PV isolation low alarm, the inverter case may be unground- ed, please do not touch the inverter case. •High voltage of inverter may result in electric shock.
⚠️ WARNING	•For better cooling purpose, please regularly clean the fans. •Do not use air pump to clean the fans, cause it may damage the fans.

Other：

i	•After you receiving the inverter please check the packing materials for damage,if there is any damage please contact your supplier.
⚠️ WARNING	•The Max. PV input voltage should not exceed 1100V. •For the disposed inverter,the consumer should dispose it according to local disposal rules for electrical equipment waste.

2.2 Symbol Conventions

Symbol	Description
⚠️ DANGER	Indicates an imminently hazardous situation which,if not avoided,will result in serious injury or death.
⚠️ WARNING	Indicates potentially hazardous situation which,if not avoided, will result in serious injury or death.
⚠️ CAUTION	Indicates potentially hazardous situation which,if not avoided, will result in minor or moderate injury.
⚠️ NOTICE	Indicates certain hazardous situation which,if not avoided,will rusult in property damage.
i	Reminds operator to read installation manual before operating or installing inverter.

2.3 Lable Description

Symbol	Name	Meaning
⚡	High Voltage Electric Shock	Inverter operating with high voltage,any operation regarding inverter need to be done by trained and authorized electrical technician.
〽️	Burn Warning	Do not touch a running inverter cause it generates high temperature on the case.
⏚	Protective Grounding	Connect inverter to grounding bar.
⚡⟳	Delay discharge	Residual voltage exists after the inverter is powered off,it takes 5 minutes for the inverter to discharge to the safe voltage.
📖	Read the installation manual	Reminds operator to read installation manual before operating or installing inverter.
---	DC	Means this terminal is for DC side.
∼	AC	Means this terminal is for AC side.
CE	CE Mark	The inverter complies with the requirements of the applicable CE guidelines

3 Product Introduction

3.1 Appearance

Front view:

A

B

Fig 3.1

Bottom view(Termial):

For 90-100K capacity add
another string of PV terminal

F G H L

C

D E I K J

Fig 3.2

Side view:

A
M

N
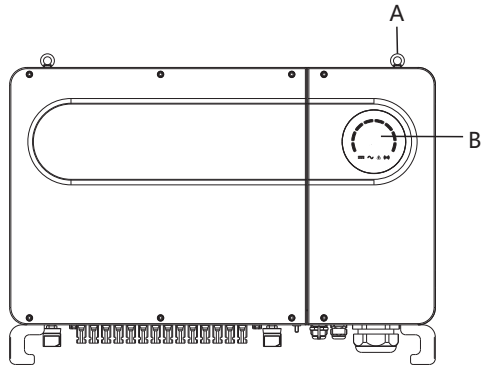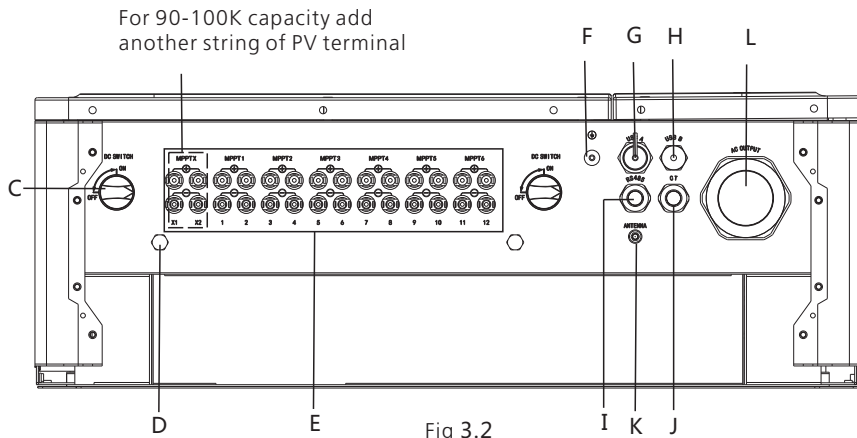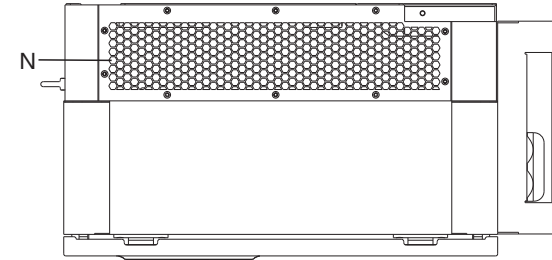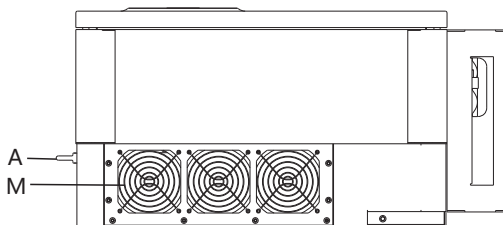
Fig 3.3

Mark	Description	Mark	Description
A	Ring	H	USB_B port
B	LED	I	RS 485 cable waterproofe head
C	DC switch	G	Outside CT port
D	Vent valve	K	Antenna port
E	PV terminal board	L	AC cable waterproof head
F	Safety ground screw	M	Fan
G	USB_A port	N	Heatsink

Notice: For inverters with 90-100K capacity, need add another string of PV terminal.

3.2 Basic Data

Model	Size (mm)			Weight (kg)
	Width	Height	Thickness	
50-80k Inverters	860	600	300	79.5
50-80k Inverter with package	1035	735	465	95
90-100k Inverters	860	600	300	79.5
90-100k Inverter with package	1035	735	465	95

3.3 Nameplate

Growatt
PV Grid Inverter

Model name	MAX 50KTL3 LV
Max.PV voltage	1100 d.c.V
PV voltage range	200-1000 d.c.V
PV Isc	32 d.c.A∗6
Max. input current	25 d.c.A∗6
Max. output power	50000 W
Max. apparent power	55500 VA
Nominal output voltage	3W/N/PE 230 a.c.V
Max output current	80.5 a.c.A
Nominal output Frequency	50 Hz
Power factor range	0.8leading~0.8lagging
Safety level	Class I
Ingress Protection	IP65
Operation Ambient Temperature	-25°C - +60°C

VDE0126-1-1

Made in China

Note: Other models of MAX series share the same label design with MAX50KTL3 LV, only with different model name and parameters, detail parameter please refer to specification in Chapter 10.

3.4 Working Principle

MAX inverter's working principle is like following:

1>The PV panels gather solar to generate DC power to inverter.

2>With input current detection circuit, it can monitor all the PV panels' working status and use MPPT to track the maximum power point.

3>With inverter circuit change DC power to AC power, and feed power back to grid per grid reuqirement.

4>With output isolation relay can isolate AC output and grid, if anything goes wrong on either inverter side or grid side, isolation relay can disconnect inverter immediately.

On-grid connection system diagram:

A B C D
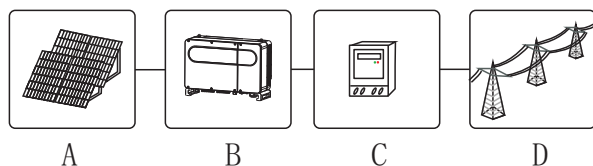
Fig 3.4

symbol	Description	symbol	Description
A	PV string	C	Electric meter
B	Inverter	D	Gird

3.5 Inverter Storage

1>Do not unpack the Inverter and store it in a ventilation dry place .

2>Keep the storage temperature at -25℃ - +60℃ and humidity at 0-95%.

3>A maximum of four inverters with package can be stacked.

4>If the inverter has been long-term stored, inspections and tests should be conducted by qualified personnel before it is put into use.

After being stored for a month or longer, the inverter's time and date could be wrong, you need set the time and date before using, for more details please refer to Chapter 7.1 inverter commissioning.

3.6 Grid Types

The MAX series, 50-80KTL3 LV inverters connect to the grid like following drawing 3.5,60- 80KTL3 MV inverters connect to the grid like following drawing3.6.90-100KTL3 MV inverters connect to the grid like following drawing 3.7.
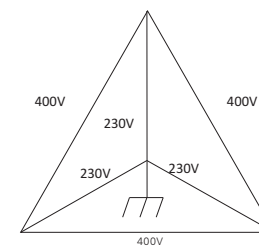
Fig 3.5
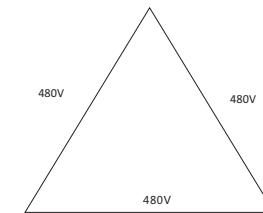
Fig 3.6
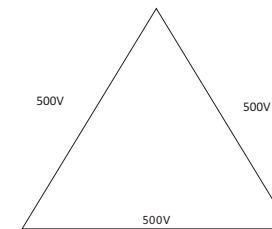
Fig 3.7

Checking before installation
1>Before unpacking the inverter, check the outer packing materials for damage.
2>After unpacking the inverter, check that the contents are intact and complete. If any damage is found or any component is missing, contact your supplier.

Package contents:
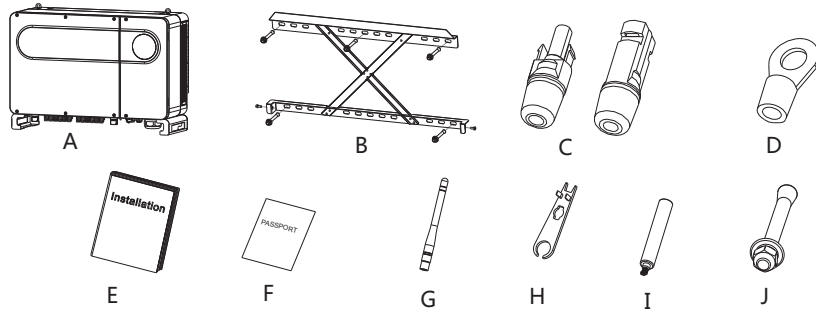
Fig 4.1

Mark	Descriptions	Number
A	Inverter	1
B	Wall mount	1
C	PV+ terminal,PV- terminal	12/12
D	SC50-10	5
E	Installation manual	1
F	Warranty card	1
G	Antenna	1
H	Removal tool of PV terminals	1
I	Removal handle (opt)	2
J	Wall mount screw	5

Notice: Though the outer package of inverter is firm, but please treat it with care.

| ⚠ CAUTION	•To prevent device damage and personal injury, keep balance when moving the inverter because it is heavy. •Do not place the inverter with its wiring and signal terminals at the bottom contacting with floor or any other object because the terminals are not designed to support the weight of inverter. •When placing inverter on the floor, put foam or paper under the inverter to protect its cover.

5.1 Basic Installation Requirements

A. Ensure that the installation wall is solid enough to bear the inverter.(Inverter weight please refer to installation manual Chapter3, 3.2)
B. There must be enough installation space to fit the size of inverter..
C. Do not install inverter on flammable or heat-intolerant buildings.
D. This inverter is IP 65 protection, you can install it indoor or outdoor.
E. To avoid inverter performance de-rate due to the over heat, please do not expose the inverter under direct sunlight.
F. The installation humidity should be from 0-95%.
G. The surrounding temperature of inverter should be from -25℃ - +60℃
H. Inverter should be installed in a vertically or rear tilted surface, please refer to following drawings.
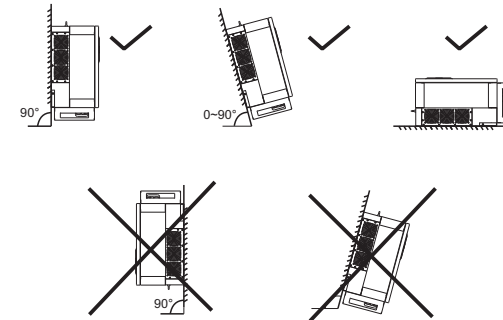
Fig 5.1

I. To ensure the inverter can work smoothly and easy for personnel to operate, please notice there is sufficient space for inverter, refer to following drawing :
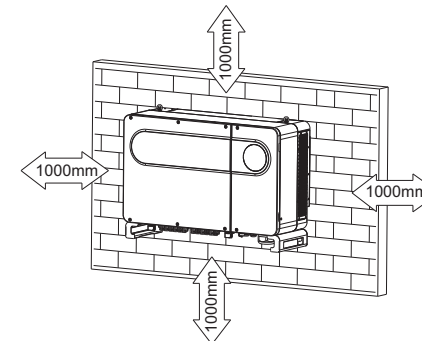
Fig 5.2

J. Do not install inverter close to strong electromagnetic signal.
K. Install the inverter out of children's reach.

5.2 Installation Environment Requirements

A. Although the inverter's protection level is IP 65, to extent inverter lifespan you still need to avoid rain and snow, please refer to following drawings.
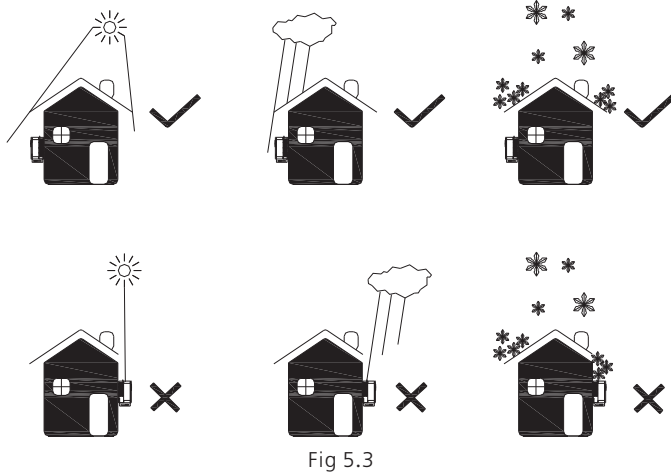
Fig 5.3

B. To reduce the de-rate performance of the inverter and extend inverter's life span, we strongly recommend you install an awning, for the distance between an awning and inverter, please refer to following drawing.

500mm
306mm   500mm
2000mm
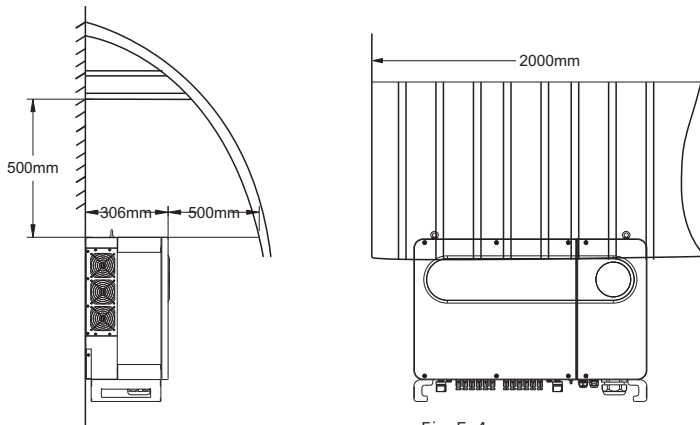
Fig 5.4

C.When you install multiple inverters on one surface, inverters should be installed as following drawing.

1000mm   1000 mm
1000mm
1000mm
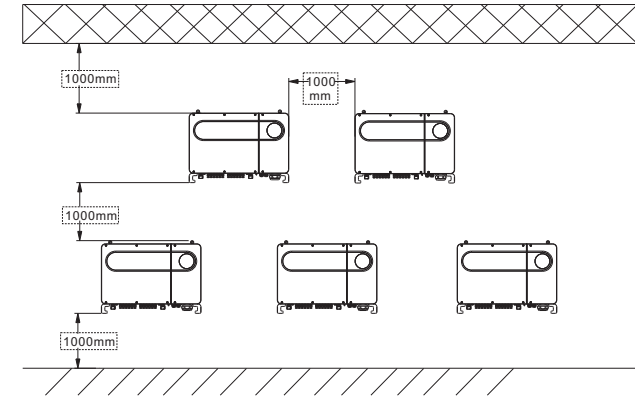
Fig 5.5

D. Do not install inverter into an enclosed space like following drawing :
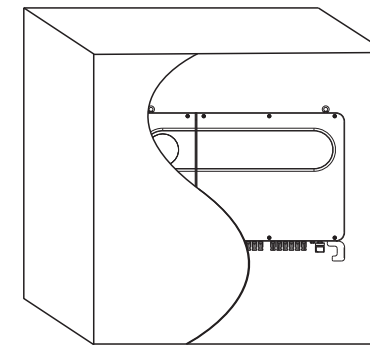
Fig 5.6

5.3 Moving Requirements

⚠ WARNING	•The inverter is heavy, please move it with care and keep balance to avoid personnel injury. •Do not place the inverter with its wiring and signal terminals at the bottom contacting with floor or any other object because the terminals are not designed to support the weight of inverter.

Plan 1 :
Moving steps :
1>Like following drawing5.7, use a rope to tie at ring and handle, lift the inverter from package and move to installation position.
2>When you are moving the inverter, please keep the balance.
Notice: There is front and bottom mark on the package.

Plan 2(Optional):
Moving steps
1>Just as following Fig5.8, 4-6 persons lift the inverter out of package, swap the ring to moving handles.
2>When you are moving the inverter, please keep the balance.
Notice: There will be front and bottom mark on the package.
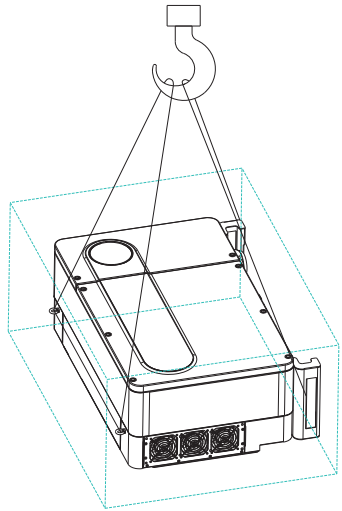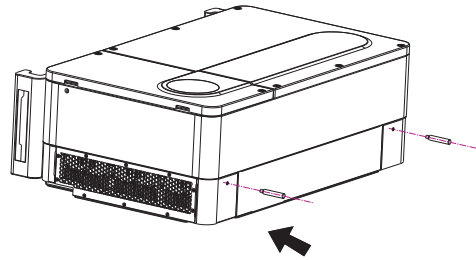
Fig 5.7   Fig 5.8

5.4 Wall Mount Bracket Installation

Before install the inverter you need install the wall mount bracket so that the inverter can be firmly installed on the wall.
Wall mount plan:
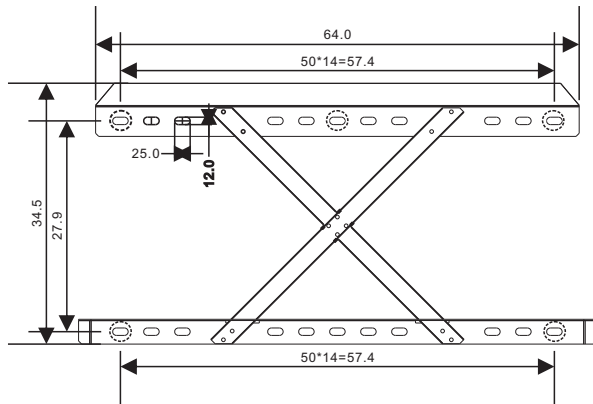
Fig 5.9

Steps:
1>Use the wall mount plate as a template drill holes on the wall and put in expansion bolts.
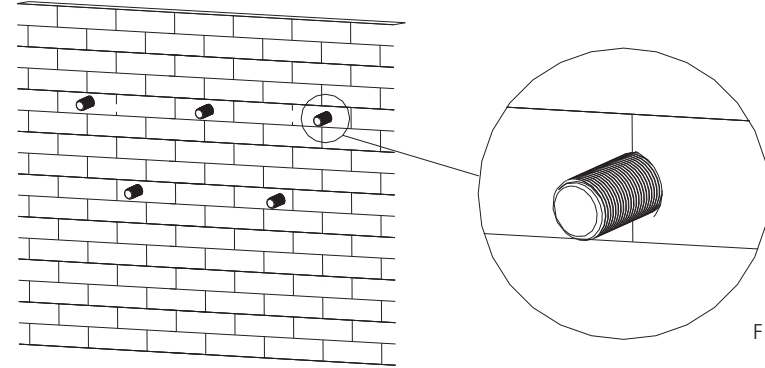
Fig 5.10

Note: Expansion bolt should be installed on solid walls with at least 100mm thickness.

2>Follow the following drawing put the bolt to install the wall mount plate on the wall.
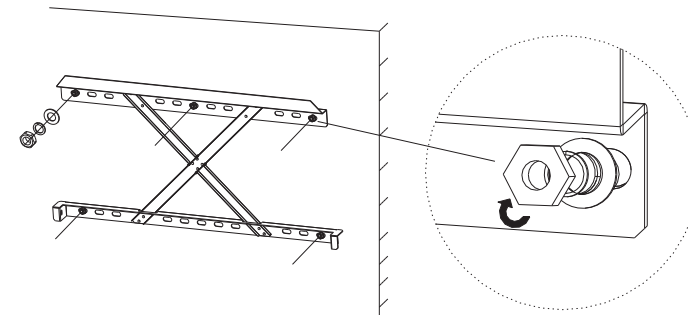
Fig 5.11

Notice: Do not install inverter unless you have confirmed the wall mount plate has been firmly installed on the wall.

5.5 Installing the Inverter

After the wall mount bracket has been firmly installed on the wall , put the inverter on that plate.
Steps:
1>Use the rope(must meet the weight requirement of the inverter) through two rings and lift the inverter up, just as following Figure.
2>Before hanging the inverter on the wall mount bracket use screws to fix the inverter and please keep the inverter balance.
3>Check the inverter if it is firm enough and lock all the screws.

Fig 5.12

Fig 5.13

Fig 5.14

6.1 Connection on AC side

DANGER	•Before electrical connection, please ensure the inverter DC switch is at " OFF" also disconnect AC switch, otherwise the high voltage from inverter may cause life risk. •Only trained authorized electrical technician can do the electric connection also please follow the connection procedures in this manual along with local country's regulations. •High voltage may cause electric shocks and serious injury please do not touch the inverter. •Please do not store inverter in area with flammable and explosive material.
WARNING	•Each inverter must install one AC breaker, AC breaker is forbidden to share with other inverters. •It is forbidden to add load between inverter and breaker. •If the cable is thick, after tightening the cable do not shake it and ensure the cable is well-connected and then start the inverter. Loose connection may cause overheat.

Preparation before connection:
1>Disconnect inverter DC switch and AC breaker or switch
2>When you lock the AC cable's screw the torque force should be 9N•m.
3>Measure the grid voltage and frequency, please refer to chapter 10.
AC breaker specification :

Inverter model	Breaker model
MAX 50KTL3 LV	100A/400Vac
MAX 60KTL3 LV	125A/400Vac
MAX 70KTL3 LV	160A/400Vac
MAX 80KTL3 LV	160A/400Vac
MAX 60KTL3 MV	100A/500Vac
MAX 70KTL3 MV	125A/500Vac
MAX 80KTL3 MV	160A/500Vac
MAX 90KTL3 MV	160A/500Vac
MAX 100KTL3 MV	160A/500Vac

Cable specification:

Inverter Model	Cross-sectional area(mm²)	Recommendation (mm²)	Cable outer diameter(mm)
MAX 50KTL3 LV	25-35	35	10.9
MAX 60KTL3 LV	25-35	35	10.9
MAX 70KTL3 LV	35-50	50	12.8
MAX 80KTL3 LV	35-50	50	12.8
MAX 60KTL3 MV	25-35	35	10.9
MAX 70KTL3 MV	25-35	35	10.9
MAX 80KTL3 MV	35-50	50	12.8
MAX 90KTL3 MV	35-50	50	12.8
MAX 100KTL3 MV	35-50	50	12.8

Notice: The cable must be unbroken.

AC side connection steps:

⚠️ **WARNING** •If the cable is thick, after tightening the cable do not shake it and ensure the cable is well-connected and then start the inverter. Loose connection may cause overheat.

1>Following drawing shows inverter's AC terminal, L1, L2, L3 are three live lines, N is Neutral line.
Notice: The screw is M8 screw
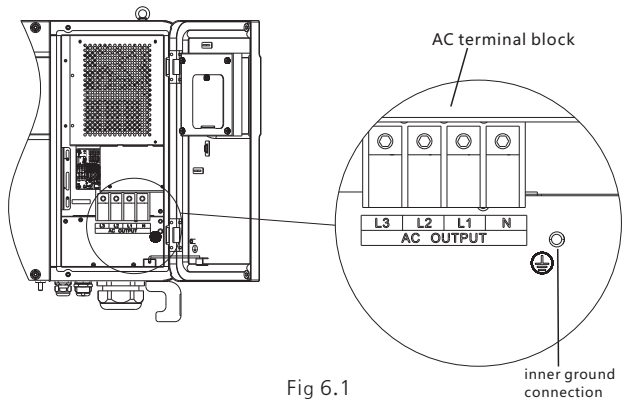
Fig 6.1

2>Firstly, unscrew the waterproof cover, then put the cable through the cover, pile the cable base on terminal size(17mm recommended), use a wire stripper to connect cable and terminal, tighten all the terminal screws.
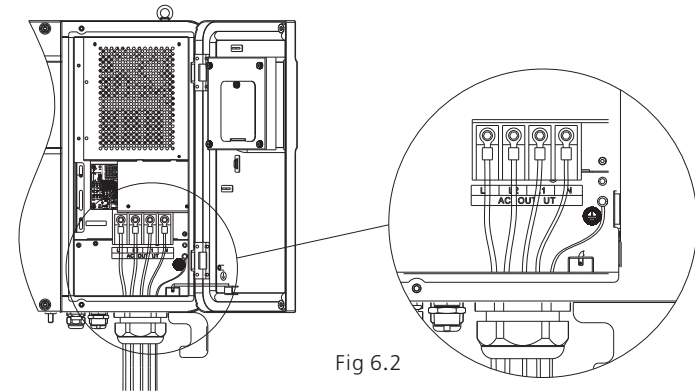
Fig 6.2

Diagram of how to install a terminal:

Fig 6.3

3>Put the water proof cover back to the inverter and fill the cover with fireproof mud, just as following drawing.

⚠️ **WARNING** •Must tighten the waterproof cover, otherwise there will be a risk of water leakage.
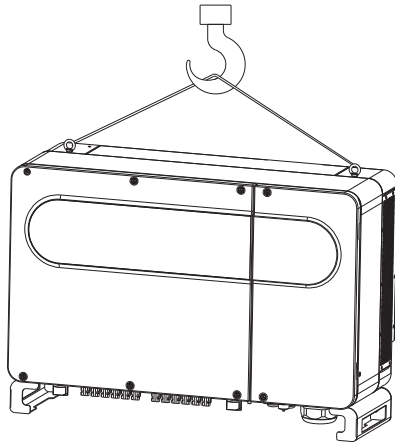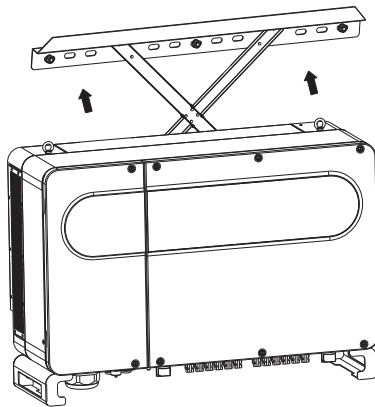

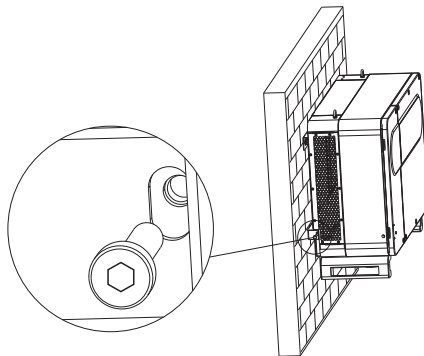
Tighten waterproof cover

Fig 6.4

6.2 Connection on DC side

<table>
<tr><td>⚠️
DANGER</td><td>•Before electrical connection, please ensure the inverter DC switch is at "OFF" also disconnect AC switch, otherwise the high voltage from inverter may cause life risk.
•Only trained authorized electrical technician can do the electric connection also please follow the connection procedures in this manual along with local country's regulations.
•High voltage may cause electric shocks and serious injury please do not touch the inverter.
•Please do not store inverter in area with flammable and explosive material.</td></tr>
</table>

Notice: The sunlight will generate voltage on the solar panels, after serial connection, the high voltage may injure personnel, so before connect DC input cable you need cover solar panels with light-tight materials and make sure the inverter DC switch is at "OFF" status, otherwise high voltage may injure personnel.

<table>
<tr><td>⚠️
WARNING</td><td>Each string's maximum open circuit voltage cannot exceed 1100Vdc, otherwise it could lead to fire or damage the inverter. If the inverter was damaged by higher maximum open circuit voltage (higher than 1100Vdc) product warranty will be forfeited and Growatt will not take any responsibility.</td></tr>
</table>

1>Each string solar panels should be same brand and same model.
2>Under any circumstance, the maximum short circuit current should not exceed 30A.
3>The total panels power should not exceed 1.25 times of inverter input power.
4>To optimize system settings, recommend two strings with same amount solar panels.
5>Following drawing shows how DC side terminals should be connected.

Notice: Connectors need to be fit with male and female terminals, before connecting panels with inverter please make sure the positive pole and negative pole, namely the solar panels'positve pole connect to"+" negative pole connect to"-".
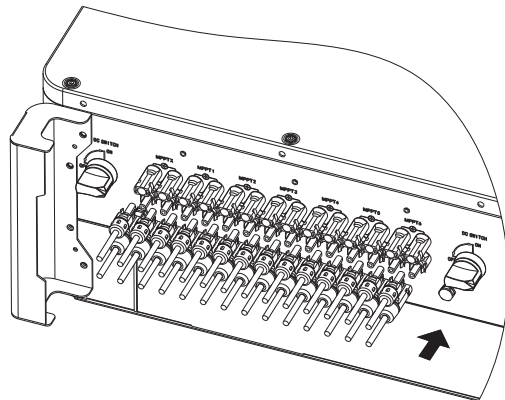
Fig 6.5

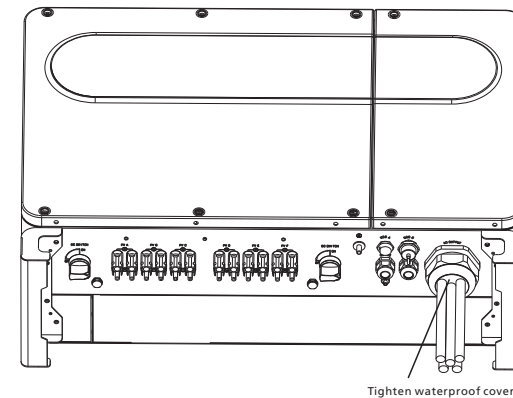6>Decide the length of peeling base on cable terminal, use the wire stripper to connect cable and terminal, and separately connect to specific connector.
7>Connect the positive and negative poles to inverter terminals, different inverter's maximum single string input current please refer to following table.

Inverter model	Max. single string input current
MAX 50KTL3 LV	12.5A*2
MAX 60KTL3 LV	12.5A*2
MAX 70KTL3 LV	12.5A*2
MAX 80KTL3 LV	12.5A*2
MAX 60KTL3 MV	12.5A*2
MAX 70KTL3 MV	12.5A*2
MAX 80KTL3 MV	12.5A*2
MAX 90KTL3 MV	12.5A*2
MAX 100KTL3 MV	12.5A*2

8>Cable specifications:

Inverter model	Cross-sectional area(mm²)	Recommendation (mm²)	Cable outer diameter(mm)
MAX 50KTL3 LV	4-6	4	4.5-7.8
MAX 60KTL3 LV	4-6	4	4.5-7.8
MAX 70KTL3 LV	4-6	4	4.5-7.8
MAX 80KTL3 LV	4-6	4	4.5-7.8
MAX 60KTL3 MV	4-6	4	4.5-7.8
MAX 70KTL3 MV	4-6	4	4.5-7.8
MAX 80KTL3 MV	4-6	4	4.5-7.8
MAX 90KTL3 MV	4-6	4	4.5-7.8
MAX 100KTL3 MV	4-6	4	4.5-7.8

Notice：1.Under any circumstance, the total current of all strings cannot exceed the
inverter's maximum current.
2. Do not touch any working solar panels.
3. Make sure the cable is unbroken.

6.3 Connection of Communication cables

6.3.1 RS 485

RS485 can be used for single inverter communication also can be used for multiple inverters(Maximum 32 inverters) , the longest distance is 500 meters, high speed (Baud rate 38400) , the communication port as following

Single inverter communicate with computer, you can use either of the ports, when multiple communication with other inverter you can use both ports at the same time, connection just as following:

RS 485 port 1
485A — 485B
GND
RS 485 port 2
485A — 485B
GND
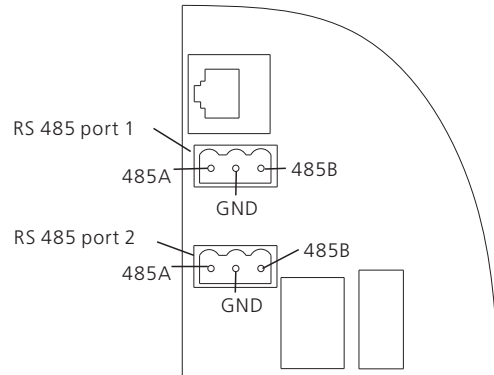
Fig 6.6

For the MAX inverter, the standard model has RS 485 connection port, please follow following instructions when you connect the inverter
1)Use the screw to tighten communication cables for 485A port and 485 B port.
2)Unscrew the M25 waterproof cover, take out the waterproof plug.
3)Just follow the following drawing to put 485 communication cable through the water proof plug and connect it to RS485 port.
4)Inverter connected with 485 communication cable in daisy chain, the end of 485 cable will connect to shinemaster for remote control.
Notice：Please refer to shinemaster operation manual for details.

GND
485A
485B
485A
GND
485B
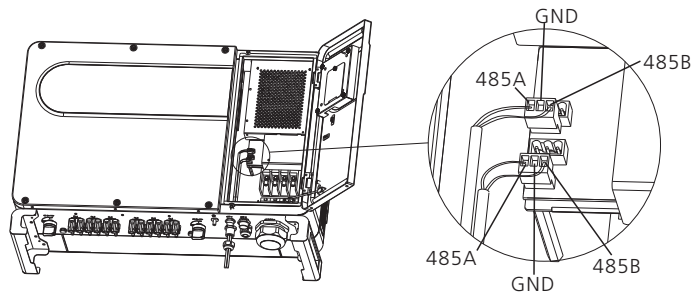
Fig 6.7

6.3.2 USB converting to WIFI/flash disk/PC

MAX series inverter is configured with USB A port, to convert to WIFI please follow below procedure：
1）Loose waterproof cover, and remove waterproof plug；
2）plug the USB to WIFI dongle to USB A port, the indicating LED will lit up。
Note: Mobile APP instruction please refer to 7.2.1
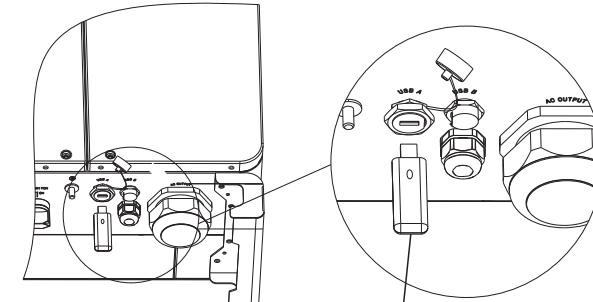
USB to WIFI converter

Fig 6.8

6.3.3 GPRS Antenna

For the MAX inverter the standard model has Antenna port, when you are using GPRS monitoring please follow following instructions.
1）Connect the antenna to the antenna port.
2）Check the antenna is firmly fixed.
Notice: For GPRS operation please refer to 7.1.1

Antenna
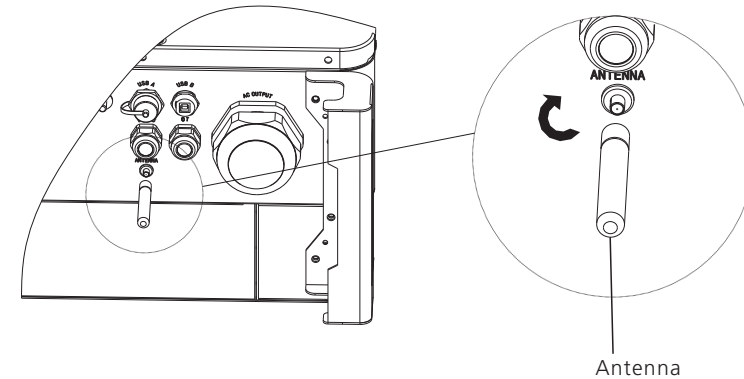
Fig 6.9

6.4 Connecting the ground cables

In this solar system all the unloaded metal components and cases should be connected to the ground.

Single inverter need grounding over a PE point, multiple inverters need connect all the inverter PE cable and solar panels shelves to the same grounding point to achieve equipotential

The grounding steps as following:

Take out the ground screw at the inverter bottom, connect the ground cables as following figure:

Notice: Do not expose Grounding terminal in the air and precaution for the rain.
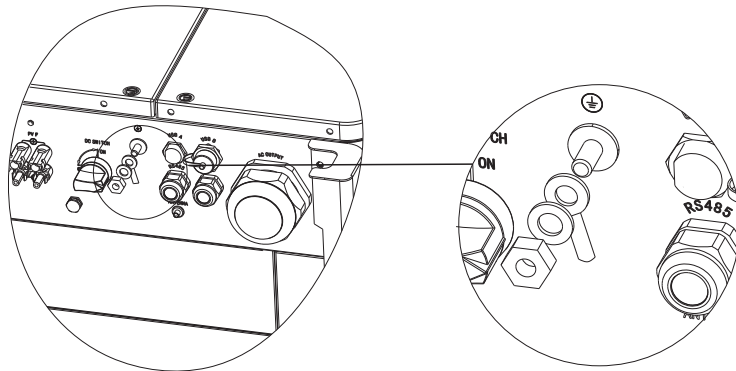
Fig 6.10

7.1 Commission the inverter

•If the inverter is stored over one month, its default time and date may looks wrong, the time and date should be reset before connection to the grid.

7.1.1 Set inverter address

After inverter is started normally, inverter address can be set via RS485：

7.1.1.1 Set RS485 address with Shinebus

Connect inverter RS485 port to PC via RS485/232 converter, then use Growatt configure software Shinebus to set inverter RS485 address as following：
1>Read PC serial port number：PC—device manage—USB serial port;

2>Read inverter default RS485 address with Shinebus as following;
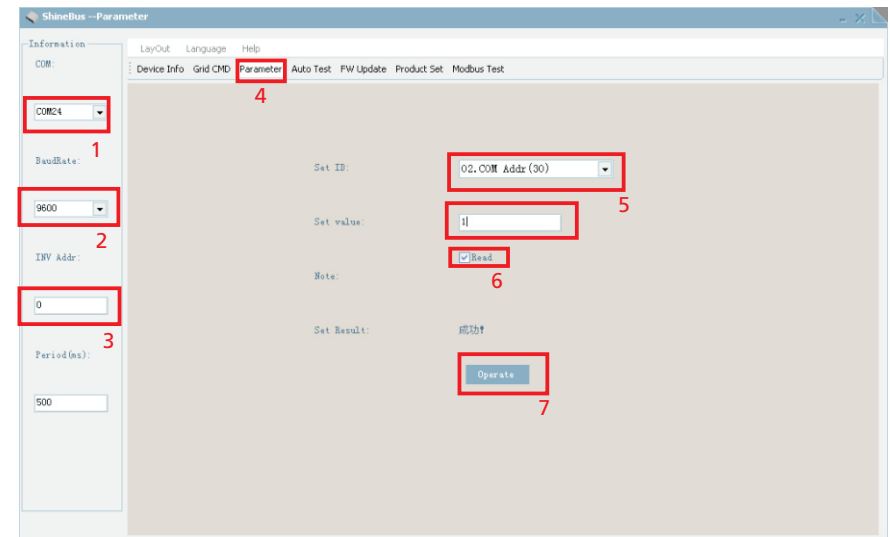
Fig 7.1

3>Set inverter RS485 address with Shinebus as following;
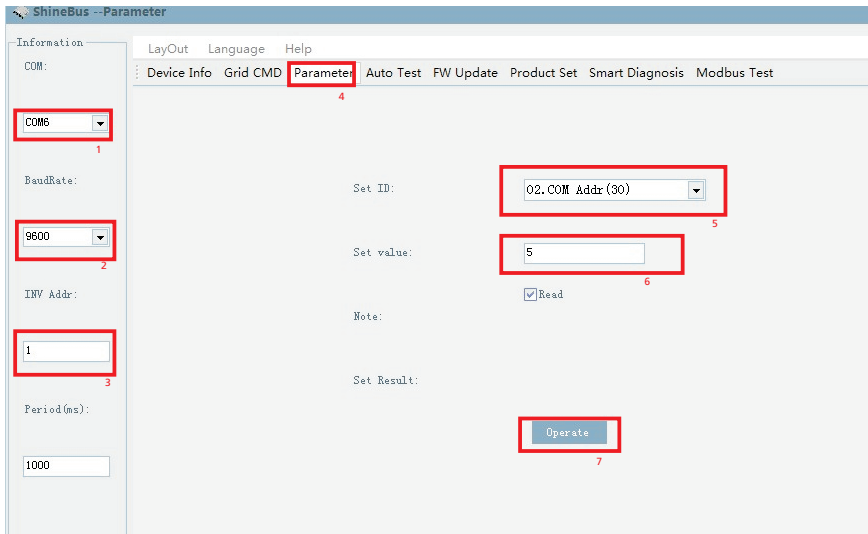
Fig 7.2

4>Check whether inverter RS485 was set successfully: if 'inverter data information' page can be refreshed, succeed;
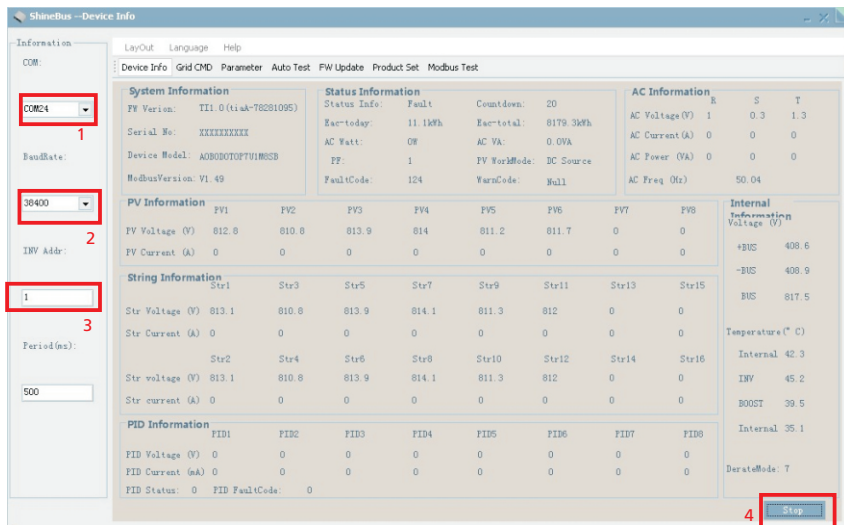
Fig 7.3

7.1.1.2 Set RS485 address on ShinePhone APP via inverter WIFI

First refer to 8.2 download mobile APP ShinePhone and connect to inverter WIFI to enter local monitoring page, as following procedure：
1.Choose(Parameter setting);
2.Enter password;
3.Click top item 'com address';
4.Click 'read' button on top right to obtain;
5/6. Set inverter com address;
7/8. Read inverter com address to ensure setting is successful;
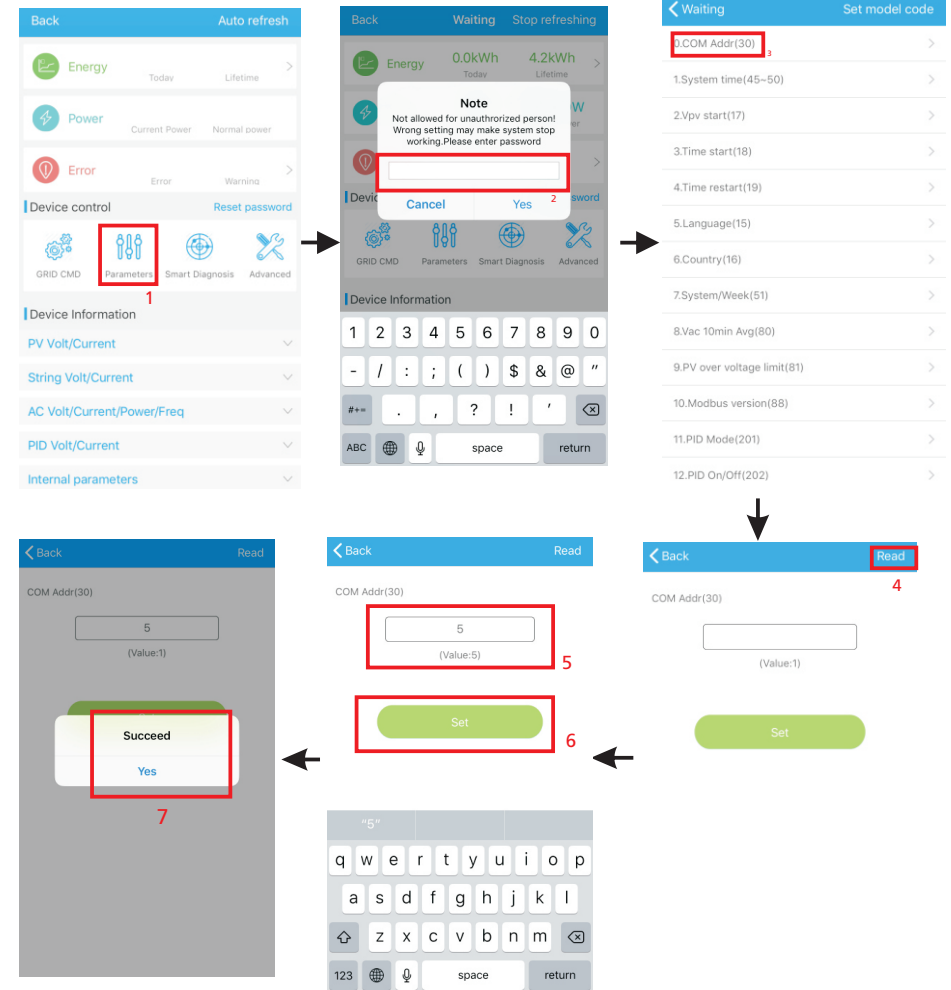
Fig 7.4

7.1.2 Set inverter time and date

Way 1:

Please refer to section 8.2.1 and login ShinePhone APP, go to parameter setting page, click "1.system time(45-50)" to enter into system time setting page, for example, if set as 2018-05-28 20:09:44, click time column to enter into setting page,choose 2018-05-28,click Yes then choose 20:09:44, click yes and then click set, then the time is set as 2018-05-28 20:09:44.
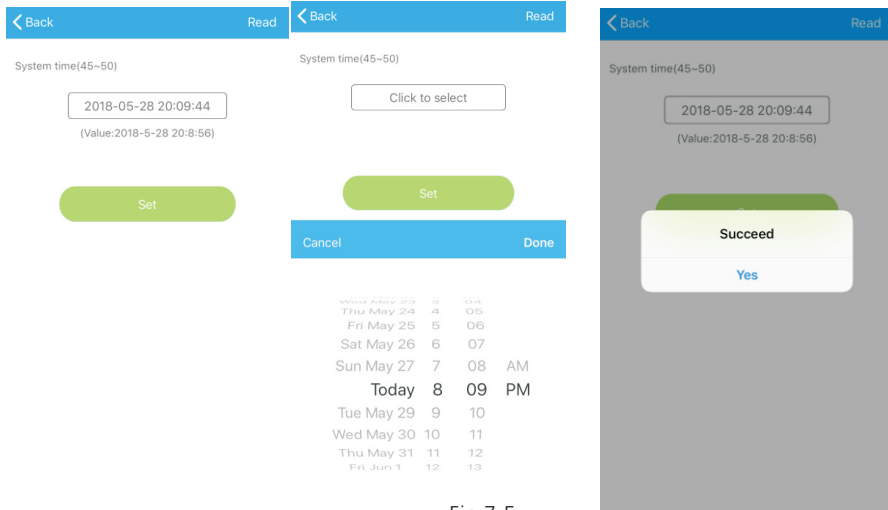
Fig 7.5

Way 2:

Please connect GPRS antenna to the inverter as section 6.3.3, when the inverter is powered on, connect the inverter to the server as section 8.1.2, then the inverter time will be updated automatically.

7.2 Operation mode

The inverter model setting can be done through the WIFI APP (ShinePhone), or remotely through the server web page. For details about the APP login method, see Logging In to the Mobile Phone App to View Local Monitors. There are two methods. For details of operation on server web page, see 7.1.2 Registering, Logging In, and Setting Up the Remote Monitoring of the Server Web Page. The specific operation is as follows.

WIFI APP(ShinePhone) operation is as following:

1>Choose: parameter setting item;

2>Set 'model': A+S-Grid code; B—save; D-String+PID; T- string monitor, PID enable; P-safety protection; U-voltage protection; M-power level.

A+S	Grid code	
B	Reserved for future APF/SVG function	
D	Manufacture	D0:Neutral D1: Growatt
T	String monitor+PID+NPE enable	Bit0:NPE enable bit1:PID enable bit2: string monitor bit3: new/old fan
P	Safety protection	Bit0:ISO enable bit1:GFCI enable bit2:DCI enable bit3: safety protection
U	Output voltage level	Bit0:277V bit1:230V bit2:reserved bit3:AFCI enable
M	Power level	M5 : 50kW M6:60KW M7:70kW M8:80KW M9:90kW MA:100KW

7.2.1 Waiting mode

When the DC voltage is more than 200VDC, inverter will be powered on and shows waiting.

At this mode, inverter will check the system parameter. If the system is normal and PV voltage is more than 250VDC, inverter will try to connect to the grid.

7.2.2 Working mode

At this mode, inverter work normally, LED shows Green, LED light pillar shows, this means inverter is sending power to the grid.

When the DC voltage is more than 250V DC, inverter will send the AC current converted from PV module DC to the grid.

When the DC voltage is lower than 250VDC, inverter will enter into "waiting" and try to connect to the grid, at this status, inverter consume very small power to check the internal system status.

Note: only when the PV modules supply enough power(voltage > 200VDC) then the inverter will start automatically.

7.2.3 Fault mode

Inverter intelligent control system will continuously monitor and adjust system status.When there is a fault detected, LED will blink red or flash red, LCD light pillar will show the fault message.

Note: please refer to section 8.2 to check the fault message and take corrective measures.

7.2.4 Off mode

When the sunlight is weak or no light, inverter will stop working automatically. When it is off, inverter will not consume gird power or PV module. Meanwhile, LCD pillar and LED light will be off.

Note: When PV string DC voltage is too low（≤150VDC）, inverter will be off.

7.3 LED display

Inverter current operation status can be visually checked from LED display directly.
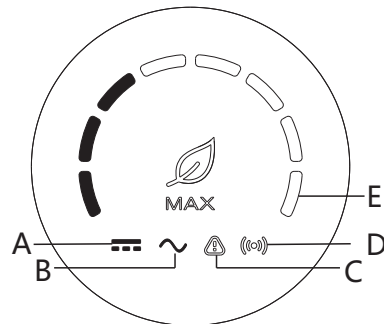
Fig 7.6

A	PV voltage indicatoor
B	AC voltage LED indicator
C	Fault LED indicator
D	Communication LED indicator
E	Power and fault code LED indicator

LED indicator descripition	
LED indicator	Inverter status description
PV voltage LED indicator	1. PV voltage < 250V, off; 2. PV voltage≥250V, green light always on
AC voltage LED indicator	1. No AC voltage, off; 2. There is AC voltage and under counter-down, blink green and fault code LED is off; 3. There is AC voltage and under fault, blink green and fault code LED shows red light always on
Fault LED indicator	1. Inverter no fault or warning, off; 2. Inverter warning, flash red light; 3. Inverter fault, red light always on;
Communication LED indicator	1. Inverter has no external communication, off; 2. Inverter connects external RS485 or GPRS, Green light on;
Power and fault LED code indicator	1.Fault LED indicator is off, inverter is connecting to the grid: Each LED indicator means 10KW output power; 2.Fault LED indicator flash red, inverter is under fault: eight LED indicator combination means different fault code; 3.From right to left 5pcs LED on means 1,2,4,8 and 16, Off means 0; when any of the LED is on, can read the fault code(the sum when the LED is on, plus 99)

Monitoring 8

8.1 Remote data monitoring

MAX inverter remote monitoring ways include APP(ShinePhone) and server Web page, RS485,GPRS,PLC(reserved) can satisfy both ways of monitoring, details as below:

Note: WIFI network of inverter can support connection of only one mobile phone. before connecting another phone, the previous phone should be disconnected and the inverter should be kept unconnected for at least 2 mins.

8.1.1 Mobile phone APP(ShinePhone) remote monitoring

1>Refer to section 6.3 RS485,GPRS and PLC communication connection, scan the following QR code, or download from Google store or App store by searching"Shinephone", download and install software.

Fig 8.1

Note: 1. Make you it's the latest version.

2. Please find more details on http://server.growatt.com

2> Download APP then Register an user, there are two ways:

Way1: Run ShinePHone, go to login page, click one key built plant.
One key built plant needs to scan the QR code to get datalogger SN, then fill in mobile phone, password, agent code etc to finish the register.

Way2: Run ShinePhone, go to login page, click register:
Register will need to fill in two pages, first page is country and city, county must be selected. The second page is to fill in details, username, password, repeat password and email are must, protocol is also must. Others can be ignored. After all input, click next step to go to the next page to finish register.
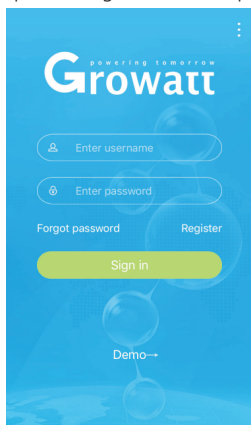
Shinephone login and main page:

Fig 8.2

Fig 8.3

Device page:

1>Main page top middle is the name of current plant, user can click the ∨ button to switch to other plants under this account.
2>User can add datalogger,check datalogger and add plant by click "+" button at the top right corner.
3>Top half shows current plant power, revenue today and total production.
4>My device list shows current plant device, user can see more details by click the device, left cross the device to stick the device and edit, edit operation includes change device alias, icon,and delete device.
5>Demo device is for user user to get familiar with company's new product, user can also click to find more and delete it as point 4.
6>"+"main page and function.
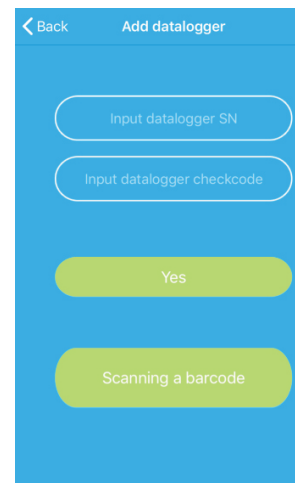
Fig 8.4
add datalogger
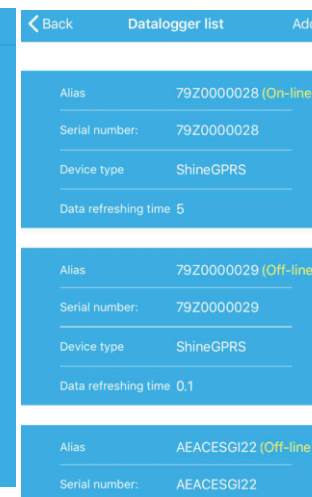
Fig 8.5
datalogger list
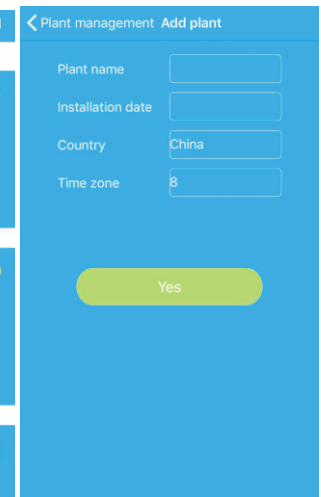
Fig 8.6
add plant

Datalogger:

1>User can add more datalogger under the particular plant.
Way: click "+" on the top right corner to add datalogger (WiFi/GPRS etc) as 7.1.1-02
(**Note**:If add wifi datalogger will need to configure it manually, scan the wifi datalogger for 2 seconds until a window pops up, then choose configure datalogger, APP will get the WIFI name , only need to input password and click set, around 30 seconds, the configuration will be done successfully.)

a   b   c   d
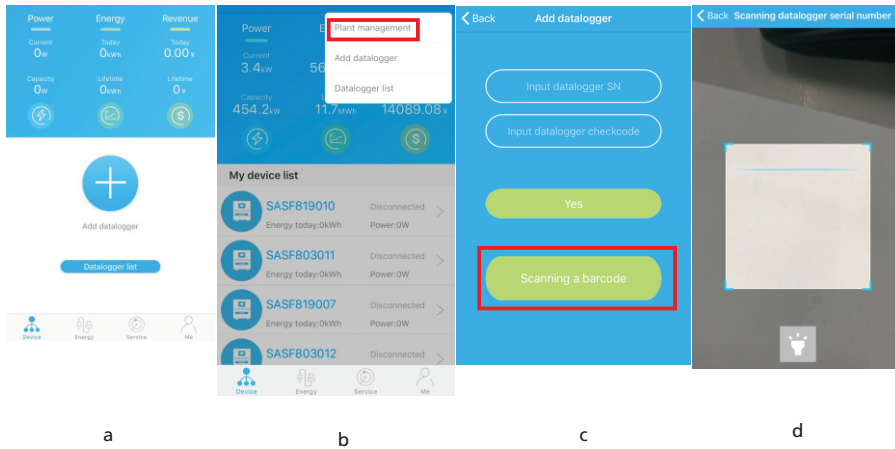
Fig 8.7

2>User can add datalogger at the datalogger list page to add a datalogger, edit, delete, configure etc.

3>User can add more plants with the add Plant function.

Device page and function.

Device page:

1>Device page: User can click the device to see more details, the device page show current power and Energy today and daily power chart, user can find more with control, parameter, data and Events page.
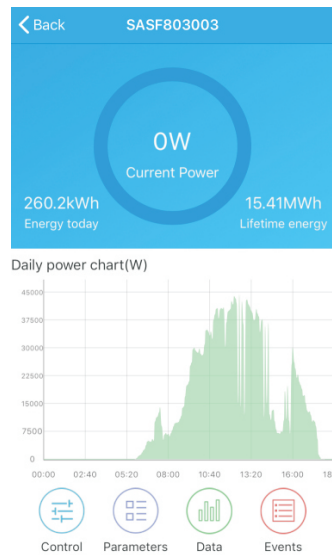
Fig 8.8

2>Control: user set inverter on/off, set active power, set reactive power, set PF, set inverter time, set grid voltage high, set grid voltage low. The operation password is: inverter+date, for example inverter20170722.

Fig 8.9

3>Parameter: user can see device SN, rated power, firmware version, PV1 voltage, current, and power etc.

Fig 8.10

4>Data page: user can see the PV power, PV1 voltage, PV1 current, PV2 voltage, PV2 current, R phase power, S phase power, S phase power, T phase power, output power by day, month, year, and can see the past every 5min data by finger up cross the screen.
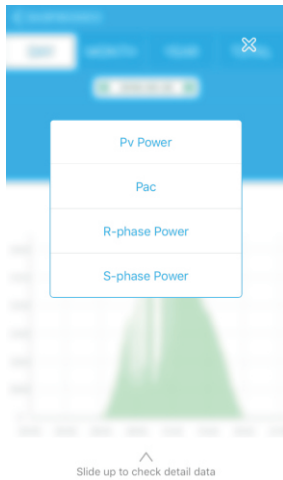
Fig 8.11

5>Events: User can see the fault message if there it is.

Fig 8.12

8.1.2 GPRS monitoring manual

8.1.2.1 Register account

1>Register account

Open browser, input server.growatt.com, click register at login page, input the necessary information then go back to login page, input the registered username and password, click login.

Fig 8.13

Fig 8.14

2>Add datalogger

At Plant page, click device manage, then click add datalogger, input the SN and valid code then save, after device is powered on, datalogger will show after 5mins, also the device will come online

(our device is monitored by datalogger, so need to add the datalogger here first)

Fig 8.15

Fig 8.16

Fig 8.17

Fig 8.18

3> Data reading

A. Basic production reading, Energy today, total production, revenue today and accumulative revenue are showing on this page.
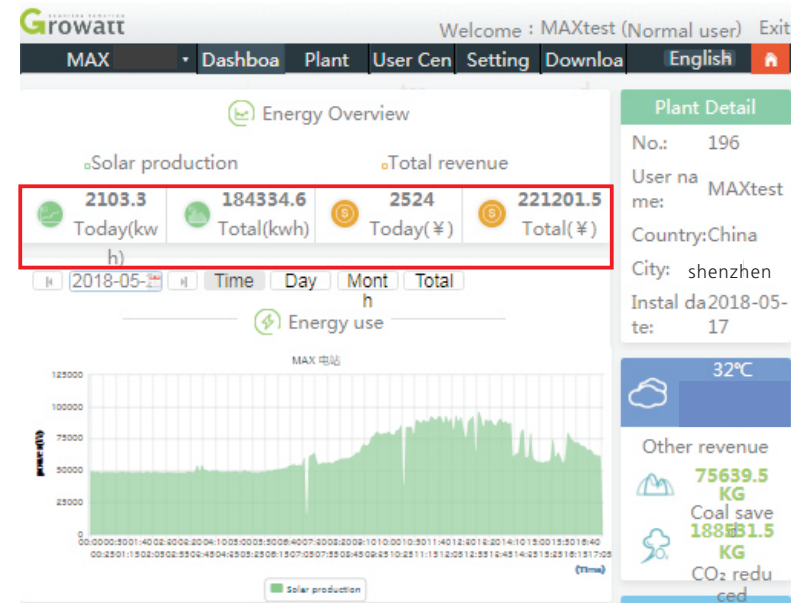
Fig 8.19

B. Plant data page can check device power, voltage curve by time, day, month or year.
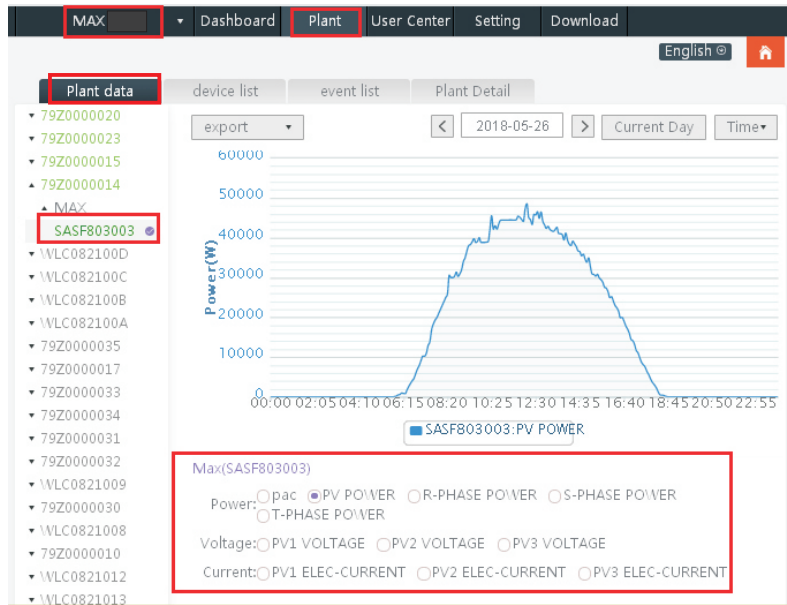
Fig 8.20

4>Set up the equipment
The device management page selects MAX. The serial number of the device to be set can be found in the list. Click on the "Settings" operating button. Check the item to be set and enter the password "inverter" + date. Such as "inverter20180425".
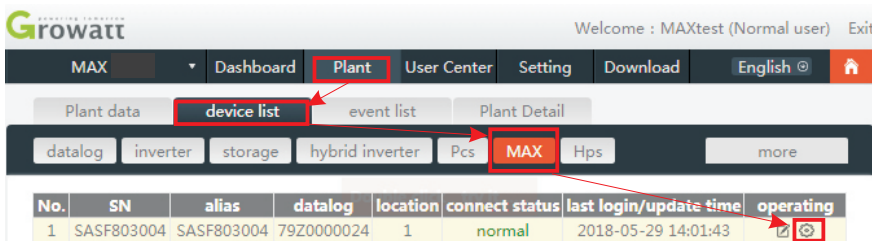
Fig 8.21

Fig 8.22

5>Check detailed data
Double-click the device serial number in the device list. The detailed data page is displayed. Data pages can be viewed by date or exported.

Fig 8.23

Fig 8.24

8.1.2.2 Shinemaster monitoring

1>ShineMaster IP Address query

A. The PC and shinemaster lan ports are connected to the router's port through the network cable, so that they are in the same local area network.

B. Go to the router's management page and check the "Internet host list" to query the IP address of the ShineMaster serial number as the name of the connected device. This IP is the IP address assigned by the router to the ShineMaster. If you do not know how to do this, contact your network administrator for operation.

Note: The router needs to enable automatic IP assignment, that is, open the DHCP function

C. Enter the shinemaster IP address in the browser to enter the shinemaster built-in page.

2>ShineMaster Built-in page access

Before accessing, check whether the communication cable between the devices is securely connected. After the check is correct, you can enter the ShineMaster IP address in the IE browser to access the built-in page of the ShineMaster. As long as the ShineMaster is on the same network segment as the computer you are accessing, you can access the Shine WebBox built-in server.

A.If the user successfully visits the shinemaster built-in page, they can go directly to the built-in page login interface, as shown in figure 8.25 below.

Fig 8.25

B. Enter user name and password, default login username: admin password: admin. click login after filling in, enter growatt shinemaster system page.

3>ShineMaster Data collector status view

Click on the status of the shinemaster data collector to view shinemaster "system state information", "serial number," server address, "number of connected devices," and so on.
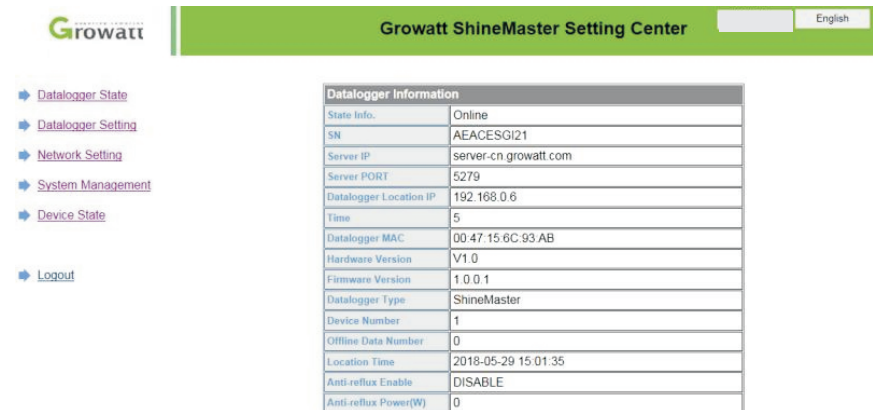
Fig 8.26

4>ShineMaster Data collector add or delete device

ShineMaster Before monitoring photovoltaic devices, we need to enter the page of the built-in shinemaster data collector settings to add devices.

A. Add device

（1)Select the monitoring mode for monitoring photovoltaic devices in the first drop-down list of add or remove devices.
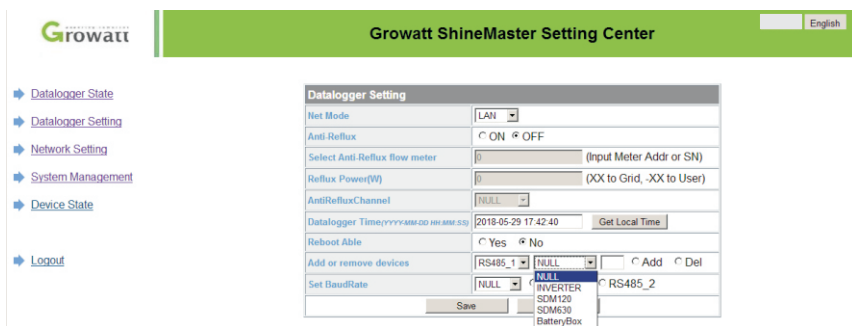
Fig 8.27

（2）Select the type of photovoltaic device monitored in the second drop-down list.
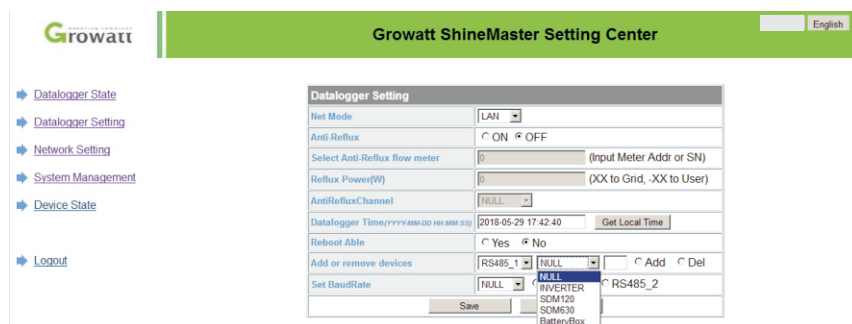
Fig 8.28

（3）Fill in the third drop-down list with the photovoltaic device correspondence address.
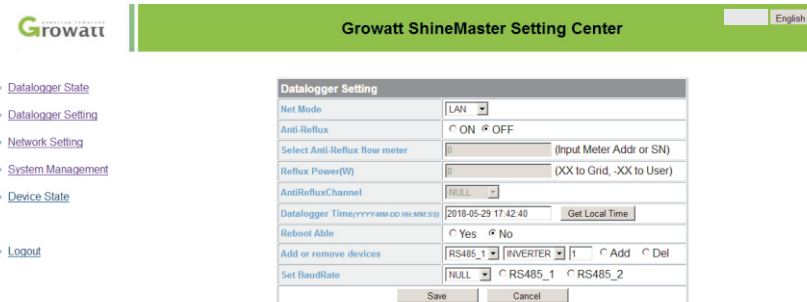
Fig 8.29

（4）Select add and then click Save.
（5）Go to the device status page after saving success to confirm that the device was added successfully.

Fig 8.30

B. Delete device

(1) "Select the first drop-down list of "add or remove devices" to monitor the monitoing mode of photovoltaic devices.
(2)Select the type of photovoltaic device monitored in the second drop-down list.
(3)Fill in the third drop-down list with the photovoltaic device correspondence address.
(4)Select the following "del" and click Save to complete the device addition.
(5)Enter the device status page after successful save to confirm that the device was deleted successfully.

5>ShineMaster Data upload to ShineServer

A. Register、 Login
(1)Enter the server domain name in the computer browser to enter the shineserver login page, if you are logged in for the first time, please register the user name. Enter the domain name access page, as shown in figure 8.32 below.
Chinese user server domain name：http://server-cn.growatt.com
The domain name of the international user server is：http://server.growatt.com

Fig 8.31

(2)Register user name, input user information according to prompt, after information is completed, click "register".
 Note: "collector serial number" and "collector check code" see shinemaster serial number box or guarantee box.

Fig 8.32

B. View monitoring data
(1)After registration is complete, jump to the shineserver main interface automatically. Click on "power station" and "work information" to display the information for the power station's total power flow chart on the same day. The drop-down list "Select collector" allows you to view the daily power flow chart of a single inverter for the power station.
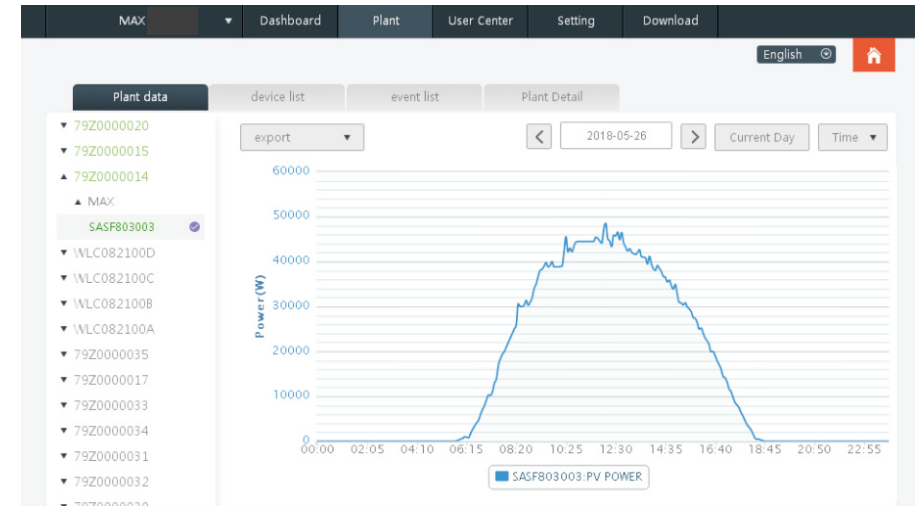
Fig 8.33

(2)By clicking on "power station" and "equipment management" in turn, the real-time data of "data collector", "inverter", "environment monitor", "intelligent meter" and "confluence box" MAX "can be viewed.

8.2 Local data monitoring
MAX Inverter local data monitoring mode has a mobile phone app phone) and PC direct connection, udisk, details are as follows:

8.2.1 Mobile phone app phone) Local Monitoring
8.2.1.1 Log on to app for local monitoring
1>Method 1
When you open the app login front page, click the top right corner toolbox icon. Pop up the toolbox, click the local debugging tool, and you can get the wifi name of the collector by scanning the bar code (if it's not the first connection you can click to skip, Connect directly to the wifi module and connect the scanned collector wifi as shown in figure 8.34) to the max device page.
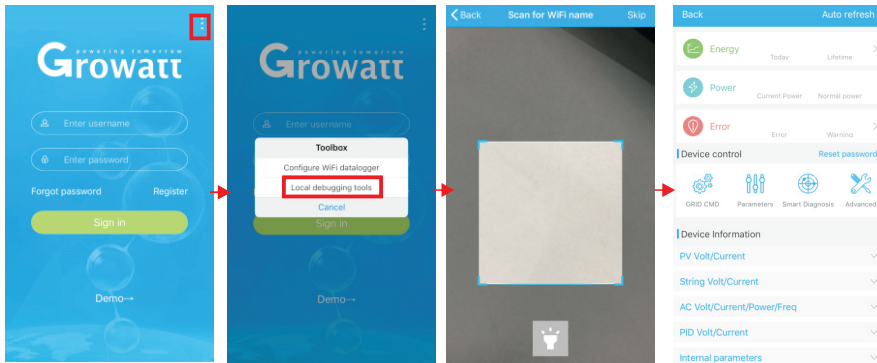
Fig 8.34

2>Method 2

Open app enter user name and password click login, enter me (personal center). Click the enter tool, find the local debugger to enter, and you can get the wifi name of the collector by scanning the bar code (if it's not the first connection you can click to skip, Connect directly to the wifi module and connect the scanned collector wifi as shown in figure 8.35) to the max device page.
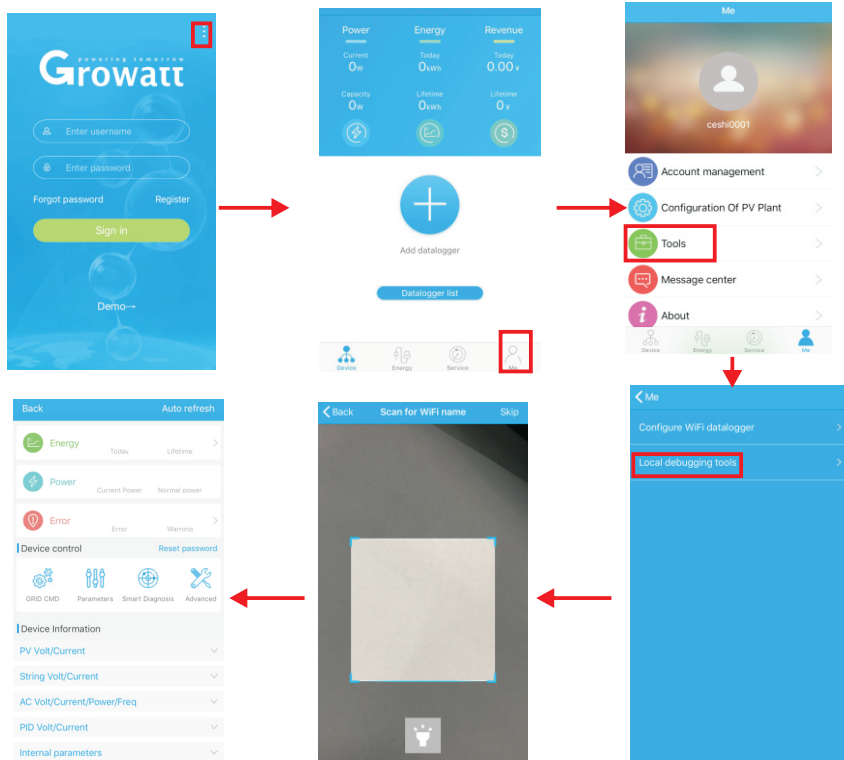
Fig 8.35

8.2.1.2 Use of local monitoring and debugging

When viewing local monitoring, you must keep the phone's wifi connected to the collector's wifi to view local monitoring (to enter the local monitoring page, first click auto refresh to get the latest data information. Electricity generation: the option to view the latest generation, daily generation, monthly and annual generation of detailed information; power: you can see the current power and rated power value; failure: can read the equipment detailed fault information;

1>device control

Note: In addition to resetting the password to connect to the network, other WiFi modules that must connect to the collector can view information.

A.Reset password

Need network connection login oss account to set up or modify the local debug password;

B.Setting configuration

The configuration data of inverter, voltage, power and so on can be modified according to the usage (see Figure 8.36).
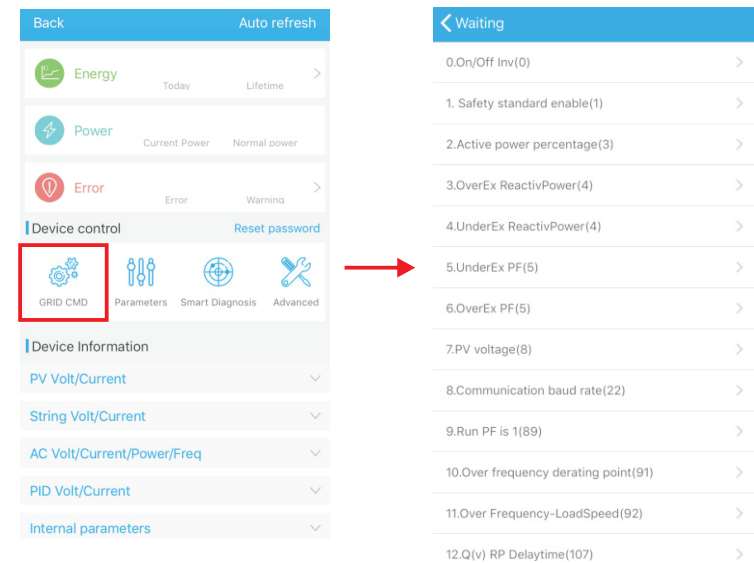
Fig 8.36

C.Parameter configuration

The parameter data of the equipment can be modified according to the usage (see figure 8.37) ;

D.Intelligent detection

Detailed and accurate view of the device's detailed data and status (see figure 8.38) ;
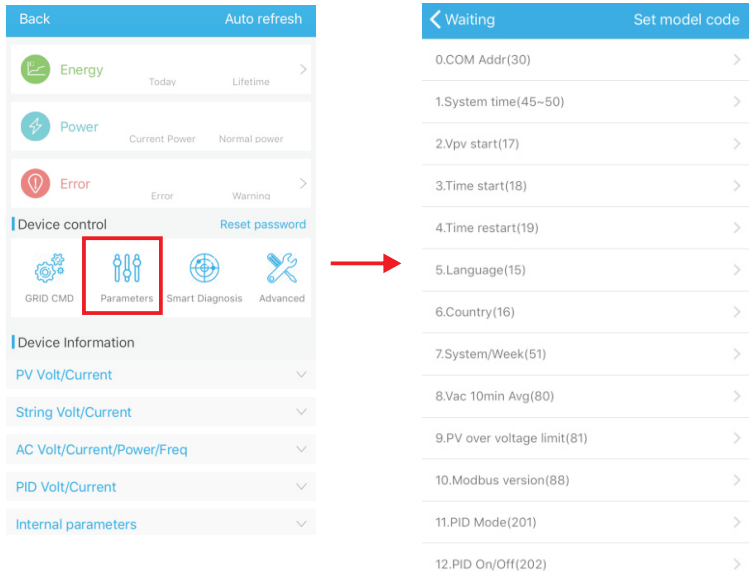
Fig 8.37
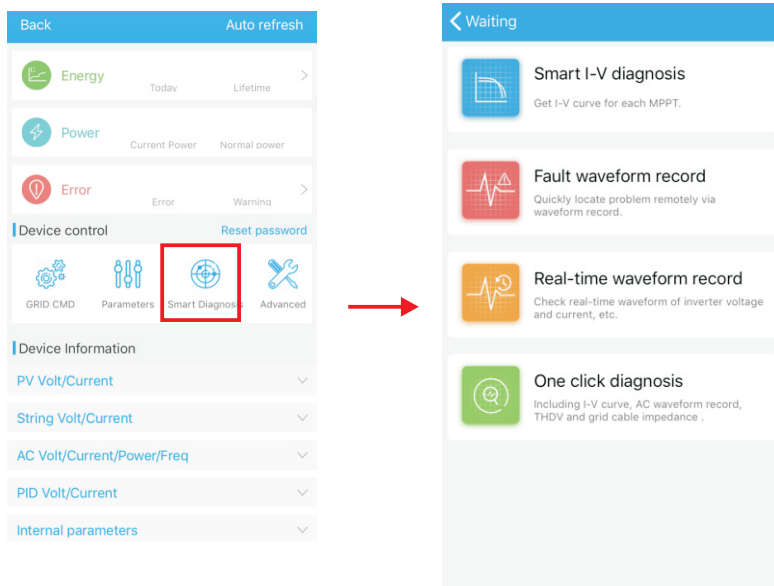
Fig 8.38

E.Intelligent I-V curve scanning
Can remotely scan each mppt (figure 8.39).
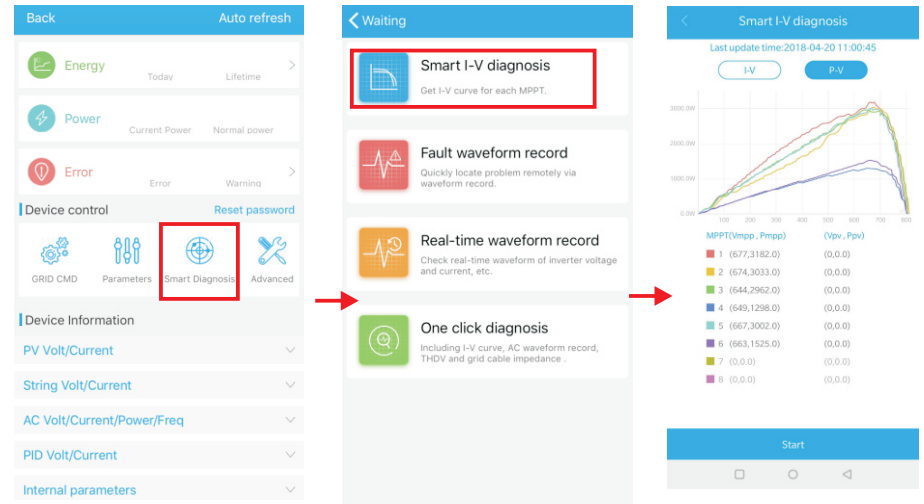
Fig 8.39

F.Fault recording detection
Remote, fast and accurate fault location (Figure 8.40)；
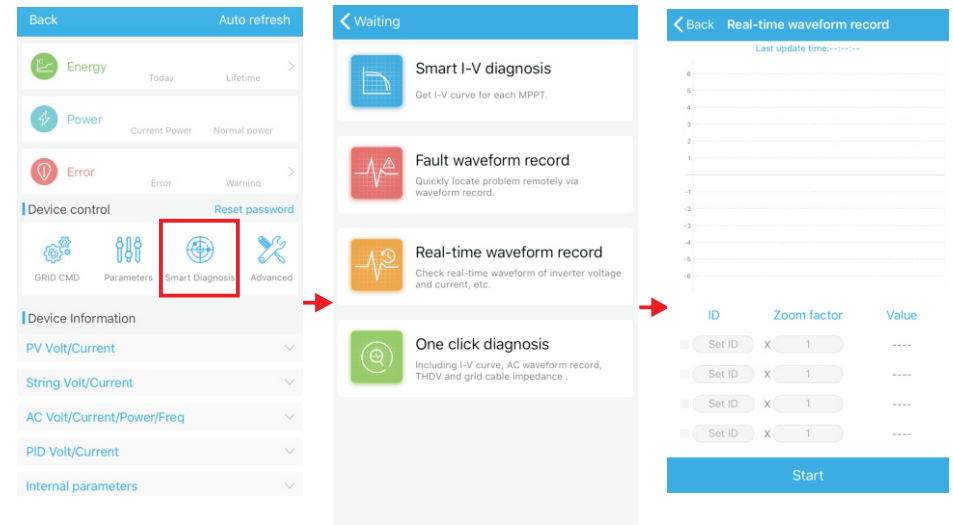
Fig 8.40

G.Real-time recording detection
Inverter voltage and current quality can be observed in real time (Figure 8.41);
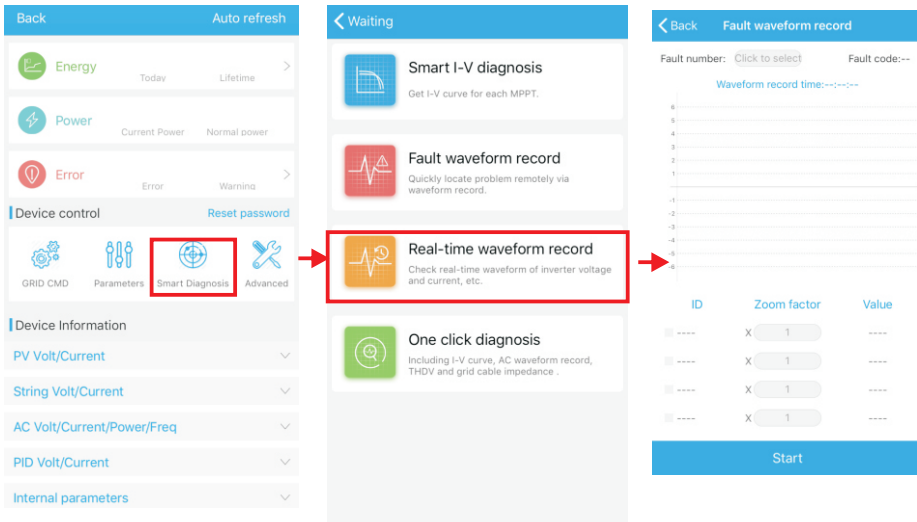
Fig 8.41

H.One click diagnosis
I-V curve diagnosis, grid waveform, THDV and cable impedance detection all at one click (Fig 8.42) ;

I.High level setting
According to the register address set parameters (professionals);

J.Device information
 Check PV voltage/current, string voltage/current, AC voltage/current/power/frequency, PID voltage/current, internal parameters and device detail information and parameters(figure 8.43) .
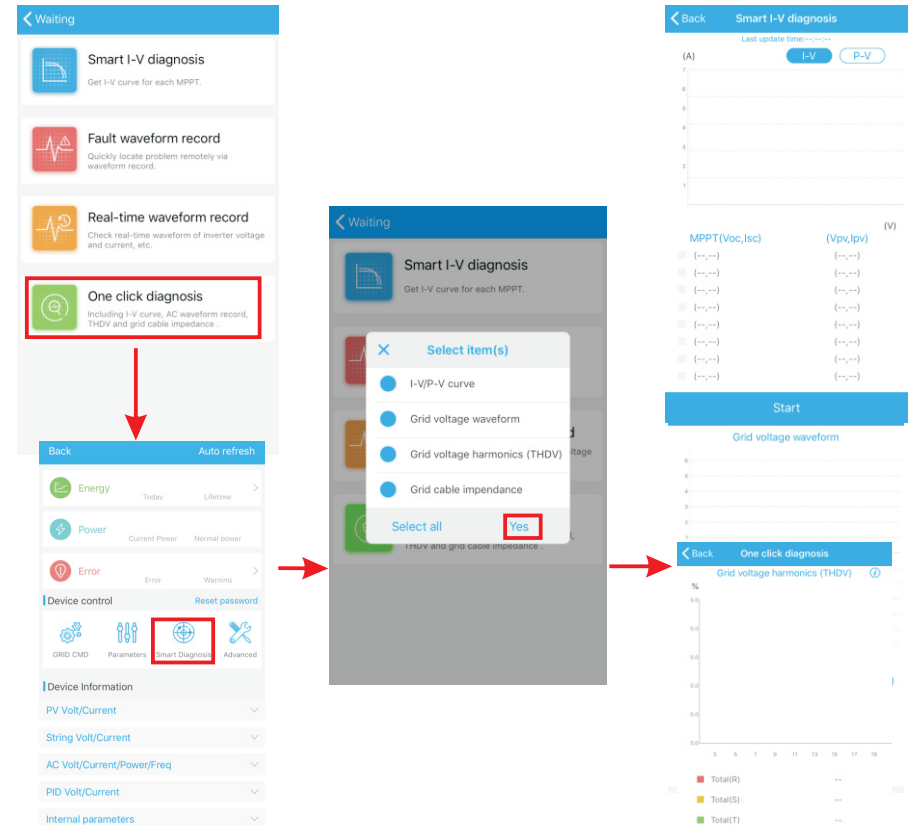
Fig 8.42
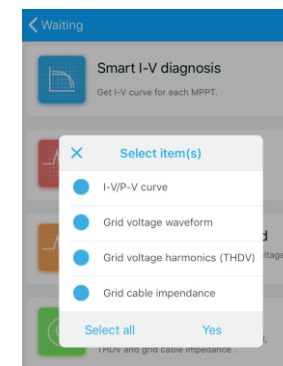
Fig 8.43

8.2.2 U Disk Monitoring

Refer to 6.3.2 USB to WIFI/ U disk communicate connection, the local monitoring of U disk can realize the functions of software burning, fault recording, curve analysis and real-time recording. Details are as follows:

1>Firmware Programming

Create the bconfig.txt file under the root of the U disk, write to the following content, then insert the U disk to programming. Note the M3 program needs to be programming at last time.
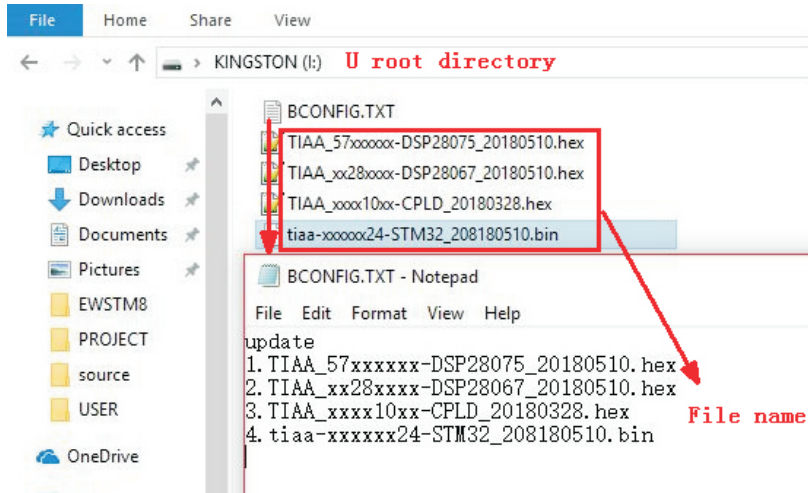
Fig 8.44

2>Fault Recording

Create the bconfig.txt file under the root of the U disk, write the following content, then insert the U disk that can be read fault information, then generates a form under the files in the root directory, A total of 60 fault recording information is stored, the latest Numbers is 0.
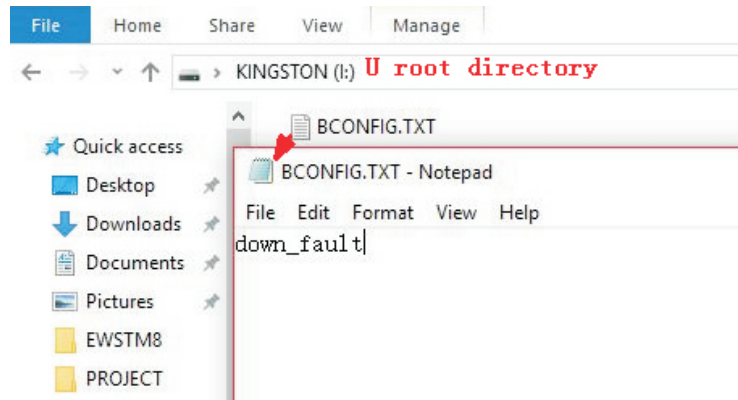
Fig 8.45

3>Curve Analysis

Create the bconfig.txt file under the root of the U disk, write the following content, the insert U disk to record I-V curve, then generates a form under the files in the root directory.
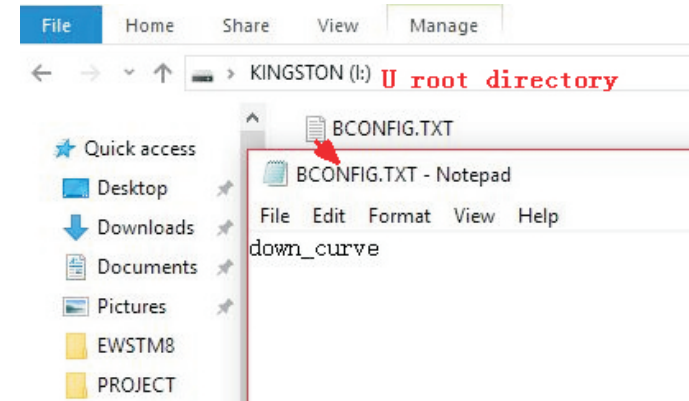
Fig 8.46

4>Real Time Recording

Create the bconfig.txt file under the root of the U disk, write the following content,then insert U disk to read real time recording information，then generates a form under the files in the root directory，the form record's waveform is consistent with the ID of the command setting.
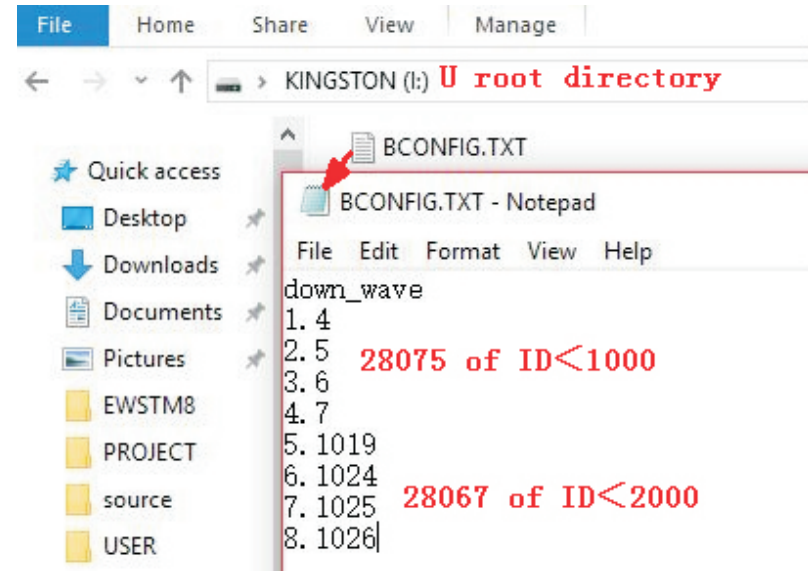
Fig 8.47

9 System Maintenance

9.1 Routine Maintenance

9.1.1 Cleaning Inverter

⚠️ DANGER	•Before any operation, please disconnect the DC switch and AC switch, and wait for at least 5 minutes until internal capacitance discharge completely.

1>Check the ambient temperature and dust of the inverter, clean the inverter when

 necessary.

2>Observe whether the air outlets is normal, when necessary, clean the air outlets or
 clean the fan step by step, steps refer to 9.1.2.

9.1.2 Fan Maintenance

⚠️ DANGER	•It must be carried out by qualified, trained personnel and comply with all prevailing local code and regulations. •Please disconnect the DC switch and AC switch before any operation, and wait for at least 5 minutes until the internal bus capacitance discharge completely.
⚠️ WARNING	•Do not use the air pump cleaning fan, which may cause fan damage.

When the Growatt MAX series inverter work in high temperature environment, good venti-
lation and heat dissipation can effectively reduce the chance of load derating . Inverter
equipped with internal cooling fans, when the internal temperature is too high, the fans
work in to reduce the internal temperature. When the inverter is derating because of the
internal temperature is too high, the following are the possible reasons or solutions;
1)Fan is blocked or the heat sink gathers too much dust, it needs to clean the fan, fan cover
or heat sink.
2)Fan is damaged, it need to replace the fan.
3)Poor ventilation of the installation location, it needs to select the appropriate installation
location according to the basic installation requirements.

Fan cleaning and replacement procedure;
1>Please ensure that the DC side and AC side of the inverter have been disconnected
before cleaning or replacement of the fan.
1) Turn off DC switch.
2)Disconnect DC terminals from inverter(Users need tools to disconnect the DC connection
terminals).
3)Turn off AC switch;

2>Remove the screws on the fan guards with a cross screwdriver. it is shown as below:
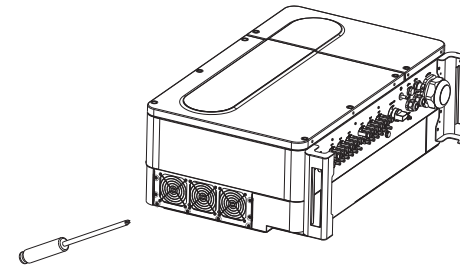
Fig 9.1 External fan view
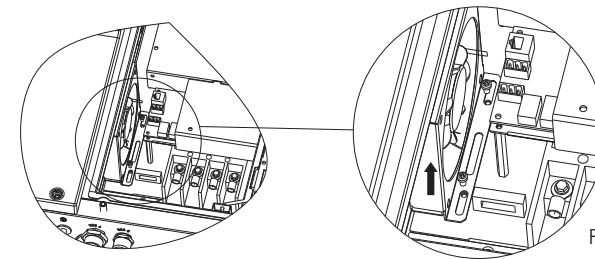
Fig 9.2 Internal fan view

3>Disconnect the wire connector of the fans with a flat head screw driver and remove
the fans from the fan guards, it is shown as below.
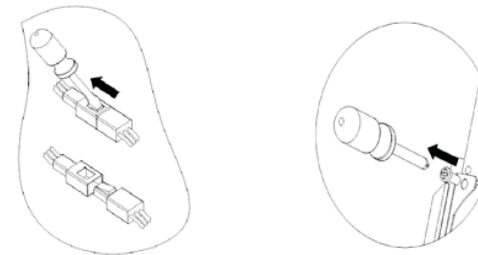
Fig 9.3
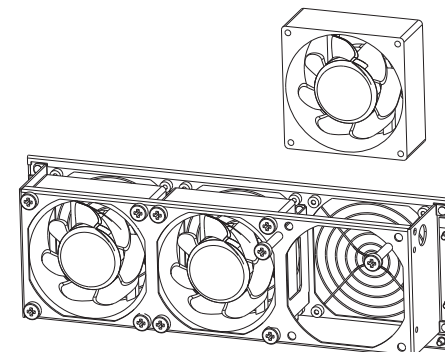
Fig 9.4 External fan view
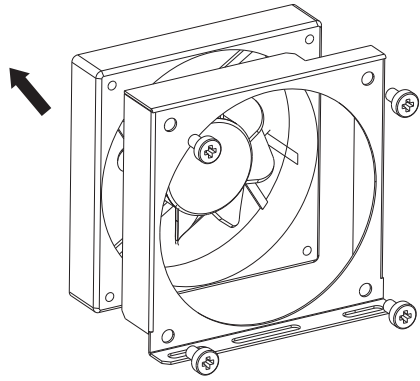
Fig 9.5 Internal fan view

Remark：MAX series inverter has four of fans（internal fan*1PCS，external fan*3PCS).

4>Clean fan, fan guards and heat sink or replace fan.
1)Clean the fan and fan guards with air pump, brush or a damp cloth.
2)Remove each fan separately for cleaning if necessary.
3)Remove the fan that need to replace with a cross screwdriver, replace a new fan.
4)Tidy up the wire；

5>Install the fan, fan guard fixed and the inverter again.

9.2 Trouble shooting

⚠️ DANGER	•Work on the Growatt Max must be carried out by qualified personnel. •Normally grounded conductors may be ungrounded and energized when a PV isolation low is indicated. •Risk of electric shock。

9.2.1 Warning

Warnings identify the current status of the inverter(Max), warnings do not related to a fault and it does not affect the normal running of the inverter. When a warning with a number after it appears in the display, it indicates a warning code and is usually cleared through an orderly shutdown/re-set or a self-corrective action performed by the inverter.

Warning	Description	Suggestion
Warning100	The problem of fan(s)	Refer to 9.1.2 to resolve it
Warning104	DSP and M3 firmware version unsmatch	Contact Growatt
Warning106	SPD fault	Check if the AC WB and M3 cables are well connected
Warning107	NE detection abnormal	Check if the neutral and ground cables are well connected and firm
Warning108	PV is short	Check if PV polarity is correctly
Warning109	Boot drive abnormal	Contact Growatt
Warning110	String abnormal	Check if the polarity is `reversed or short
Warning111	U disk over current	Check if the U disk is connected to a short circuit, or the abnormal USB terminal is connected.

Remark：MAX series inverter has four of fans（internal fan*1PCS，external fan*3PCS).
If the suggestions do not work, please contact to Growatt.

9.2.2 Error

Errors codes identify a possible equipment failure, fault or incorrect inverter setting or configuration, any or all attempts to correct or clear a fault must be performed by qualified personnel.
Typically, the error code can be cleared once the cause or fault is removed.
Some of error code as table shows below, may indicate a fatal error and require you to contact the supplier or Growatt for help.

Error Code	Description	Suggestion
Error 101	Internal communication with host failed	Contact Growatt
Erro 102	Redundant sample circuit of insulation values are different	Contact Growatt
Erro 108	Internal power test fail	Contact Growatt
Erro 112	AFCI test fail, system PV circuitry exist ARC	Contact Growatt

Error Code	Description	Suggestion
Error113	IGBT drive fault	Contact Growatt
Error114	AFCI self check fail	Contact Growatt
Error117	Inverter relay fault	Contact Growatt
Error121	CPLD CPU test fail	Contact Growatt
Error122	Internal bus over/under voltage	Contact Growatt
Error124	No AC connection	Check the grid connection
Error125	PV isolation low	Contact Growatt
Error126	Residual I high	Contact Growatt
Error127	Output high DCI	Contact Growatt
Error128	PV voltage high	Check the solar panel configuration and wiring
Error129	AC voltage outrange	1.Check the AC voltage by the LCD. 2.Check if the grid cables are correctly or firm.
Error130	AC frequency outrange	Check the frequency by the LCD
Error131	Over temperature protection	Contact Growatt

Model	MAX 50KTL3 LV	MAX 60KTL3 LV	MAX 70KTL3 LV	MAX 80KTL3 LV	MAX 60KTL3 MV
Input Data					
Max PV Power	51000W	61200W	71500W	82000W	61200W
Max PV voltage	1100V	1100V	1100V	1100V	1100V
Start voltage	250V	250V	250V	250V	250V
PV nominal voltage	585V	585V	600V	685V	700V
PV voltage range	200V-1000V	200V-1000V	200V-1000V	200V-1000V	200V-1000V
MPPT voltage range(full load)	500V-850V	520V-850V	600V-850V	685V-850V	520V-850V
Max input current of each MPPT	25A	25A	25A	25A	25A
Max short current of each MPPT	32A	32A	32A	32A	32A
No. of MPPT trackers	6	6	6	6	6
Max No. of strings per MPPT	2	2	2	2	2
Max backfeed current to the array	0	0	0	0	0
Output Data					
Nominal output power	50000W	60000W	70000W	80000W	60000W
Max apparent power	55500VA	66600VA	77700VA	88800VA	66600VA
Nominal AC output voltage	230V/400V	230V/400V	230V/400V	230V/400V	277V/480V
AC voltage range	340-440V	340-440V	340-440V	340-440V	420-540V
Max output fault current	250A	250A	250A	250A	250A
Inrush current	35A	35A	35A	35A	35A
Max output overcurrent protection	250A	250A	250A	250A	250A
Nominal output Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Nominal output Frequency range	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz

Model	MAX 50KTL3 LV	MAX 60KTL3 LV	MAX 70KTL3 LV	MAX 80KTL3 LV	MAX 60KTL3 MV
Max output current	73A(PF=1) 81A(PF=0.9)	87A(PF=1) 97A(PF=0.9)	102A(PF=1) 113A(PF=0.9)	116A(PF=1) 129A(PF=0.9)	73A(PF=1) 81A(PF=0.9)
Power factor	>0.99	>0.99	>0.99	>0.99	>0.99
Power factor range	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging
Harmonics	<0.3%	<0.3%	<0.3%	<0.3%	<0.3%
Grid connection type	3W/N/PE	3W/N/PE	3W/N/PE	3W/N/PE	3W+PE
Effciency					
Max effciency	99.00%	99.00%	99.00%	99.00%	99.00%
CQC effciency	98.40%	98.40%	98.50%	98.50%	98.50%
MPPT effciency	99.50%	99.50%	99.50%	99.50%	99.50%
Protection					
DC reverse-polarity protection	yes				
DC switch	yes				
DC inrush protection	yes (Class II)				
DC insulation detection	yes				
RCD protection	yes				
AC short cuiruit protection	yes				
AC inrush protection	yes (Class II)				
AC switch	no				
String fuse	no				
String monitor	yes				
Anti PID	yes				
ARC detection (AFCI)	opt (compliant to UL1699B)				
Display and communication					

Model	MAX 50KTL3 LV	MAX 60KTL3 LV	MAX 70KTL3 LV	MAX 80KTL3 LV	MAX 60KTL3 MV
Display	LED/WIFI+APP(LCD opt)				
USB	yes				
RS485	yes				
PLC	opt				
GPRS	opt				
4G	opt				
General Data					
Dimensions (W*H*D)	860*600*300mm				
Weight	80kg				
Operation ambient temp. range	-25℃ - +60℃ (derating over 45°C)				
Noise emission	≤55dB(A)				
Relative humidity	0~100%				
Altitude	4000m				
Self-consumption night	<1W(Note1)				
Topology	transformerless				
Cooling concept	Fan cool				
Ingress protection	IP 65				
Warranty	5/10years (opt)				
Satisfied standard					
Standard	EN61000-3,EN61000-6,EN/IEC62109-1,EN/IEC62109-2, IEC60529				
	NB/T 32004-2013,CGC/GF 035-2013,GB/T 19964-2012				
Note1. Self-consumption less then 6W when AC power supply at night					

Model	MAX 70KTL3 MV	MAX 80KTL3 MV	MAX 90KTL3 MV	MAX 100KTL3 MV
Input Data				
Max PV Power	71500W	82000W	92500W	102500W
Max PV voltage	1100V	1100V	1100V	1100V
Start voltage	250V	250V	250V	250V
PV nominal voltage	700V	700V	730V	730V
PV voltage range	200V-1000V	200V-1000V	200V-1000V	200V-1000V
MPPT voltage range(full load)	600V-850V	685V-850V	730V-850V	730V-850V
Max input current of each MPPT	25A	25A	25A	25A
Max short current of each MPPT	32A	32A	32A	32A
No. of MPPT trackers	6	6	7	7
Max No. of strings per MPPT	2	2	2	2
Max backfeed current to the array	0	0	0	0
Output Data				
Nominal output power	70000W	80000W	90000W	100000W
Max apparent power	277V/480V	277V/480V	288V/500V	288V/500V
Nominal AC output voltage	230V/400V	230V/400V	230V/400V	230V/400V
AC voltage range	425-540VAC	425-540VAC	425-540VAC	425-540VAC
Max output fault current	250A	250A	250A	250A
Inrush current	35A	35A	35A	35A
Max output overcurrent protection	250A	250A	250A	250A
Nominal output Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Nominal output Frequency range	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz	45-55Hz/ 55-65Hz

Model	MAX 70KTL3 MV	MAX 80KTL3 MV	MAX 90KTL3 MV	MAX 100KTL3 MV
Max output current	73A(PF=1) 81A(PF=0.9)	87A(PF=1) 97A(PF=0.9)	102A(PF=1) 113A(PF=0.9)	116A(PF=1) 129A(PF=0.9)
Power factor	>0.99	>0.99	>0.99	>0.99
Power factor range	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging	0.8leading ... 0.8lagging
Harmonics	<0.3%	<0.3%	<0.3%	<0.3%
Grid connection type	3W+PE	3W+PE	3W+PE	3W+PE
Effciency				
Max effciency	99.00%	99.00%	99.00%	99.00%
CQC effciency	98.50%	98.50%	98.50%	98.50%
MPPT effciency	99.50%	99.50%	99.50%	99.50%
Protection				
DC reverse-polarity protection	yes			
DC switch	yes			
DC inrush protection	yes (Class II)			
DC insulation detection	yes			
RCD protection	yes			
AC short cuiruit protection	yes			
AC inrush protection	yes (Class II)			
AC switch	no			
String fuse	no			
String monitor	yes			
Anti PID	yes			
ARC detection (AFCI)	opt (compliant to UL1699B)			
Display and communication				

Model	MAX 70KTL3 LV	MAX 80KTL3 LV	MAX 90KTL3 LV	MAX 100KTL3 LV
Display	LED/WIFI+APP(LCD opt)			
USB	yes			
RS485	yes			
PLC	opt			
GPRS	opt			
4G	opt			
General Data				
Dimensions (W*H*D)	860*600*300mm			
Weight	80kg			
Operation ambient temp. range	-25℃ - +60℃ (derating over 45°C)			
Noise emission	≤55dB(A)			
Relative humidity	0~100%			
Altitude	4000m			
Self-consumption night	<1W(Note1)			
Topology	transformerless			
Cooling concept	Fan cool			
Ingress protection	IP 65			
Warranty	5/10years (opt)			
Satisfied standard				
Standard	EN61000-3,EN61000-6,EN/IEC62109-1,EN/IEC62109-2			
	IEC60529,NB/T 32004-2013,CGC/GF 035-2013,			
	GB/T 19964-2012			
Note1. Self-consumption less then 6W when AC power supply at night				

Decommissioning 11

If the inverter does not operate in the future, it needs to be properly disposed. The steps are as follows:
1>Disconnect the external AC short circuit and prevent reconnection due to misoperation.
2>Turn the DC switch to "OFF" position.
3>Wait at least 5 minutes until the internal capacitor discharge is completed.
4>Disconnect the AC connector.
5>Disconnect DC connector.
6>Remove the inverter from the wall.
7>Disposing of the inverter.

11.1 Disposing of the MAX series inverter

Do not dispose of MAX series inverter together with household waste. Please accordance with the disposal regulations for electronic waste which apply at the installation site at that time. Ensure that the old unit and, where applicable, any accessories are disposed of in a proper manner.

12 Quality assurance

Please refer to related file.

13 Contact

If you have technical problems concerning our products, contact your installer or Growatt, please provide information below for better support.

1>Inverter type
2>Serial number of inverter
3>Error code of inverter
4>LED status of inverter
5>DC input voltage of inverter (Modules information)
6>Inverter communication method