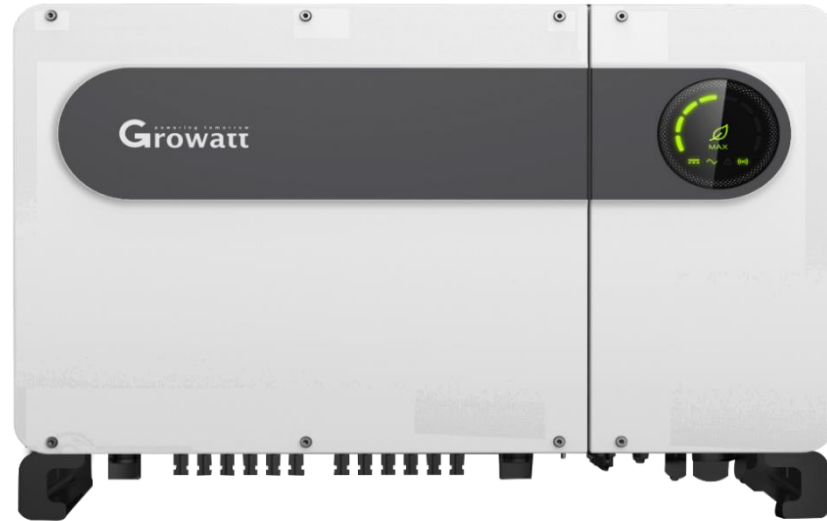


# Make The MAX Out Of It

powering tomorrow  
**Growatt**

MAX series 50-80kW new string inverters



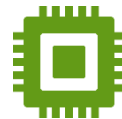
**High  
yields**



**Safe  
& reliable**



**Smart  
& capable**



**Easy  
Maintenance**



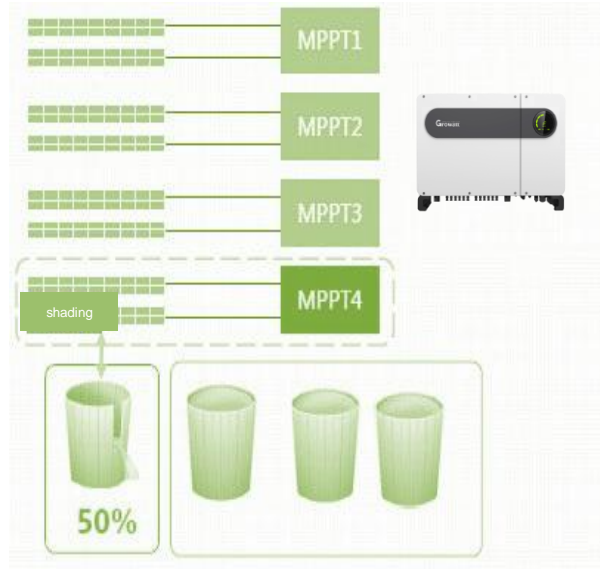
## Hill Side



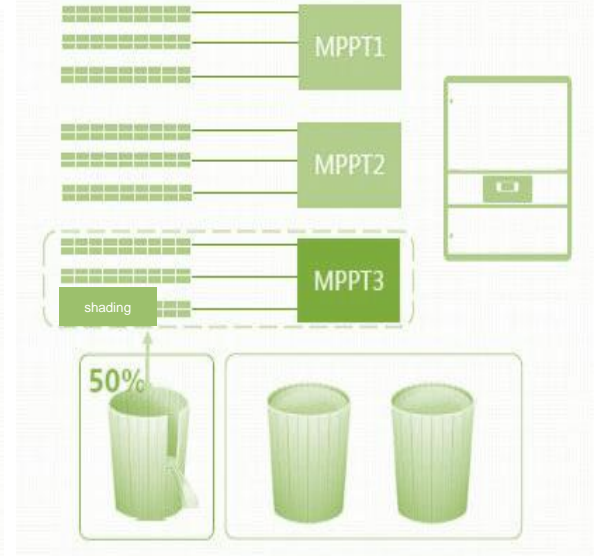
## Irregular Roof



## 2 strings per MPPT



## 3 or 4 strings per MPPT



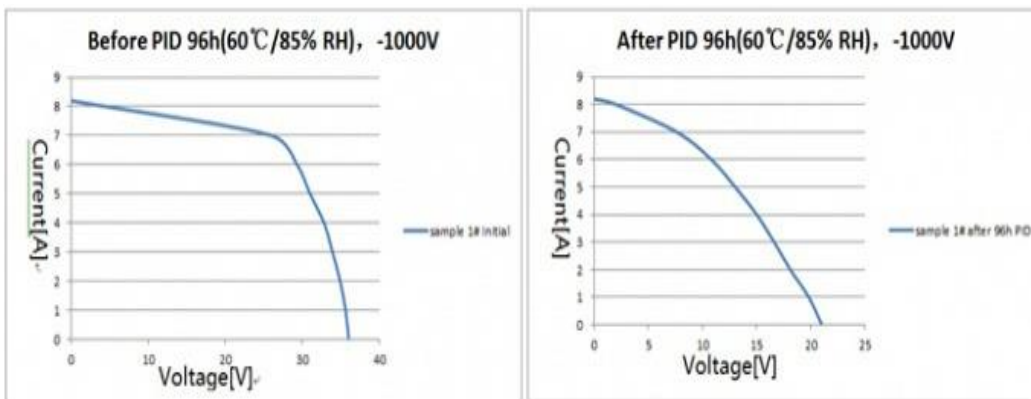
**More MPPTs, flexible string configuration**

## Anti-PID— Automatically repair module power loss caused by PID effect at night.

Sample	States	Voc (V)	Isc (A)	Vmp (V)	Imp (A)	Pmax (W)	Power Degradation (%)
0 #	Label	37.37	8.31	29.32	7.84	230.00	N/A
1 #	Initial	36.27	8.23	26.55	6.80	180.48	21.53%
	After PID 96h	21.01	8.07	12.39	5.34	66.13	71.28%
2 #	Initial	35.88	8.21	25.17	6.74	169.73	26.20%
	After Recovery 96h	36.82	8.13	28.97	7.31	211.86	7.89%

### Anti-PID Optional

Anti-PID is integrated as a standard configuration, no need external anti-PID device, increases system revenue at the same time saves system cost.



## Comprehensive Protections



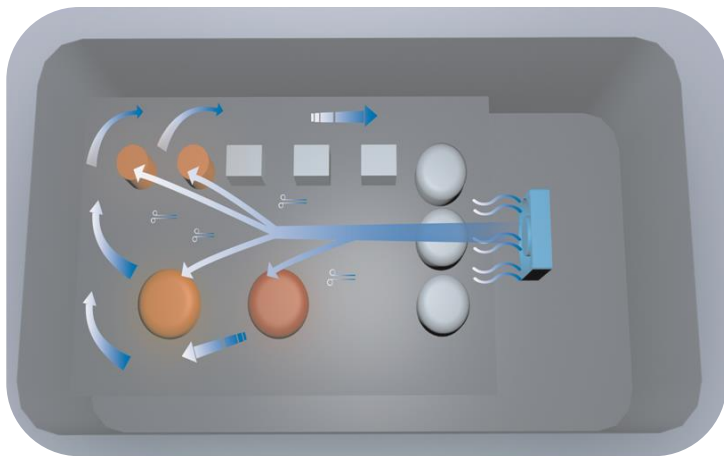
- **Lightning protection**

Type II **SPD** for both AC and DC side for lightning protection

- **Fire protection**

AFCI modular to avoid fires that caused by DC electrical arcs

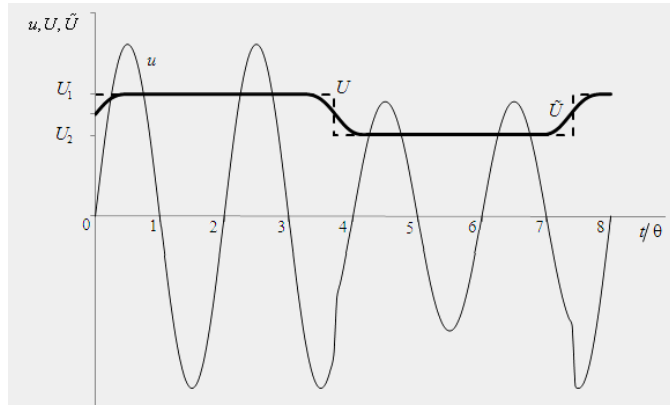
## Optimized Heat Performance



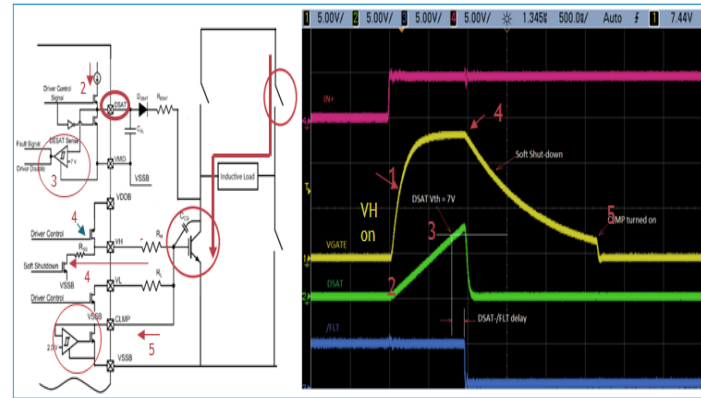
- **Sophisticated air route**  
Orderly air circulation, more effective cooling
- **Accurate temperature balancing**  
Balance internal environment temperature of inverter
- **Precise heat dissipation**  
Avoid over-heat risk of far end components

## First-aid Functions

When sudden high voltage fluctuation or inrush current occurs, inverter suppresses surge current to ensure inverter normal operation in preset duration

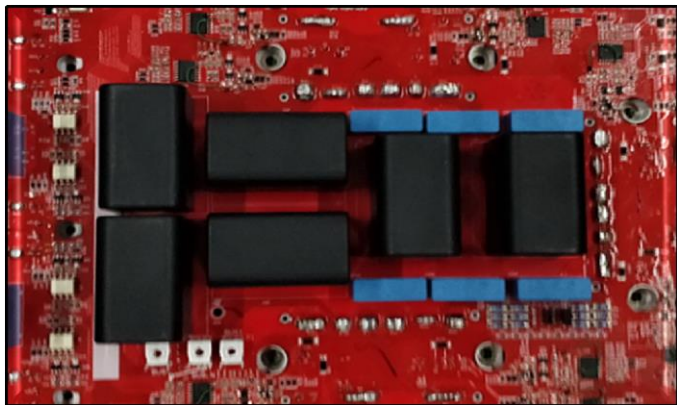


When IGBT is short circuited or with very high surge current, the DESAT function of drive IC(with inbuilt magnetic isolation) will stop PWM immediately to avoid component damage

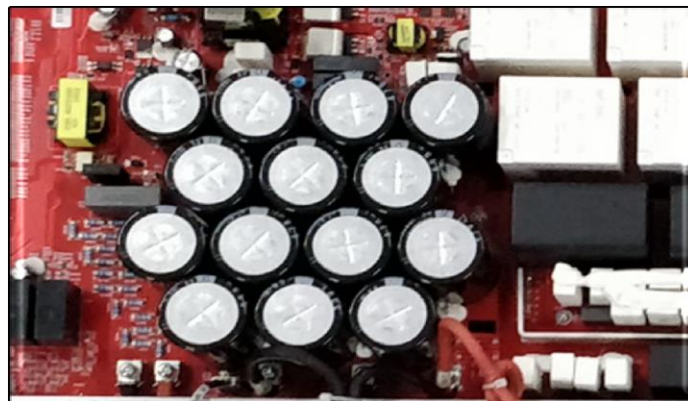


## Film-cap & E-cap, Double Insurance

Film-cap is enough to serve as the main capacitor during normal operation, E-cap storage power only, ensures long life span of E-cap

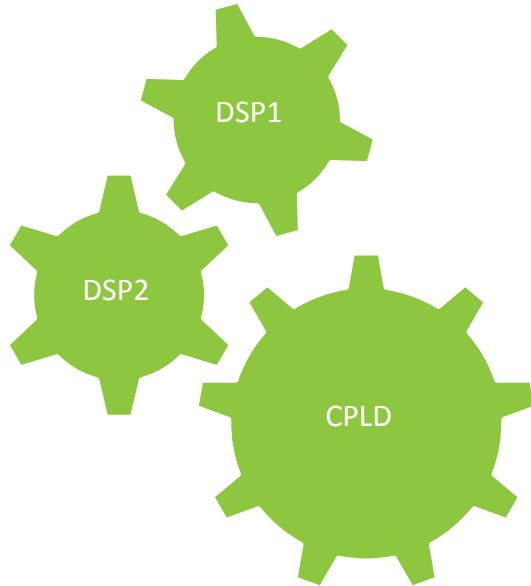


E-cap as the main capacitor when there's special occasions such as reactive power compensation which needs high energy support, and film-cap just used for inverter stability





## Stronger Brain, Smarter Inverter

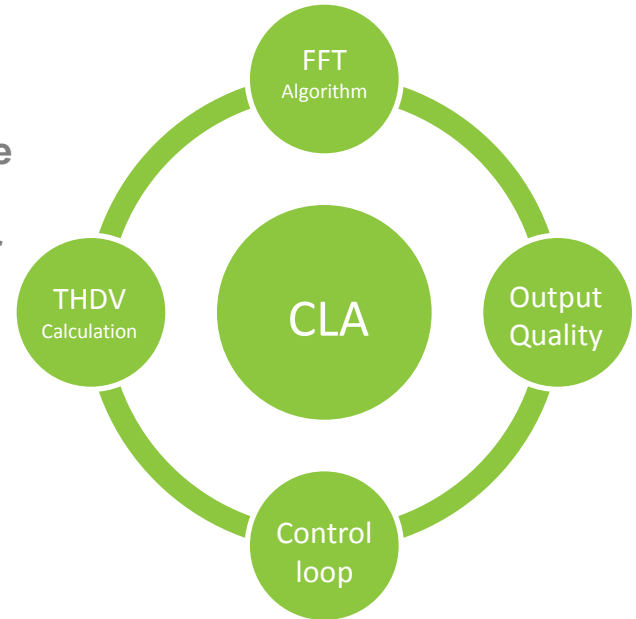


**Dual DSP, more reliable**

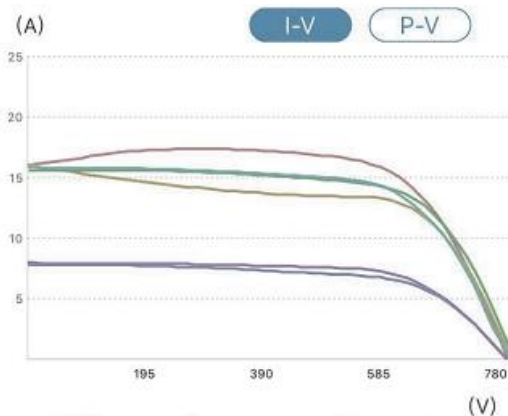
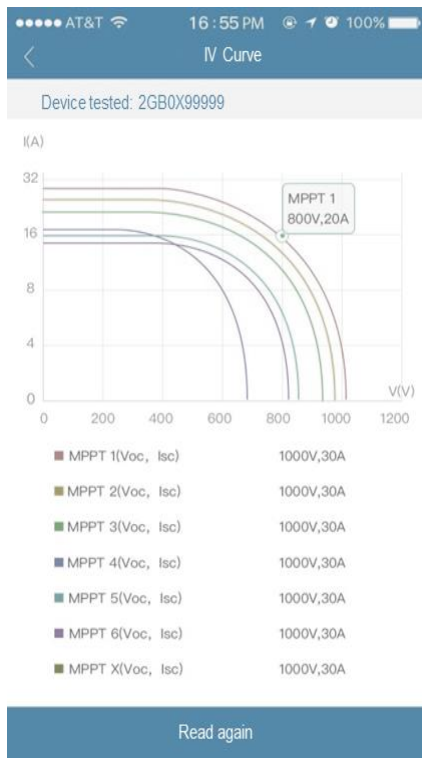
**CPLD in parallel, faster**

**ARM design**

**Quick communication**

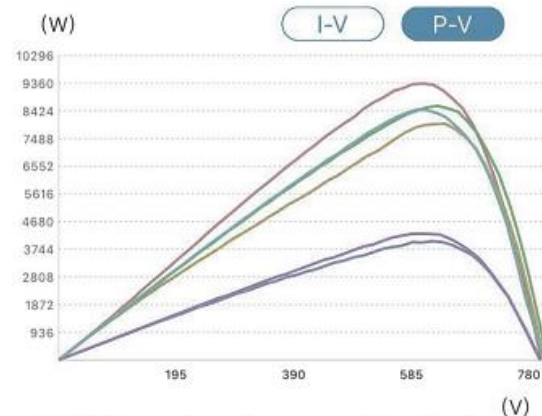


## Smart String Monitoring and Smart I-V Diagnosis



### String monitoring

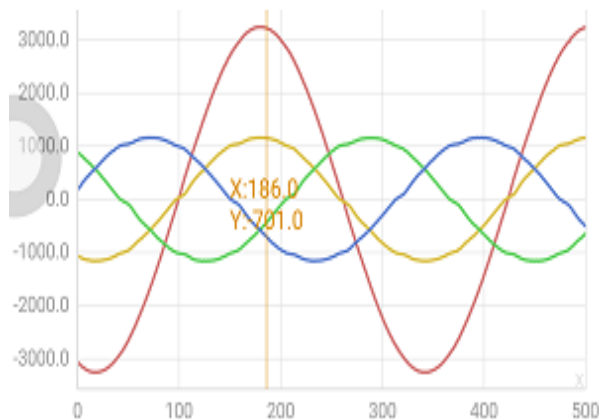
12 strings real-time monitoring, fast local trouble string, improve service speed



### Smart I-V diagnosis

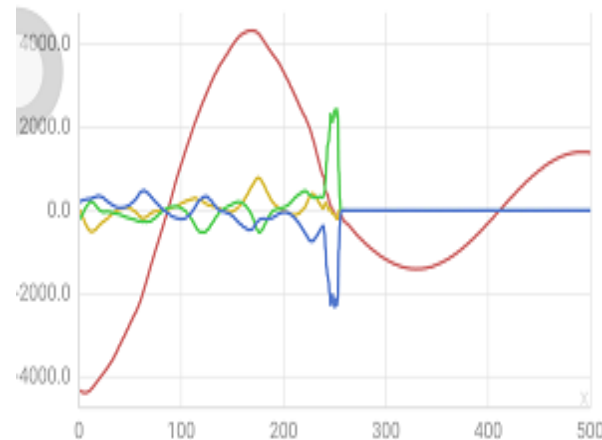
One-click to get I-V curve of each MPPT, local trouble string remotely, no need special equipment.

## Smart Waveform Recording



### Real-time waveform display

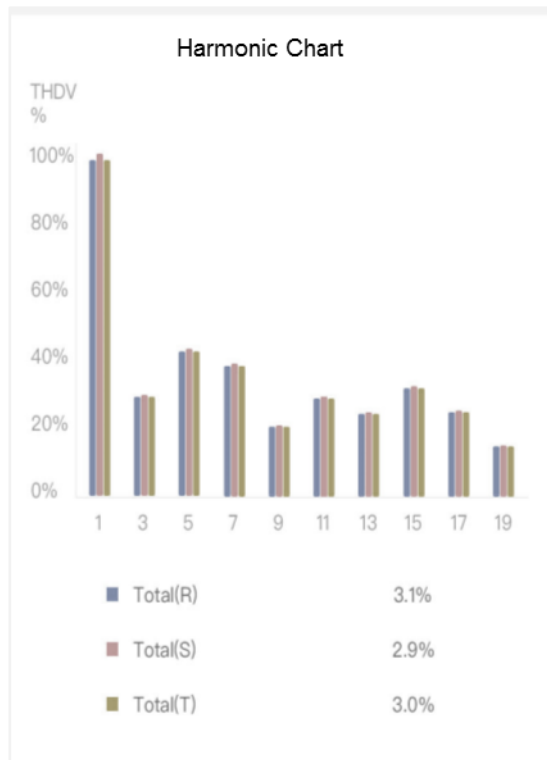
Show real time waveform of DC /AC current and voltage by one click



### Fault waveform recording

Set the trigger parameter and when it happen, the waveform will be record, for easy troubleshooting.

## One Click Automatic Diagnosis



5 minutes quick diagnosis of overall system information after installation with just one click

- I-V curve of each MPPT
- Grid voltage waveform
- Grid voltage harmonic
- Grid line impedance

## Simple yet sophisticated LED display



### Energy Panel

Power rate  
Error code

### PV Status

ON: Normal  
OFF: Abnormal

### AC Status

ON: Normal  
OFF: Abnormal  
Flash: Standby

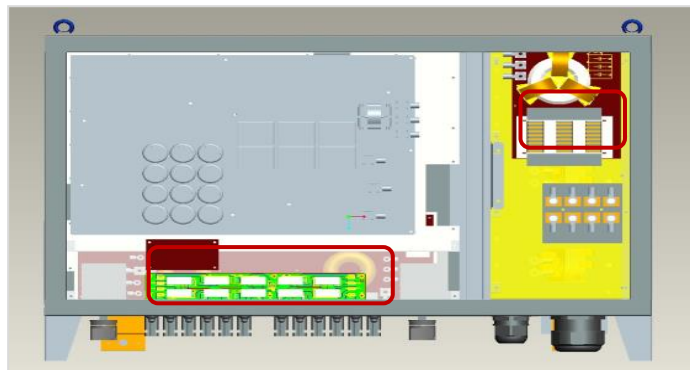
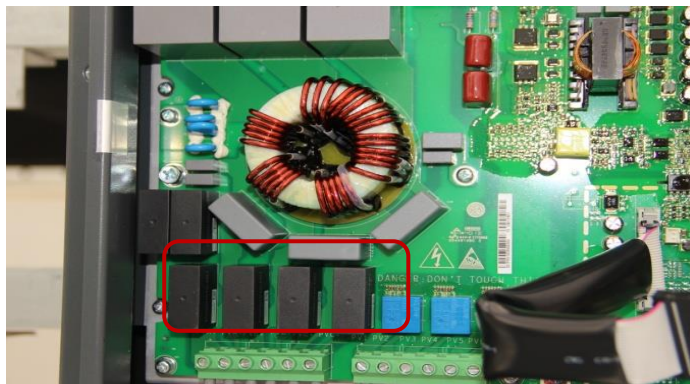
### Warning

ON: Error  
OFF: Normal  
Flash: Warning

### Communication

ON: Normal  
OFF: Abnormal  
Flash: FW updating

## Independent SPD Board



- **Surge protection on main power board**

When it's broken, you need replace the whole inverter

- **Surge protection on a small board**

It's very easy to replace a small board when it's broken, reduce the maintenance cost and time.

## Fuseless design to reduce the failure caused by fuses



### Failure causes

- Metal heat fatigue
- Soldering melt
- Chemical rust

### Failure rate year average

10%-20%

2 strings  
each MPPT,  
no need  
fuse

### Faulty string



### Short current route

.....

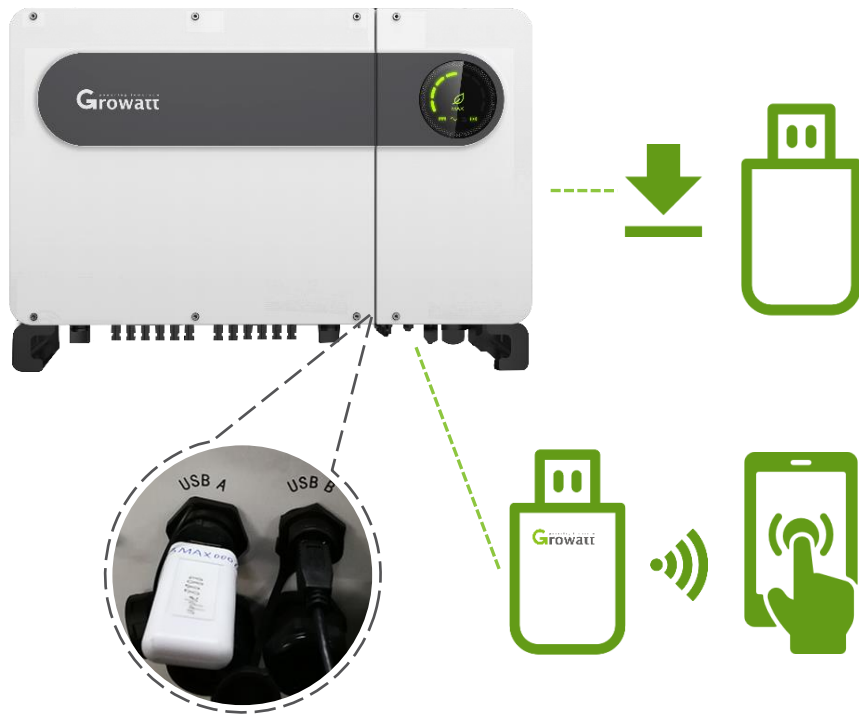


Normal  
string



MPP  
Tracker

## Smart local service



### USB A: flash disk

- Update inverter FW quickly (< 200s)
- Real-time wave data record and fault waveform record
- Record I-V curve data

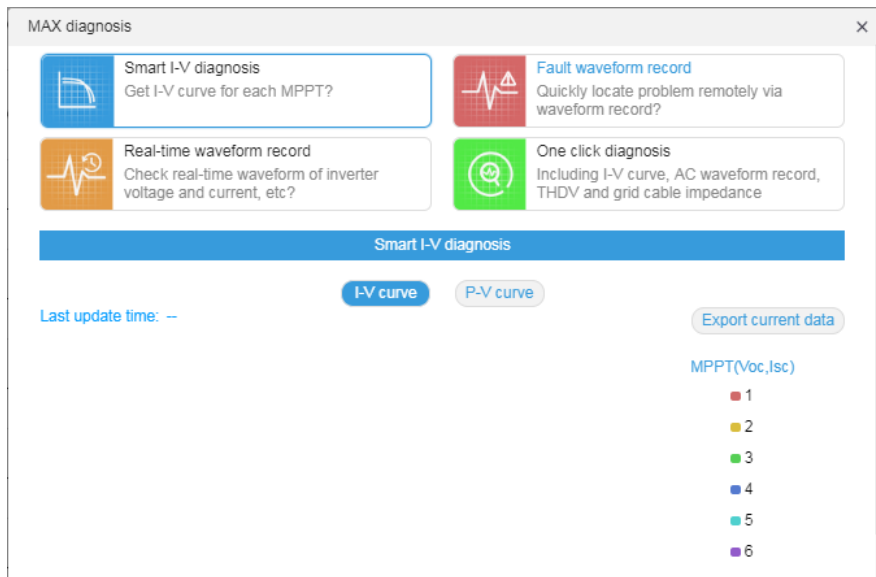
Note: you must put corresponding script in the USB disk

### USB B: local network service

- Wi-Fi stick+ShinePhone APP
- Check real-time waveform and fault waveform record via APP
- Check real time I-V curve
- Set parameter via local Wi-Fi network



## MAX inverter Online checking



MAX diagnosis

**Smart I-V diagnosis**  
Get I-V curve for each MPPT?

**Fault waveform record**  
Quickly locate problem remotely via waveform record?

**Real-time waveform record**  
Check real-time waveform of inverter voltage and current, etc?

**One click diagnosis**  
Including I-V curve, AC waveform record, THDV and grid cable impedance

Smart I-V diagnosis

Last update time: --

I-V curve P-V curve

Export current data

MPPT(Voc, Isc)

- 1
- 2
- 3
- 4
- 5
- 6
- 

## Report

Report for details before  
conenction

## Smart Remote Maintenance, reduce cost of on-site service

### Remote Configuration

Set inverter

**Inverter**  
Serial number: 3F16160040    Alias: 3F16160040  
Port: 4KZ47142C1    Attributes: AH1.0/ahba0101/1110372

**Command**

Set PV on/off   

Set save PF commands   

Set active power rate     %

Set reactive power rate     %   

Set PF value   

Set inverter time   

Set grid voltage high   

Register        Value

### Remote FW Update

Growatt online upgrade system

Datalog:     Inverter:     Date:  -    

No.	Inverter	Datalog	Time	Firmware version	Internal version	Upgrade	Path
1	FPA2702005	4KZ370139D	2017-10-09 16:28:19	TH1.0	thaa0504	datalog connect time out	/ShinePano/Rudolf - Growatt Germ.
2	FPA2702005	4KZ370139D	2017-10-09 16:08:53	TH1.0	thaa0504	user cancel or datalog connect tim...	/ShinePano/Rudolf - Growatt Germ.
3	FPA2702005	4KZ370139D	2017-10-09 15:28:22	TH1.0	thaa0504	downloading firmware to datalog...	/ShinePano/Rudolf - Growatt Germ.
4	FPA2702005	4KZ370139D	2017-10-09 15:28:22	TH1.0	thaa0504	set datalog 4KZ370139D set pv de...	/ShinePano/Rudolf - Growatt Germ.
5	FPA2702005	4KZ370139D	2017-10-09 15:28:22	TH1.0	thaa0504	set datalog 4KZ370139D set pv de...	/ShinePano/Rudolf - Growatt Germ.
6	FPA2702005	4KZ370139D	2017-10-09 15:30:59	TH1.0	thaa0504	New inverter firmware upgrade	/ShinePano/Rudolf - Growatt Germ.
7	HEB1713001	4KZ3646089	2017-10-01 18:28:40	TH1.0	thaa0507	The user canceled the upgrade	/ShinePano/thaa-XX07/thaa-xx07 ...
8	HEB1713001	4KZ3646089	2017-10-01 18:28:30	TH1.0	thaa0507	逆变器升级成功	/ShinePano/thaa-XX07/thaa-xx07 ...
9	HEB1713001	4KZ3646089	2017-10-01 18:28:25	TH1.0	thaa0507	逆变器升级成功	/ShinePano/thaa-XX07/thaa-xx07 ...
10	HEB1713001	4KZ3646089	2017-10-01 18:28:21	TH1.0	thaa0507	逆变器升级成功	/ShinePano/thaa-XX07/thaa-xx07 ...

Growatt service engineer almost can handle 60%+ problems by remote configuration and FW update without on-site service, saving time and cost for installers and distributors.

## On-site support for the first installation

New function for MAX, Growatt can provide on-site support if necessary with experience engineers



Ranking No.1 of commercial inverters





# Monitoring Solution



ShineMaster Via RS485

Integrated GPRS



ShineWiFi-X/4G-X Q4, 2019

Monitoring device



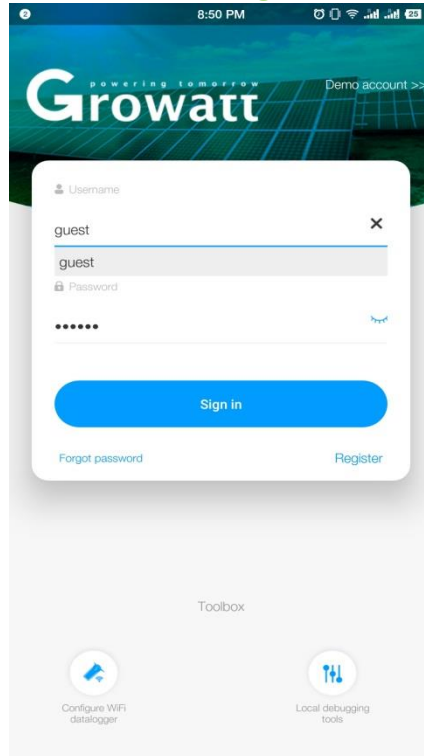
ShinePhone APP



ShineServer / OSS system

Monitoring platform

## Monitoring APP



Daily power chart(W)

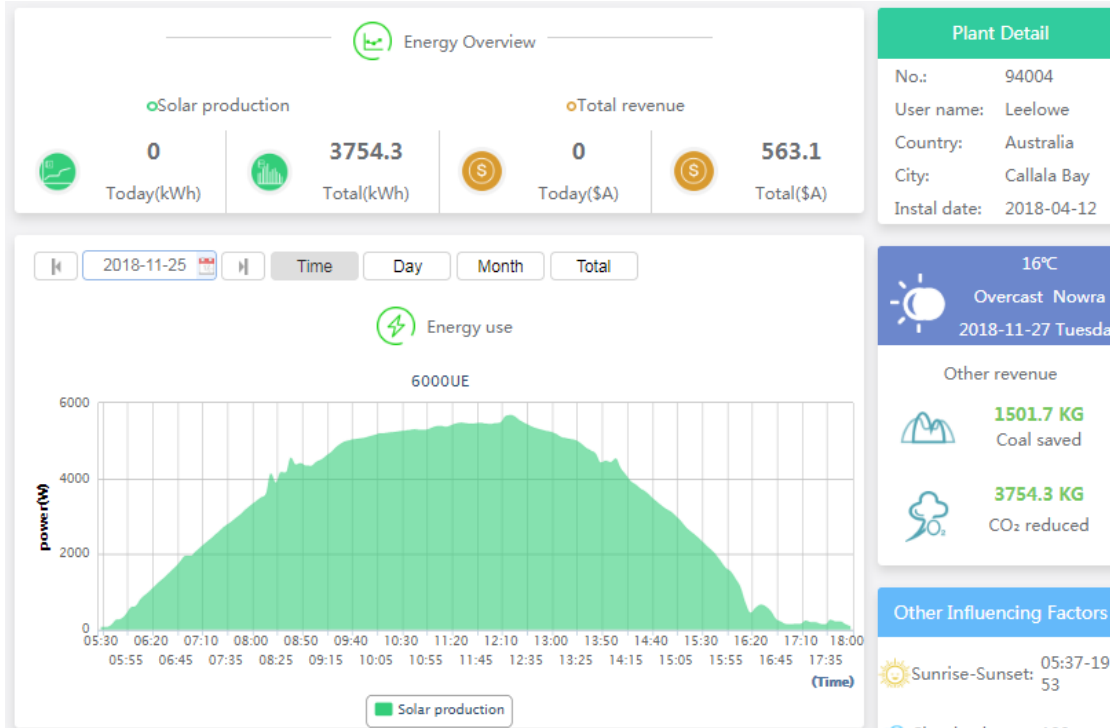


Download ShinePhone



- Production information
- Inverter and datalogger status
- Inverter data, event report
- Configure ShineWiFi-S
- And MAX inverter

Monitoring website <http://server.growatt.com/>



Production information

Inverter and datalogger status

Inverter data, event report

The screenshot displays the Growatt ShineDesign web interface. The top navigation bar includes the Growatt and ShineDesign logos, a language dropdown set to 'English', and navigation links for 'Home page', 'My project', 'City manage', 'Panel manage', and a user profile for 'Vivian'. The main content area is divided into three sections:

- Welcome to use ShineDesign:** A message stating 'You can access and set up your project from here.' Below this is a search input field with the placeholder text 'Please input ID or name' and a search icon. A 'Search history list' section is also present.
- My project:** A table listing existing projects with columns for project name, creation time, and user. A 'New project' button is located at the top right of this section.
- Module:** A table listing available solar modules with columns for manufacturer, module type, nominal power, MPP voltage, and MPP current. Buttons for 'Lately', 'Collection', and 'New Module' are at the top right.

Project Name	Creation Time	User
MAX2	2019-01-15 16:38:52	Vivian
MAX 80K	2019-01-08 18:07:12	Vivian
New	2018-12-12 22:56:03	Vivian
3000-S NL	2018-09-12 22:50:08	Vivian
5K MTL-S	2018-07-26 16:50:44	Vivian

Manufacturer	Module Type	Nominal Power(W)	MPP Voltage(V)	MPP Current(A)
LG	LG 365W-A5	365	36.7	9.95
Triansolar	TSM-300 A	300	32.6	9.19
Trina Solar Limited	TSM-PD05 275	275	31.1	8.73
Trina Solar Limited	TSM-DD05A (II) 285W	280	31.8	8.97
Trina Solar Limited	TSM-DD05A (II) 285W	280	31.8	8.97

<http://shinedesign.growatt.com/ShineDesign/user/loginPage>

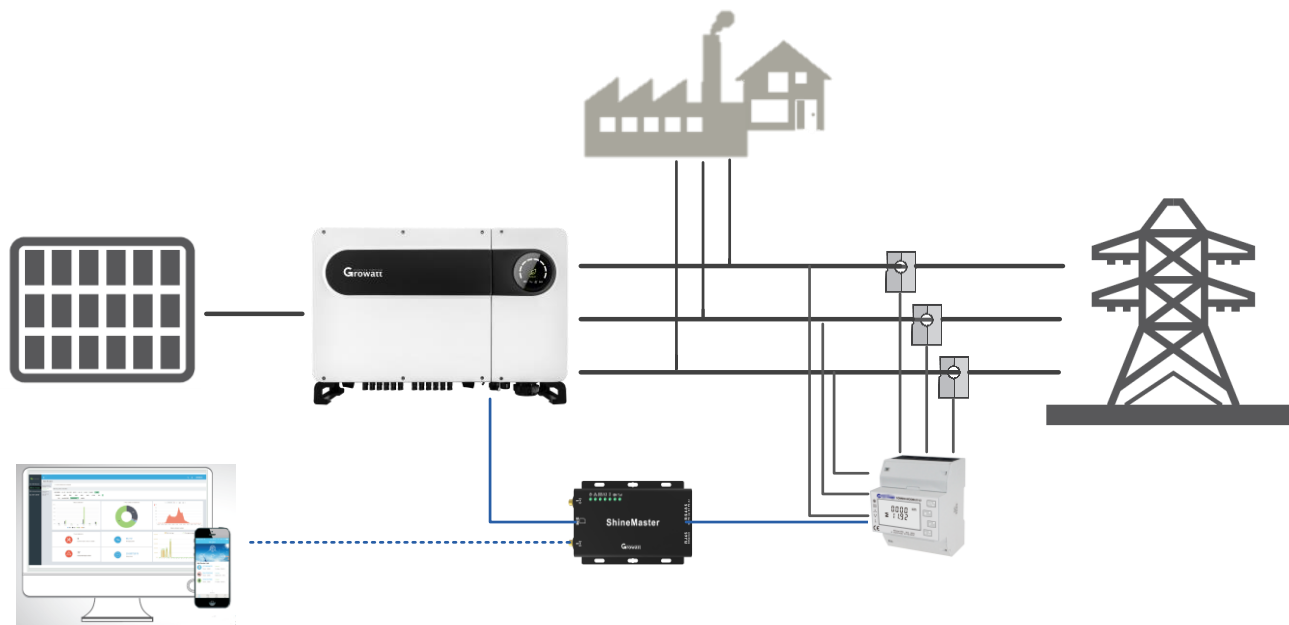
Visit shinedesign website to design your PV system with Growatt inverter.



Export limitation function (ShineMaster+ meter)  
Self-consumption monitoring (ShineMaster+ meter)  
Iframe to display solar system information on third company website



# System Diagram (Commercial consumption)



ShineMaster+ meter + CTs

# Commercial plant monitoring



506.83  
Energy today (kWh)

506.83  
Energy month (kWh)



20  
Devices

1032days  
operation days

6000kW  
Export power

Jan, 12, 2014  
Export time

€ 59,346.86  
Income Total

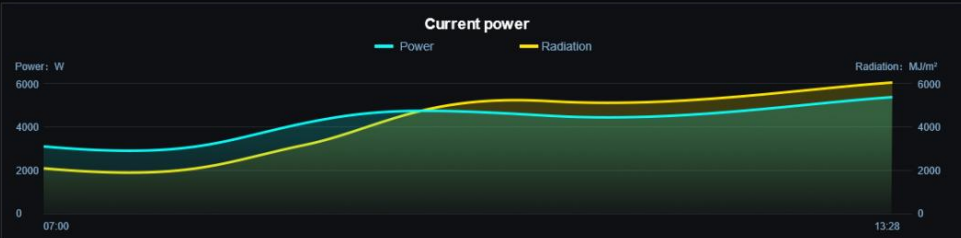
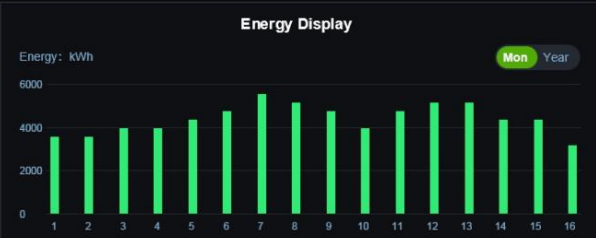
Income Today € 346.86

Income Month € 2,346.86

4000 W  
Current power

82%  
PR

351  
Reduce forest logging




□□□□

⏪ Back **Device list** 🏠 Home 📄 Devices List 📄 Log report ⚙️ Plant Setting 👤 User Manage 10:36  
2018-05-17

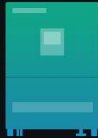
🔌 Inverter 📄 Datalog 📄 MAX   ➕ Add Datalog

### HNB271405C Online ✎ Edit ⚙️ Setting



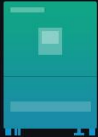
Alias FBD0846018 Model Growatt 3000-S  
Current power 1800W Rated power 1800W  
Datalog SN MN0003072E46671  
Energy today 203.19kWh Energy month 6003.19kWh Energy total 9465203.19kWh  
City ShenZhen Last update time 2019-2-20 11:17:56

### HNB271405C Online ✎ Edit ⚙️ Setting



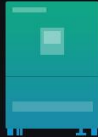
Alias FBD0846018 Model Growatt 3000-S  
Current power 1800W Rated power 1800W  
Datalog SN MN0003072E46671  
Energy today 203.19kWh Energy month 6003.19kWh Energy total 9465203.19kWh  
City 深圳 Last update time 2019-2-20 11:17:56

### HNB271405C Online ✎ Edit ⚙️ Setting



Alias FBD0846018 Model Growatt 3000-S  
Current power 1800W Rated power 1800W  
Datalog SN MN0003072E46671  
Energy today 203.19kWh Energy month 6003.19kWh Energy total 9465203.19kWh  
City 深圳 Last update time 2019-2-20 11:17:56





### HNB271405C Online ✎ Edit ⚙️ Setting



Alias FBD0846018 Model Growatt 3000-S  
Current power 1800W Rated power 1800W  
Datalog SN MN0003072E46671  
Energy today 203.19kWh Energy month 6003.19kWh Energy total 9465203.19kWh  
City 深圳 Last update time 2019-2-20 11:17:56

K 1 2 3 4 5 ... 10 >  GO

Iframe to display solar system information on third company website

Installation:		Santa Lucia 5.73kW	New York City 5.73kW	Freiburg im Breisgau 5.73kW	Los Angeles 5.73kW	
Daily Production		<b>458.24kWh</b>			Daily Revenue	
						<b>\$ 68.21</b>
Total Production		<b>6,937,458.24kWh</b>			Total Revenue	
						<b>\$ 61,928.21</b>

# 500KW Solar Rooftop

MAX 60KTL3 LV

Dalfsen, Netherlands





# 1MW Solar Rooftop

15pcs MAX 60KTL3 LV Bergambacht, Netherlands





# 1MW Solar Rooftop

15pcs MAX 60KTL3 LV Netherlands





# 200kW Solar Rooftop

4pcs MAX 60KTL3 LV Merselo, Netherlands



# 10MWp Ground Solar Plant

MAX 60KTL3 LV Gansu, China





# 2.5MWp Solar Rooftop

MAX 60KTL3 LV Fujian, China

