



Official Website



APP (iOS)



APP (Android)



340-00043-02 Version: 1.0

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BP SERIES USER MANUAL

DC-COUPLED BATTERY STORAGE RETROFIT

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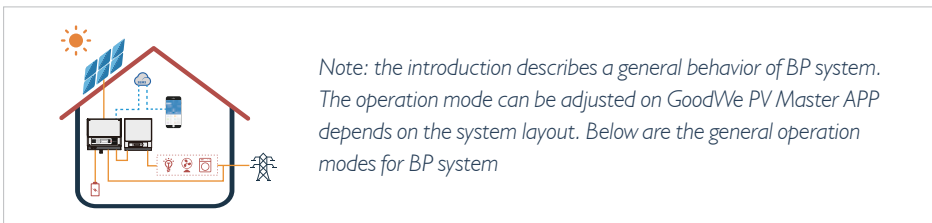
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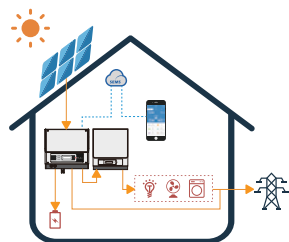
01 INTRODUCTION

GoodWe BP series Hybrid converter is used to upgrade a single-phase grid-tied solar system into energy-storage system with battery, thus to improve self-consumption greatly. During daytime, PV panels generation can go to grid-tied inverter to support local loads, exceed power will charge battery via BP. During night time, battery discharge to grid-tied inverter via BP to make the whole system work without PV power.



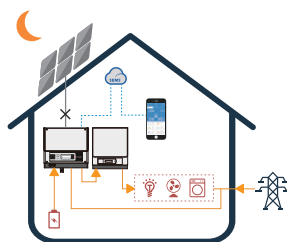
I.1 OPERATION MODES INTRODUCTION

The Hybrid converter has the following main operation modes based on different conditions:



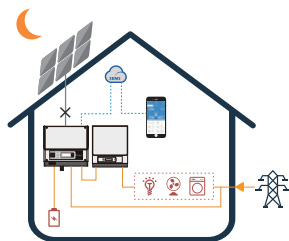
Mode I

PV power support local loads via grid-tied inverter first, then charge battery via BP, exceed power could be exported to public grid



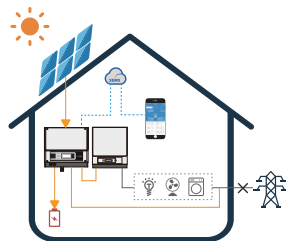
Mode II

Battery can discharge to support the whole system together with grid when PV power is low or without PV power



Mode III

Grid could support to power on BP, decrease battery power consumption



Mode IV

When grid shut down or grid-tied inverter fails, PV power could be used to charge battery

I.2 SAFETY & WARNING

The BP series hybrid converters of Jiangsu GoodWe Power Supply Technology Co., Ltd. (hereinafter called as GoodWe) strictly comply with related safety rules for product design and testing.

Please read and follow all the instructions and cautions on the hybrid converter or user manual during installation, operation or maintenance, as any improper operation might cause personal or property damage.

• SYMBOLS EXPLANATION



Caution!
Failing to observe a warning indicated in this manual may result in injury.



Danger of high voltage and electric shock!



Danger of hot surface!



Components of the product can be recycled.



This side up! The package must always be transported, handled and stored in such a way that the arrows always point upwards.



No more than six (6) identical packages being stacked on each other.



Product should not be disposed as household waste.



The package/product should be handled carefully and never be tipped over or slung.



Refer to the operating instructions.



Keep dry! The package/product must be protected from excessive humidity and must be stored under cover.



Inverter will be touchable or operable after minimum 5 minutes of being turned off or totally disconnected, in case of any electrical shock or injury.



CE Mark

• SAFETY WARNING

Any installation and operation on hybrid converter must be performed by qualified electricians, in compliance with standards, wiring rules or requirements of local grid authorities or companies (like AS 4777 and AS/NZS 3000 in Australia).

Before any wiring connection or electrical operation on hybrid converter, all DC and AC power must be disconnected from hybrid converter for at least 5 minutes to make sure it is totally isolated to avoid electric shock.

The temperature of hybrid converter surface might exceed 60 C during working, so please make sure it is cooled down before touching it, and make sure the hybrid converter is untouchable for children.

Usage and operation of the hybrid converter must follow instructions in this user manual, otherwise the protection design might be useless and warranty for the hybrid converter will be invalid.

Appropriate methods must be adopted to protect hybrid converter from static damage. Any damage caused by static is not warranted by GoodWe.

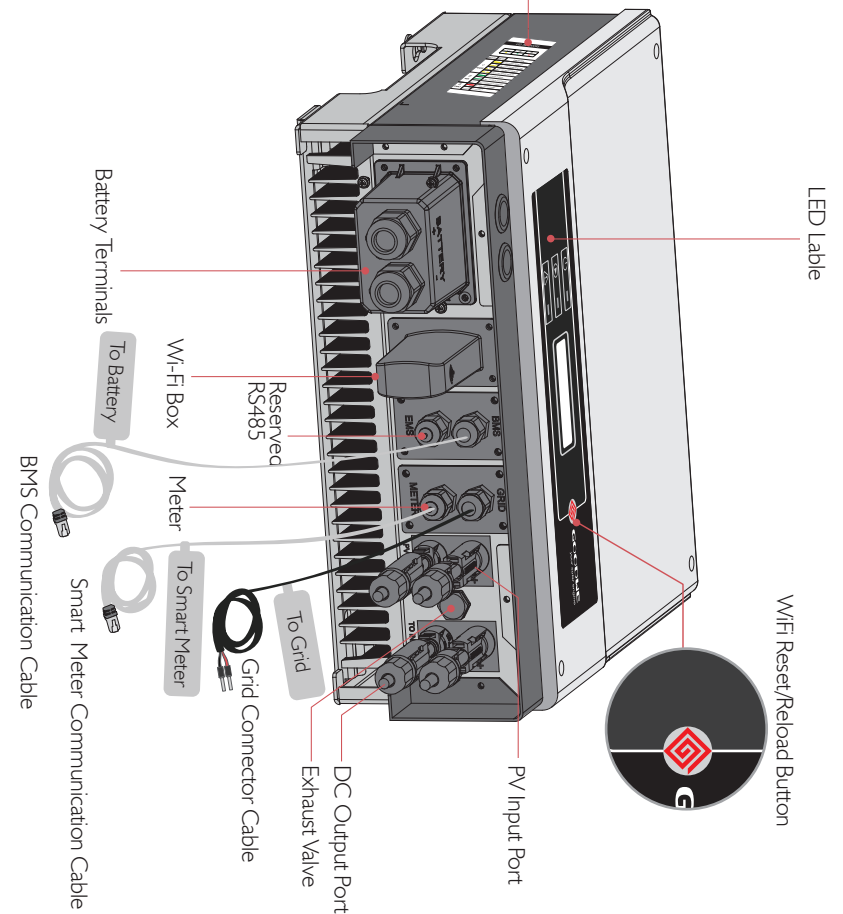
Appropriate methods must be adopted to protect inverter from static damage. Any damage caused by static is not warranted by GoodWe.

PV negative (PV-) on hybrid converter side is not grounded as default design.

PV modules used on the hybrid converter must have an IEC61730 class A rating, and the total open-circuit voltage of PV string/array is lower than the maximum rated DC input voltage of the hybrid converter. Any damage caused by PV over-voltage is beyond warranty

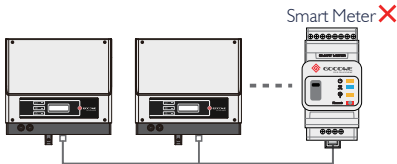
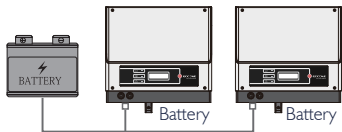
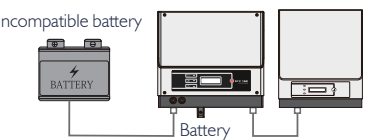
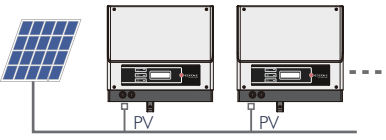
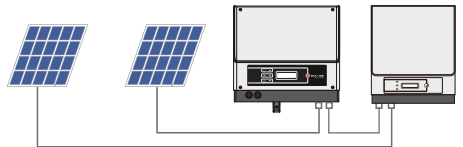
1.3 PRODUCT OVERVIEW

INDICATOR	STATUS	EXPLANATION
POWER		ON=WIFI CONNECTED/ACTIVE
		BLINK 1 = WIFI SYSTEM RESETING
		BLINK 2 = WIFI ROUTER PROBLEM
		BLINK 4 = WIFI SERVER PROBLEM
RUN		ON = SYSTEM IS READY
		BLINK = SYSTEM IS STARTING UP
FAULT		ON = FAULT HAS OCCURRED
		OFF = NO FAULT






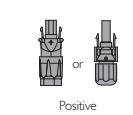
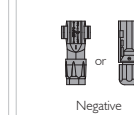
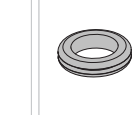
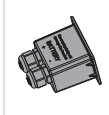






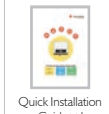
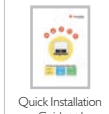
02 **INSTALLATION INSTRUCTIONS**

2.1 UNACCEPTABLE INSTALLATIONS

 <p>Smart Meter ❌</p> <p>ONE SMART METER CANNOT CONNECT TO MULTI-INVERTERS</p>	 <p>BATTERY</p> <p>Battery Battery</p> <p>ONE BATTERY BANK CANNOT BE CONNECT TO MULTI-INVERTERS.</p>
 <p>Incompatible battery ❌</p> <p>Battery</p> <p>CANNOT CONNECT TO INCOMPATIBLE BATTERIES OR GRID-TIED INVERTERS</p>	 <p>PV PV</p> <p>SINGLE PV STRING CANNOT CONNECT TO TWO OR MORE INVERTERS.</p>
 <p>Single-MPPT Two DC input Grid-tied Inverter ❌</p> <p>SINGLE MPPT GRID-TIED INVERTER, WITH TWO DC INPUTS THE SEPARATE STRINGS CANNOT BE CONNECTED AS SHOWN</p>	

2.2 PACKING LIST

On receiving the hybrid converter, please check to make sure all the components as below are not missing or broken.

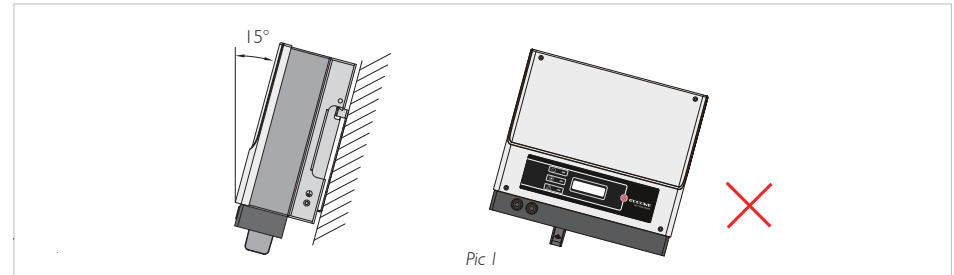
 Converter x 1	 Wall-mounted Bracket x 1	 Smart Meter & CT x 1	 Positive DC Plug x 2	 Negative DC Plug x 2	 Insulation ring x 2	 Battery cover x 1
 Waterproof terminal x 1	 Battery terminal x 2	 PE terminal x 1	 Expansion bolts x 6	 Hexagon head screw x 2	 Pan head screw x 12	 User manual x 1
						 Quick Installation Guide x 1

2.3 MOUNTING

2.3.1 SELECT MOUNTING LOCATION

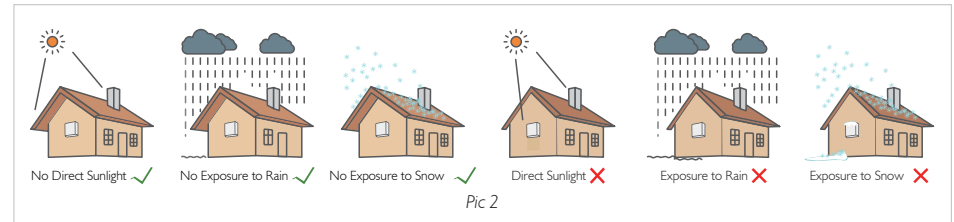
For converter's protection and convenient maintenance, mounting location for converter should be selected carefully based on the following rules:

- Rule 1.** Converter should be installed on a solid surface, where is suitable for inverter's dimensions and weight.
- Rule 2.** Converter installation should stand vertically or lie on a slop by max 15° (Pic 1)



Rule 3. Ambient temperature should be lower than 45 °C

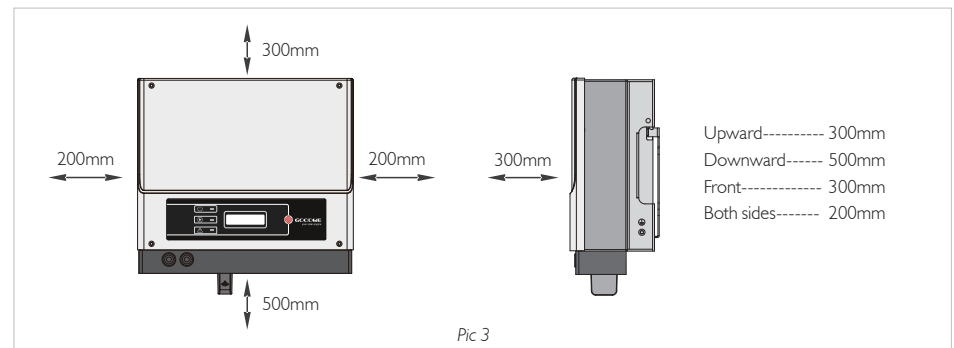
Rule 4. The installation of converter should be protected under shelter from direct sunlight or bad weather like snow, rain, lightning etc. (Pic 2)



Rule 5. Converter should be installed at eye level for convenient maintenance.

Rule 6. Product label on inverter should be clearly visible after installation.

Rule 7. Leave enough space around converter following the values on pic 3.



Converter cannot be installed near flammable, explosive or strong electro-magnetic equipment.^[1]

2.3.2 MOUNTING

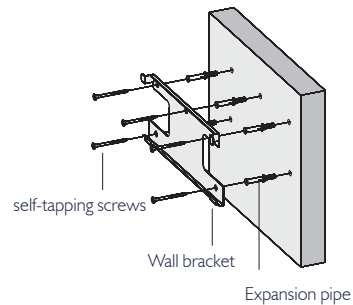
! Remember that this converter is heavy! Please be careful when lifting out from the package.^[2]

The converter is suitable for mounting on concrete or other non-combustible surface only

Step 1

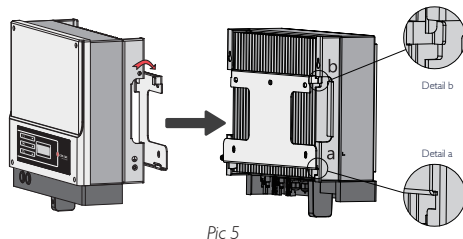
- Please use the mounting bracket as a template to drill 6 holes on right positions (10mm in diameter, and 80mm in depth) (Pic 4)
- Use expansion bolts in accessory box and fix the mounting bracket onto the wall tightly

NOTE: Bearing capacity of the wall must be higher than 8KG, otherwise may not be able to keep converter from dropping.



Pic 4

Step 2



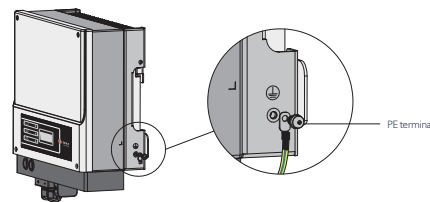
Pic 5

Carry the converter by holding the heating sink on two sides and Place the converter on the mounting bracket. (Pic 5)

NOTE: Make sure the heat sink on converter is rightly joint with mounting bracket.

Step 3

Ground cable shall be connected to ground plate on grid side (Pic 6)



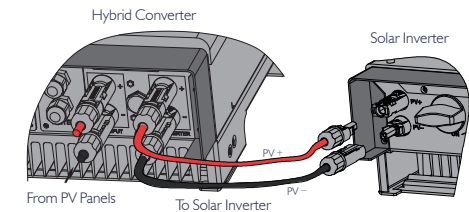
Pic 6

2.4 ELECTRICAL WIRING CONNECTION

2.4.1 PV INPUT AND TO INVERTER CONNECTION

Please follow the following rules when connecting PV panels to BP converter:

1. A DC breaker must be installed between PV panels and BP converter. And make sure the DC breaker is turned off before connecting PV to BP converter.
2. The short-circuit current and open-circuit voltage of PV string must not exceed the Max DC Current and Max Input Voltage of BP converter
3. PV strings could not connect to earth/grounding conductor and the minimum isolation resistance to ground of PV strings must exceed 18.33KΩ



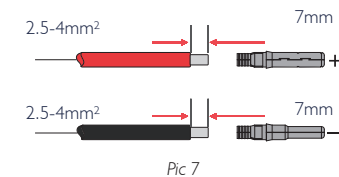
There could be SUNCLIX, MC4 or Amphenol DC plugs in accessory box

Step 1

Prepare PV cables and DC plugs (Pic 7)

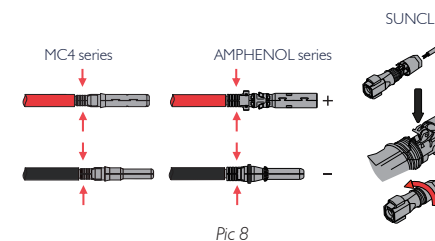
NOTE:

- Please use DC plugs and connectors in GoodWe accessory box
- PV cable should be standard, 2.5-4mm² PV cable



Pic 7

Step 2



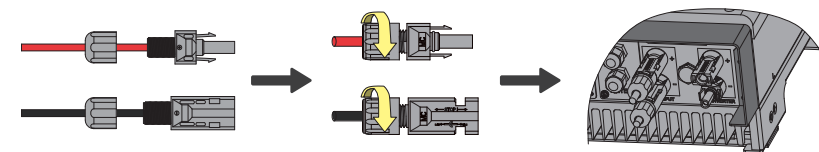
Connect PV cable to DC connectors (Pic 8)

NOTE:

- PV cable must be tightly crimped into the connectors
- For Amphenol connector, the limit buckle cannot be pressed

Step 3

Screw the cap on and plug onto inverter side (Pic 9)



NOTE:


- There will be a click sound if connectors are inset correctly into DC plugs

! The polarity of PV strings or on the converter cannot be connected by reverse, otherwise converter could be damaged.^[3]

2.4.2 BATTERY CONNECTION

- Lithium battery (pack) the capacity should be $\geq 50\text{Ah}$. Lead acid batteries are not allowed to use with BP converter without GoodWe's authority.
- Please be careful against any electric shock or chemical hazard
- Make sure there is an external DC switch ($\geq 63\text{A}$) connected for battery without attached DC switch

Battery wiring connection steps as below:

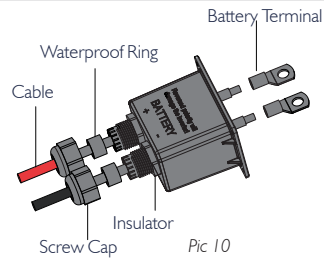
 Make sure battery switch is off and battery nominal voltage meet BP specification before connecting battery to converter make sure converter is totally isolated from PV and AC power^[4].

Step 1

Prepare battery cables and accessories and put battery power cable through battery cover (Pic 10)

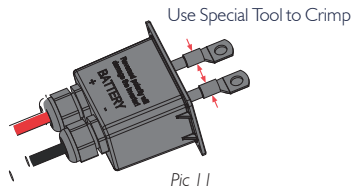
NOTE:

1. Please use accessories from GoodWe box
2. Battery power cable should be 20-25 mm²



09

Step 2



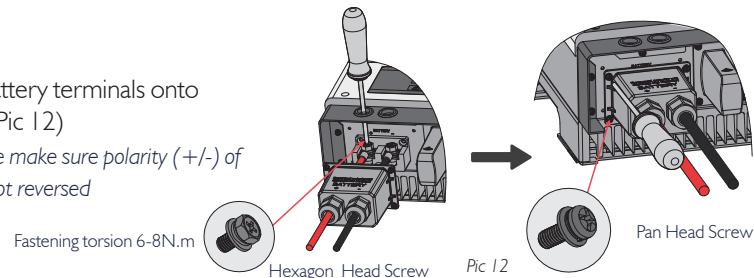
Make battery terminals (Pic 11)

- Strip cable coat, revealing 10mm length of metal core
- Use special crimper to compress battery terminal tightly

Step 3

Connect battery terminals onto converter (Pic 12)

NOTE: Please make sure polarity (+/-) of battery are not reversed



* For the compatible lithium batteries connection, please refer to battery connection part in BP QUICK INSTALLATION INSTRUCTIONS.

• BATTERY PROTECTION DESCRIPTION

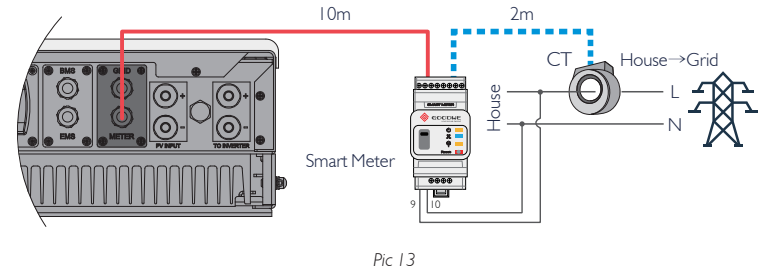
Battery will act a protective charge/discharge current limitation under any condition as below:

- Battery SOC is lower than 1-DOD
- Battery over temperature protection
- Battery voltage lower than discharge voltage
- BMS limitation for lithium battery
- Battery communication abnormal for lithium battery

2.4.3 SMART METER & CT CONNECTION

 Make sure AC cable is totally isolated from AC power before connecting Smart Meter and CT^[6]

- Single-Phase Smart Meter Wiring (Pic 13)



NOTE:

1. The Smart Meter and CT is well configured, please do not change any setting on Smart Meter
2. CT must be connected on the same phase with Smart Meter power cable

10

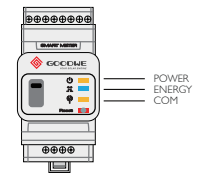
- Detailed pin function of each port on BP converter is as below:



Position	Color	BMS Function	Smart Meter Function	RS485
1	Orange&white	485_A2	NC	485_A
2	Orange	NC	NC	485_B
3	Green&white	485_B2	485_B1	485_A
4	Blue	CAN_H	NC	NC
5	Blue&white	CAN_L	NC	NC
6	Green	NC	485_A1	485_B
7	Brown&white	NC	485_B1	NC
8	Brown	NC	485_A1	NC

- Single-Phase Smart Meter LED Indications

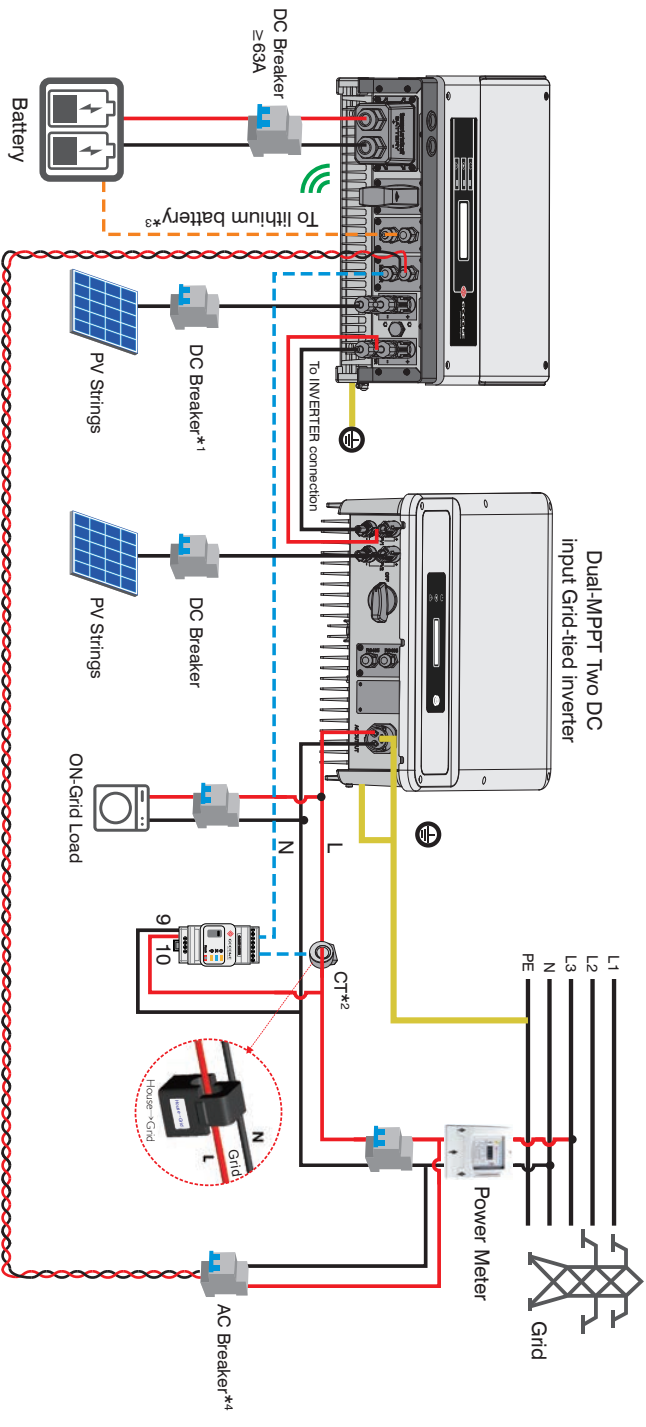
	OFF	ON	Blinking
POWER	Not working	Working	/
ENERGY	/	Importing	Exporting
COM	Blink one time when it transfer data to inverter		



NOTE:

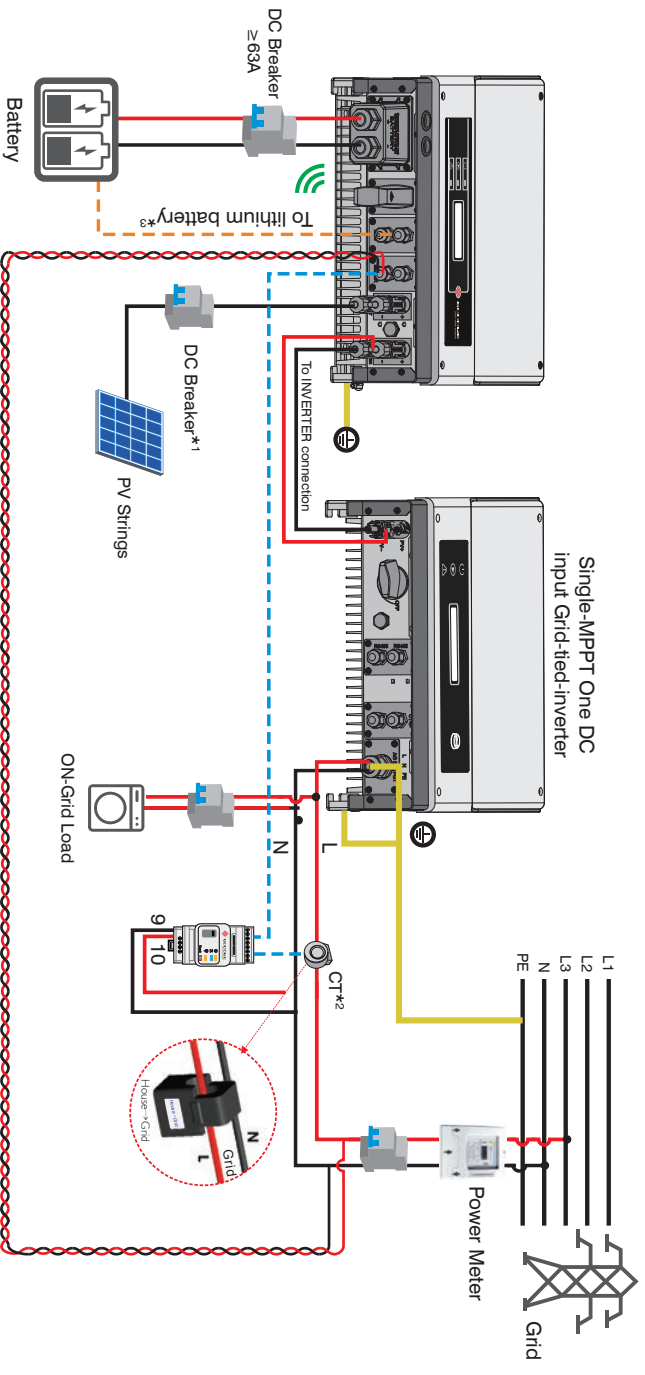
For both Smart Meter, customer can also check on PV Master App

• WIRING SYSTEM FOR BP CONVERTER



1. DC Breaker is compulsive, or DC power can not be cut off manually
2. Direction of the CT cannot be connected in reverse, please follow "House→Grid" direction to do the connection
3. Only for lithium battery which has BMS communication
4. AC Breaker is optional or shut AC power off if you need close BP converter

• WIRING SYSTEM FOR BP CONVERTER



1. DC Breaker is compulsive, or DC power can not be cut off manually
2. Direction of the CT cannot be connected in reverse, please follow "House→Grid" direction to do the connection
3. Only for lithium battery which has BMS communication

03 MAMUAL OPERATION

3.1 WIFI CONFIGURATION

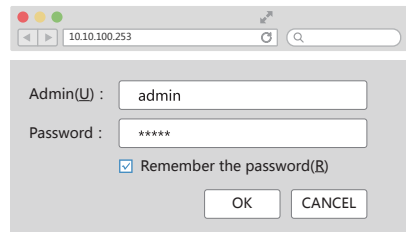
- This part shows configuration on web page
- Wi-Fi configuration is absolutely necessary for online monitoring and after-sales maintenance

PREPARATION:

1. Inverter must be powered up with only PV power
2. Need a router with available internet access to GoodWe portal <https://www.semsportal.com>

Step 1

1. Connect Solar-WiFi* to your PC or smart phone>(* means the last 8 characters of the inverter serial No.)
2. Open browser and login 10.10.100.253
Admin (U): admin; Password: admin
3. Then click "OK"



Step 2

1. Click "Start Setup" to choose your router
2. Then click "Next"

Device information	
Firmware version	1.6.9.3.38.2.1.38
MAC address	60:C5:A8:60:33:E1
Wireless AP mode	Enable
SSID	Solar-WiFi
IP address	10.10.100.253
Wireless STA mode	Disable
Router SSID	WiFi_Burn-in
Encryption method	WAP/WAP2-PSK
Encryption algorithm	AES
Router Password	WiFi_Burn-in

Cannot join the network, may be caused by:
router doesn't exist, or signal is too weak, or password is incorrect
★ Help: Wizard will help you to complete setting within one minute.

Start Setup

Please select your current wireless network:

SSID	Sec mode	Enc type	Channel	RSSI
WIFI Test	WAP2-PSK	AES	6	54%

★ Note: When RSSI of the selected WiFi Network is lower than 10%, the connection may be unstable, please select other available network or shorten the distance between the device and the router.
If your wireless router does not broadcast SSID, please click "Next" and add a wireless network manually.

Back **Next**

Step 3

1. Fill in the password of the router, then click "Next"
2. Click "Complete"

Add wireless network manually

Network name (SSID): WiFi-Test
Encryption method: WPA/WPA2-PSK
Encryption algorithm: AES

Please enter the wireless network password:
Password (8-63 bytes): hellogoodwe

Note: case sensitive for SSID and password
Please make sure all parameters of wireless network are matched with router, including password

Back **Next**

Save success!

Click 'Complete', the current configuration will take effect after restart.
If you still need to configure the other pages of information, please go to complete your required configuration.
Configuration is completed, you can log on the Management page to restart device by Click on 'OK' button.

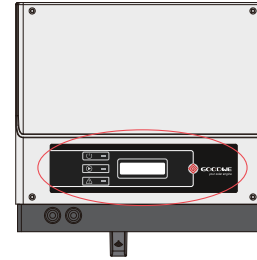
Confirm to complete?

Back **Complete**

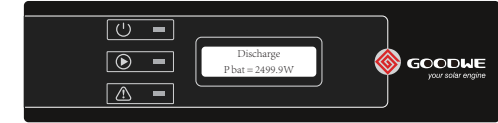
NOTE:

1. Please make sure the password, Encryption Method/Algorithm is right the same with the router's
2. If everything is right well, the Wi-Fi LED on inverter will change from double blink to quartic blink then to solid status, which means Wi-Fi is connected to GoodWe icloud successfully.
3. Wi-Fi configuration could also be done on PV Master, details please check on PV Master APP

3.2 LCD DISPLAY INSTRUCTION

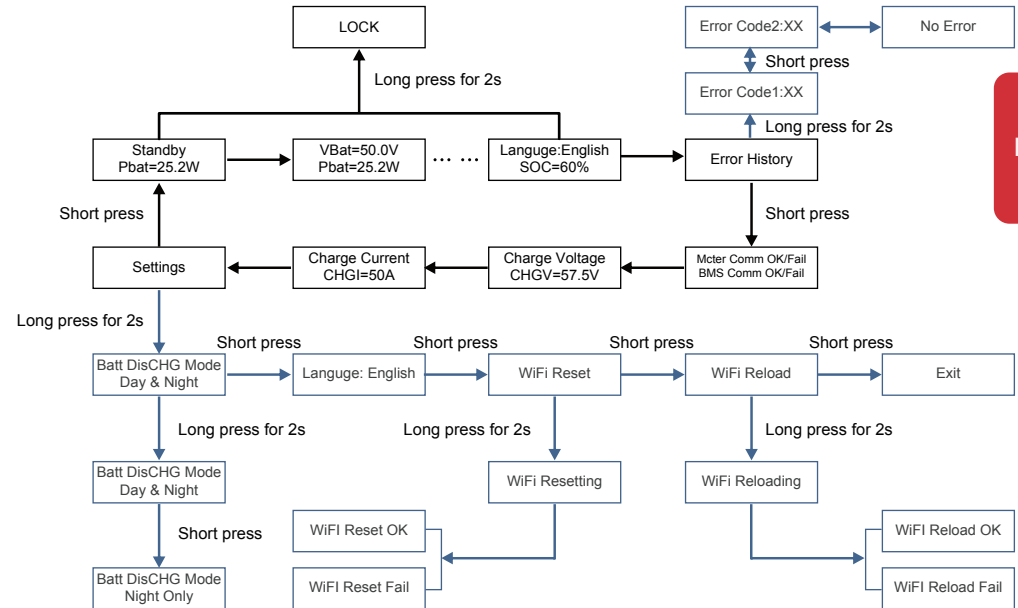


LED Display



Note: All the settings except for "WiFi Reloading" and "WiFi Resetting" can also be done on GoodWe PV Master App.

• DISPLAY OPERATION MENU



Note: Double click of the button takes display back to the last page.

3.3 PV Master APP OPERATION

PV Master is an external monitoring/ configuration application for GoodWe hybrid inverters, used on smart phones or pad for both Android and iOS system, main functions as below:

1. Edit system configuration to make the system work as customer needs
2. Monitor and check performance of the hybrid system
3. Wi-Fi configuration

Please download PV Master OPERATION INSTRUCTIONS from www.goodwe.com



04 OTHERS

4.1 ERROR MESSAGE AND TROUBLESHOOTINGS

• ERROR MESSAGE

The error messages below will be displayed on the LCD or PV Master App or report by Email if the error really happen

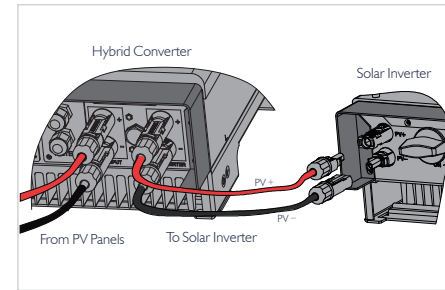
ERROR MESSAGE	EXPLANATION	REASON	SOLUTIONS
PV Over Voltage	DC total voltage of PV string is too high	The total voltage (short-circuit voltage) of each PV string is higher than the max DC input voltage of the hybrid converter.	Check PV string VOC is lower than Max PV Input Voltage of the hybrid converter If VOC of PV string is high, please decrease panels to make sure VOC is with the max DC input voltage of the hybrid converter.
Over Temperature	Temperature inside of the hybrid converter is too high	hybrid converter working environment leads to a high temperature condition	1. Try to decrease surrounding temperature 2. Make sure the installation complies with the instruction on inverter user manual 3. Try to close inverter for 15 mins, then start up again.
DC Bus High	BUS voltage is over-high	/	Try to restart hybrid converter, check if it still happens, if not, means it is just an occasional situation or contact GoodWe

Note: All the errors about battery happen only on Lithium battery with BMS communication

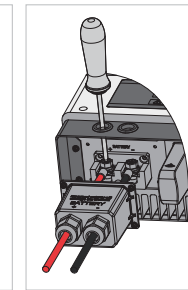
• TROUBLESHOOTINGS

Checking Before Starting bp Up

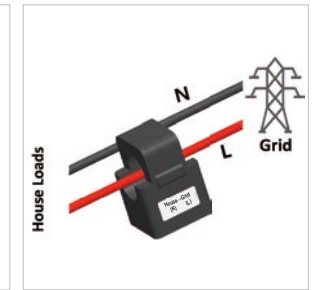
- **PV Input Connection:** Confirm the connection between BP converter and PV panels : polarity (+/-) not reversed, refer to pic 15
- **Battery Connection:** Confirm the connection between BP converter and battery : polarities (+/-) not reversed, refer to pic 16
- **Smart Meter& CT Connection:** Make sure CT are connected between house loads and grid, and follow the House→Grid direction sign on CT. (Pic 17)



Pic 15



Pic 16



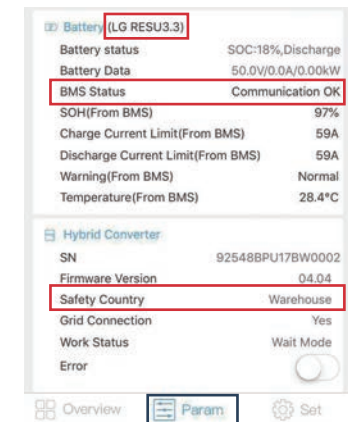
Pic 17

• Battery Settings, BMS Communication and Safety Country:

After connecting Solar-WiFi* (* means the last 8 characters of the inverter serial No.), check on PV Master APP (in "Param" column) to make sure battery type is right what you have installed. If not, please change it in "Set" column (Pic 18)

For Lithium batteries, BMS status should be "Communication OK"

Note: If BMS Status says "NG", then please make sure battery communication cable wiring connection and all settings are all right, refer to battery connection SOP in S-BP QUICK INSTALLATION INSTRUCTIONS



Pic 18

Possible Problems During Operation

BP not start up with ONLY battery connected

Solution:

1. Make sure the voltage of battery is higher than 50.5V, otherwise battery cannot start BP up. If battery voltage is OK, but problem still there, please contact GoodWe after-sales services

BP not start up with ONLY PV connected

Solution:

1. Make sure the voltage of PV is higher than 90V;
 2. Make sure the connection between BP ("TO INVERTER") and inverter is well-not reversed;
- If everything is OK, but problem still there, please contact GoodWe after-sales services.

BP not start up with ONLY Grid connected

Solution:

Make sure the voltage of Grid is higher than 90V, otherwise Grid cannot start BP up. If Grid voltage is OK, but problem still there, please contact GoodWe after-sales services

There is no discharge or output power from BP at night time

Solution:

Check items:

1. It takes 20-30s before battery discharge.

NOTE: sometime BP may be under standby status for long time, this might result from the sharp change of PV or Load power during a short time("import/export Power" changed a lot between buy/sell power to grid, battery cannot discharge continuously)

2. Communication between BP and Smart Meter is OK or not;
3. Make sure import Meter power is lower than -100W.
 - a. BP/battery will not discharge unless import Power is lower than 100W;
 - b. If import Power is lower than 100W, but BP/Battery still not discharge, then please check Smart meter&CT connection and direction;
4. Make sure SOC is higher than 1-DOD; Or if battery discharged to below 1-DOD, than battery will only discharge again when 50C charged to $20\% + (1-DOD)/2$ (if need battery discharge immediately, customer can restart the system)

If everything is OK, but problem still there, please contact GoodWe after-sales services.

Import power > 100W but battery does not discharge

Solution:

Check Items:

1. Follow the steps as above the last trouble shooting;
 2. Make sure the work mode is set to "Day and night mode".
 3. Make sure PV voltage is lower than $9 \times \text{Battery voltage} - 20V$, if not, please decrease panels;
- If everything is OK, but problem still there, please contact GoodWe after-sales services.

Big Power fluctuation on battery charge/discharge

Solution:

Check items

1. Check if there is a fluctuation on load power;
 2. Check if there is a fluctuation on PV power on GoodWe Portal.
- If everything is OK, please contact GoodWe after-sales Services

Battery not charge when export power > 100W

Solution:

Check items:

1. It takes 20-30s before battery charge.
 2. Check if Smart Meter&CT connected in the right position and to right direction as on the user manual;
 3. Make sure PV voltage is higher than 100V to start BP up;
 4. Check if total load power is much higher than PV power, or check if Pgrid on GoodWe Portal is always below 0W.
 5. Make sure PV voltage is lower than $9 \times \text{Battery voltage} - 20V$, if not, please decrease panels
- If everything is OK, but problem still there, please contact GoodWe after-sales services.

NOTE: Sometime BP may be under standby status for long time, this might result from the sharp change of PV or Load power during a short time("import/export Power" changed a lot between buy/sell power to grid, battery cannot charge continuously)

Questions & Answers (Q & A)

About Wi-Fi Configuration

Q: Why cannot search Solar-WiFi* signal on smart phone?

A: Normally Solar-WiFi* signal can be searched after inverter powered up. Please check if Wi-Fi module is connected well, and make sure inverter is powered up normally.

NOTE: If Wi-Fi led on inverter is single-blinking (0.5s on & off), then it means Wi-Fi module is not connected or not connected well

Q: Why cannot connect Solar-WiFi* signal on my mobile device?

A: It is the character of the Wi-Fi module that it can connect to only one device at a time. So please make sure the signal is not connected on other device.

NOTE: Please make sure the password of the Wi-Fi signal (12345678) is not wrong

About others

Q: Could BP converter work normally if the grid-tied inverter works under anti-recerse(zero export)function?

A: Cannot can only work with grid-tied inverter without anti-recerse function activated

Difference on work mode “Day and Night” mode and “Night Only” mode

1. Day and Night mod: battery discharge when system need, nothing to do with PV voltage;
2. Night Only mode: battery discharge only when PV voltage lower than 100V.

“Battery Activate” function

1. Open or close it on PV Master APP;
2. Used to activate battery when battery is discharged empty;
3. Only used when there is no battery voltage.

How BP works when grid is OFF

1. BP can ONLY charge when grid is OFF, because inverter cannot work normally without grid.

The threshold of Meter power to charge/discharge battery

1. Meter power $> +100W$, battery can start to charge;
2. Meter power $< -100W$, battery can start to discharge;

Battery SOC cannot charge to 100%

1. For LG battery, it will stop charge at SOC 95%. It is about LG battery, normal
2. Battery will also stop charge when battery voltage reaches charge voltage set on PV Master APP;

Battery switch trip

1. For lithium battery, please make sure BMS communication OK;
2. Please check if battery voltage is large than discharge voltage set on APP
3. Make sure no short-cut on Battery connection side.

NOTE: If PV power is lower than 100W, or battery cannot get effective charge from PV because of like bad weather for long time, battery voltage will drop low till it trips.

How BP used with on-grid inverter

1. Only used with single-phase on-grid inverters;
2. For each system, can only use one BP;

What is the “Grid” cable on BP converter used for

1. It is used to keep system alive without using battery power when battery voltage is low (on APP, battery voltage will show as 0V, but BMS communication OK);
2. It cannot be used to charge battery

NOTE: battery could still act self consume, which could still drop battery voltage if battery cannot get charge fro long time

Battery configuration

Lithium battery must connect BMS communication and select the right battery type on APP

About forced charging

PV will charge battery in priority to protect battery from over-discharge when battery SOC is low and reached the forced charging point of individual battery (forced charging point for each battery is different)

4.2 DISCLAIMER

The BP series hybrid converters are transported, used and operated under environmental and electrical conditions. GoodWe has the right not providing after-sales services or assistance under following conditions:

* Maintenance

The converter requires periodically maintenance, details as below:

NOTE: Make sure converter is totally isolated from all DC and AC power for at least 5 mins before maintenance

Heat sink: please use clean towel to clean up heat sink once a year

Torque: please use torque wrench to tighten AC and battery wiring connection once a year

DC switch: check DC switch regularly, active the DC switch 10 times in a row once a year. operating DC switch will clean contacts and extend lifespan of DC switch

Water-proof covers: check if water-proof covers of RS485 and other part are fasten once a year

Note: GoodWe will keep the right to explain all the contents in this user manual.

- Inverter is damaged during transferring
- Inverter is out of warranty year and extended warranty is not bought
- Inverter is installed, refitted or operated in improper ways without authority from GoodWe
- Inverter is installed or used under improper environment or technical condition mentioned in this user manual, without authority from GoodWe
- Installation or configuration of the converter does not follow requirements mentioned in this user manual
- The converter is installed or operated against the requirements or warnings that are mentioned in this user manual
- Converter is broken or damaged by any force majeure like lightning, earthquake, fire hazard, storm and volcanic eruption etc.
- Converter is disassembled, changed or updated on software or hardware without authority from GoodWe
- Converter is installed, used or operated against any related items in international or local policies or regulations
- Any non-compatible batteries, loads or other devices connected to BP system

4.3 WARINING QUICK CHECK LIST

[1] Converter cannot be installed near flammable, explosive or strong electro-magnetic equipment, page 6

[2] Remember that this converter is heavy! Please be careful when lifting out from the package, page 7

[3] The polarity of PV strings or on the converter cannot be connected by reverse, otherwise converter could be damaged, page 8

[4] Make sure battery switch is off and battery nominal voltage meet BP specification before connecting battery to converter make sure converter is totally isolated from PV and AC power, page 9

[5] Make sure AC cable is totally isolated from AC power before connecting Smart Meter and CT, page 10

4.4 TECHNICAL PARAMETERS AND CERTIFICATES

• TECHNICAL PARAMETERS OF HYBRID CONVERTERS

Model Name	GW2500-BP
PV Input	
Max. allowed PV input power(W)	6000
Max. allowed PV input voltage (V)*	500
BP working voltage range(V)	100~450
Max. PV input current (A)	25
No. of PV input&output connectors	1/1
PV overvoltage category	Category II
PV connector	AMPHENOL/MC4/SUNCLIX(Optional)
Battery	
Battery type	Li-Ion
Norminal voltage (V)	48
MAX Discharge/Charge current(A)*	50/50
MAX discharge/charge power(W)	2500/2500
Battery capacity (Ah)	50~1000
Charging curve	self-adapt to Li-Ion battery BMS
BP output (without PV)	
Rated output voltage (V)	360
Output voltage range (V)	250~360
Max output current (A)	10
Efficiency	
Max. Battery efficiency	96.5%
Safety	
Battery over&low voltage protector	Integrated
Over current protection	Integrated
Output short protection	Integrated
Safety/EMC	CE
General data	
Dimensions (W×H×D)	344*274.5*128mm
Weight (kg)	8
Mounting	Wall bracket
Ambient temperature range	-25~600 C (>45 C derating)
Relative humidity	0~95%
Moisture location category	4K4H
Max. operating altitude	4000m(>3000m derating)
Protection degree	IP65
Environment category	Outdoor&indoor
External environment pollution degree	Grade I ,2,3

Topology	High frequency insulation
Standby losses(W)	<8
Cooling	Nature convection
Noise emission(dB)	<25
Display	LCD+LED
Communication	USB2.0;WiFi
Standard warranty(years)	5

- *PV input Max. allowed voltage is 500V, But the BP really working voltage range is 100~450V;
- *For Li-Ion battery, charge current follows the command of BMS which doesn't exceed 50A.
- *Make sure PV voltage is lower than 9*Battery voltage-20V, if not, please decrease panels.

• CERTIFICATES OF BP SERIES



Appendix: Protection Category Definition

Overvoltage Category Definition

Category I	Applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level
Category II	Applies to equipment not permanently connected to the installation. Examples are appliances, portables tools and other plug-connected equipment
Category III	Applies to a fixed equipment downstream of and including the main distribution board. Examples are switchgear and other equipment in an industrial installation
Category IV	Applies to equipment permanently connected at the origin of an installation (upstream of the main distribution board). Example are electricity meters, primary over-current protection equipment and other equipment connected directly to outdoor open lines

Moisture Location Category Definition

Moisture Parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40 C	-33~+40 C	-20~+55 C
Humidity Range	5%~85%	15%~100%	4%~100%

Environment Category Definition

Environment Condition	Ambient Temperature	Relative Humidity	Applied to
Outdoor	-20 ~ 50 C	4% ~ 100%	PD3
Indoor Unconditioned	-20 ~ 50 C	5% ~ 95%	PD3
Indoor Conditioned	0 ~ 40 C	5% ~ 85%	PD2

Pollution Degree Definition

Pollution Degree I	No pollution or only dry, non-conductive pollution occurs. The pollution has no influence
Pollution Degree II	Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.
Pollution Degree III	Conductive pollution occurs, or dry, non-conductive pollution occurs, which becomes conductive due to condensation, which is expected.
Pollution Degree IV	Persistent conductive pollution occurs, for example, the pollution caused by conductive dust, rain and snow.