iOS App Store

Android market

Official Website

GOODWE
your solar engine

BP SERIES USER MANUAL

GOODWE
your solar engine

HYBRID CONVERTER

340-00043-00

Note: The information above is subject to change without prior notice, details refer to www.goodwe.com.cn.

1 Introduction

A GoodWe BP series hybrid converter can upgrade a generic single phase or Goodwe SDT three phase PV grid-tied inverter into an energy-storage system.

During daytime, PV panels generate electricity which can be firstly supplied to the local loads, then the excess energy will be used to charge the batteries via the hybrid converter. During the night, the battery will discharge. The electricity will be provided to the local loads with the hybrid converter and the PV grid-tied inverter. The hybrid system improves the self-consumption ratio greatly.
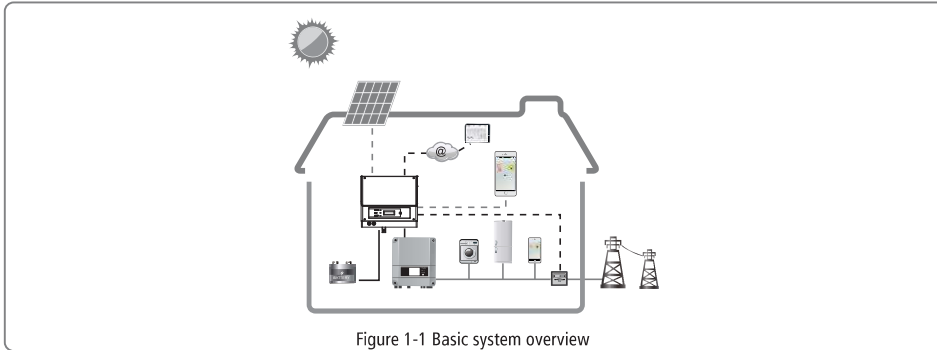
Figure 1-1 Basic system overview

2 Safety and Warning

- Before using the hybrid converter, please read all instructions and cautionary markings on the unit and this manual. Store the manual where it can be accessed easily.
- The BP series hybrid converter of Jiangsu GoodWe Power Supply Technology Co. Ltd. (hereinafter referred to as GoodWe) strictly conforms to related safety rules in design and testing.
- Safety regulations relevant to the location shall be followed during installation, operation and maintenance.
- Improper operation may have a risk of electric shock or damage to equipment and property.

2.1 Symbols

⚠	Caution! Failure to observe a warning indicated in this manual may result in injury.	♻	Components of the product can be recycled.
⚡	Danger of high voltage and electric shock!	⬆⬆	This side up; the package must always be transported, handled and stored in such a way that the arrows always point upwards.
♨	Danger of hot surface!	6	No more than six (6) identical packages may be 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.

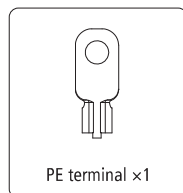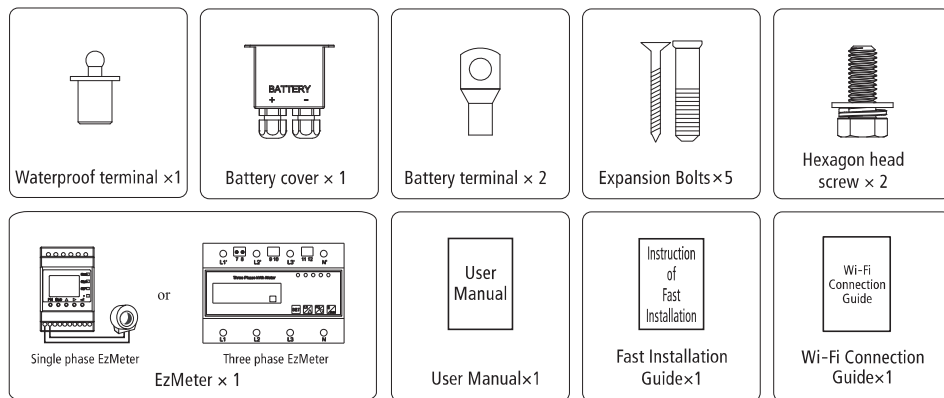|			
CE	CE mark	☂	Keep dry; the package/product must be protected from excessive humidity and must be stored under cover.
⚡5min			Signals danger due to electrical shock and indicates the time (5 minutes) to allow after the inverter has been turned off and disconnected to ensure safety in any installation operation.

2.2 Safety

- Installation, maintenance and connection of hybrid converter must be performed by qualified personnel, in compliance with local electrical standards, wiring rules and the requirements of local power authorities and/or companies
- To avoid electric shock, PV input, PV output, battery connection of the hybrid converter must be terminated at least 5 minutes before performing any installation or maintenance.
- The temperature of some parts of the hybrid converter may exceed 60 during operation. To avoid being burnt, do not touch it during operation. Let it cool before touching it.
- Keep children away from the hybrid converter.
- Static electricity may damage electronic components. Appropriate method must be adopted to prevent such damage to the equipment; otherwise the hybrid converter may be damaged and the warranty annulled.
- When exposed to sunlight, the PV array generates dangerous high DC voltage. Please operate according to our instructions, or it will result in danger to life.
- Ensure the output voltage of the proposed PV array is lower than the maximum rated input voltage of the hybrid converter; otherwise the equipment may be damaged and the warranty annulled.
- Do not open the front cover of the hybrid converter without permission. Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to equipment and annulment of the warranty.
- Completely isolate the equipment should :disconnect the PV input, output terminal, disconnect the battery terminal or breaker.
- Prohibit inserting or pulling the PV and battery terminals when the hybrid converter is working.
- PV modules should have an IEC61730 class A rating.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
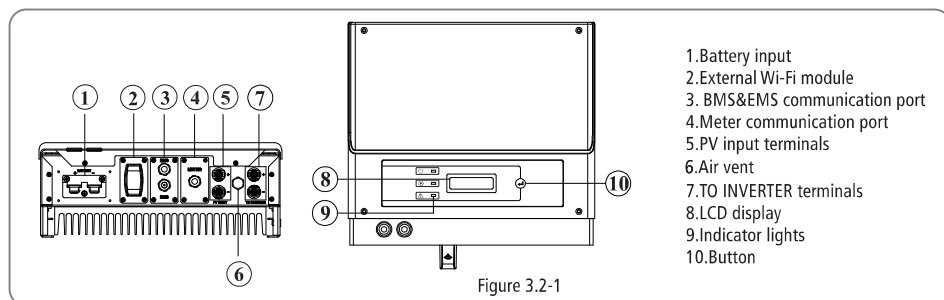
3 Installation

3.1 Packing List

Before installation, please check the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside the package:

BP machine×1	Wall-mounted Bracket×1	Negative DC Plug×2	Positive DC Plug×2	Pan head screw × 5

Waterproof terminal ×1	Battery cover × 1	Battery terminal × 2	Expansion Bolts×5	Hexagon head screw × 2

or Single phase EzMeter / Three phase EzMeter EzMeter × 1	User Manual User Manual×1	Instruction of Fast Installation Fast Installation Guide×1	Wi-Fi Connection Guide Wi-Fi Connection Guide×1

PE terminal ×1

● Depend on your order, we have three-phase EzMeter for three-phase grid-tied inverter and single-phase EzMeter for single-phase grid-tied inverter.

3.2 Product Overview

1.Battery input
2.External Wi-Fi module
3. BMS&EMS communication port
4.Meter communication port
5.PV input terminals
6.Air vent
7.TO INVERTER terminals
8.LCD display
9.Indicator lights
10.Button

Figure 3.2-1

3.3 Selecting The Mounting Location

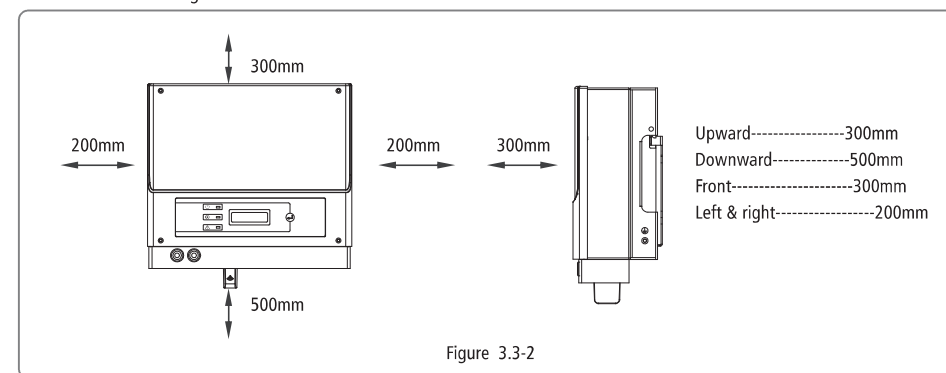Mounting location should be selected based on the following aspects:

● The installation method and mounting location must be suitable for the Hybrid converter's weight and dimensions.

● Mount on a solid surface.

● Select a well ventilated place sheltered from direct sun radiation.

● Install vertically or tilted backwards by max 15°. The device cannot be installed with a sideways tilt. The connection area must point downwards. Refer to Figure 3.3-1.

Figure 3.3-1
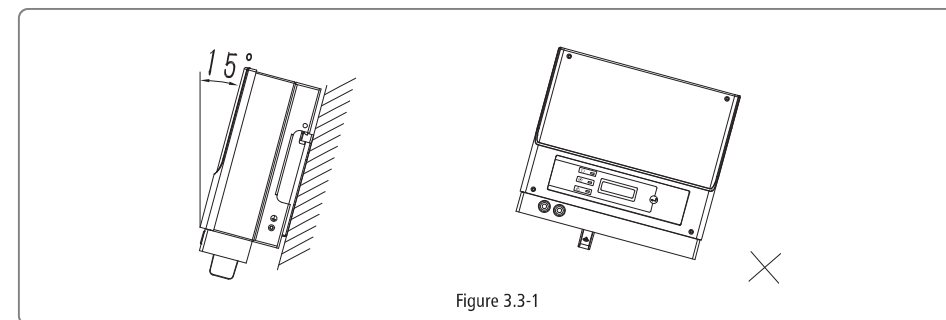
● In order to achieve optimal performance, the ambient temperature should be lower than 45 °C.

● For the convenience of checking the LCD and possible maintenance activities, please install the machine at eye level.

● The Hybrid converter should NOT be installed near inflammable and explosive items. Any strong electro-magnetic equipment should be kept away from installation site.

● Product label and warning symbol should be clear to read after installation.

● Please avoid direct sunlight, rain exposure, snow lay up when installing.

No direct sunlight ✓	No rain exposure ✓	No snow lay up ✓	Direct sunlight ✕	Rain exposure ✕	Snow lay up ✕
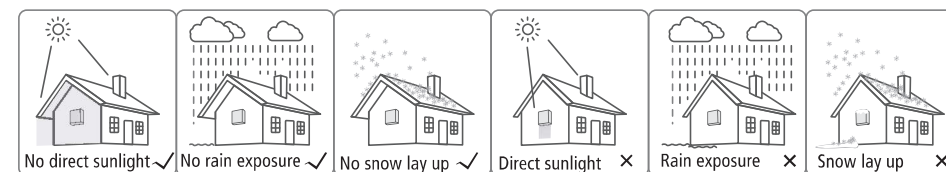
● In consideration of heat dissipation and convenient dismantlement, the minimum clearances around the machine should be no less than the following values:

300mm
200mm   200mm   300mm

Upward----------------300mm
Downward-------------500mm
Front--------------------300mm
Left & right-----------------200mm

500mm

Figure 3.3-2

⚠ 3.4 Mounting Procedure

(1) Use the wall-mounted bracket as a template and drill 5 holes in the wall, 10 mm in diameter and 80 mm deep. Referred to Figure 3.4-1

(2) Fix the wall mounting bracket on the wall using the expansion bolts in the accessories bag.

(3) Hold the hybrid converter by the side groove as Figure 3.4-2.

(4) Install the hybrid converter on the wall-mounted bracket. Referred to Figure 3.4-3, 3.4-4.
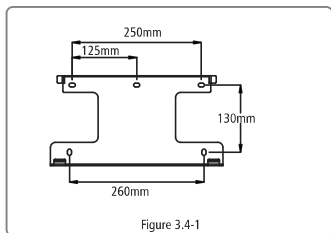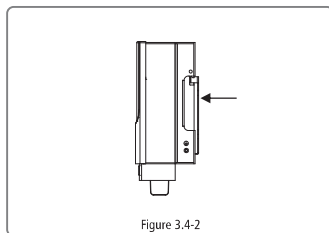
Figure 3.4-1

Figure 3.4-2
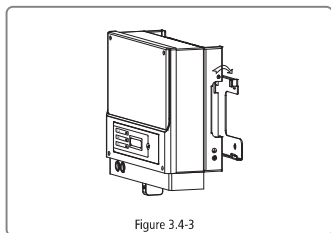
Figure 3.4-3
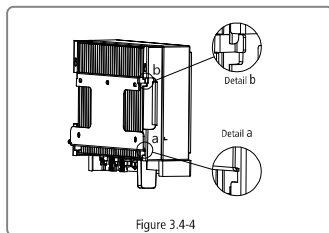
Figure 3.4-4

4. System Connection Diagram

Below configurations are suitable for BP series hybrid converter

1) Single MPPT PV grid-tied inverter, with one DC input

Power cable

Communication cable

① PV INPUT connection

② TO INVERTER connection

③ Battery connection

④ To lithium battery communication cable

⑤ To EzMeter communication cable

⑥ Ezmanage Illustration

⑦ EzMeter & CT connection
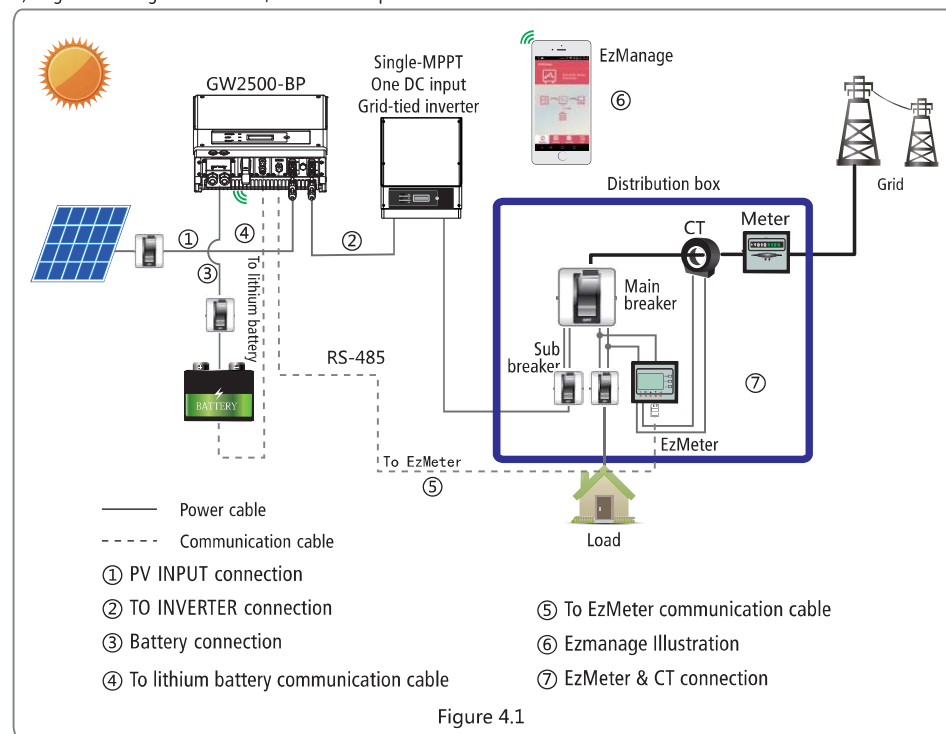
Figure 4.1

Note: if equipped with lead-acid battery, do not need to connect④.

2) Single MPPT PV grid-tied inverter, with two DC inputs
Connection criteria:

● Strings must be equal.

● DC output of the GW2500-BP must be connected to one input of the PV grid-tied inverter.

● Open voltage and short current of panels when connected in parallel must not exceed max voltage and current of inverter.

Power cable

Communication cable

① PV INPUT connection

② TO INVERTER connection

③ Battery connection

④ To lithium battery communication cable

⑤ To EzMeter communication cable

⑥ Ezmanage Illustration

⑦ EzMeter & CT connection

Figure 4.2

Note: if equipped with lead-acid battery, do not need to connect④.

3) Single phase, Dual MPPT, with two DC inputs
• First PV string is connected through the GW2500-BP before connecting to the DC input on the first MPPT.
• Second PV string is connected directly to second MPPT of inverter.
• Strings may be unequal.
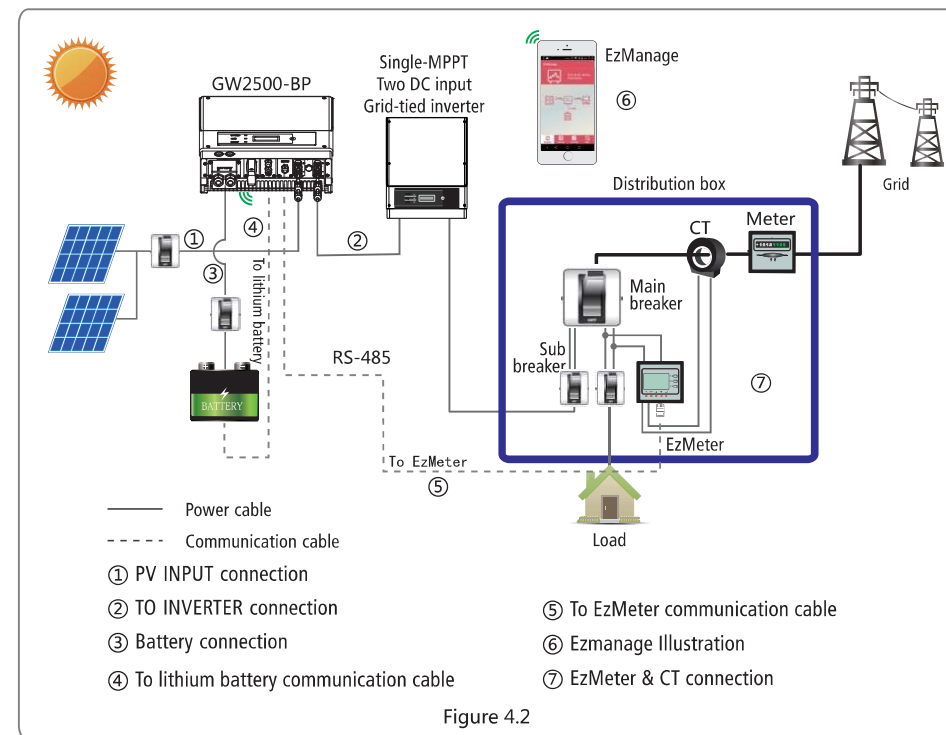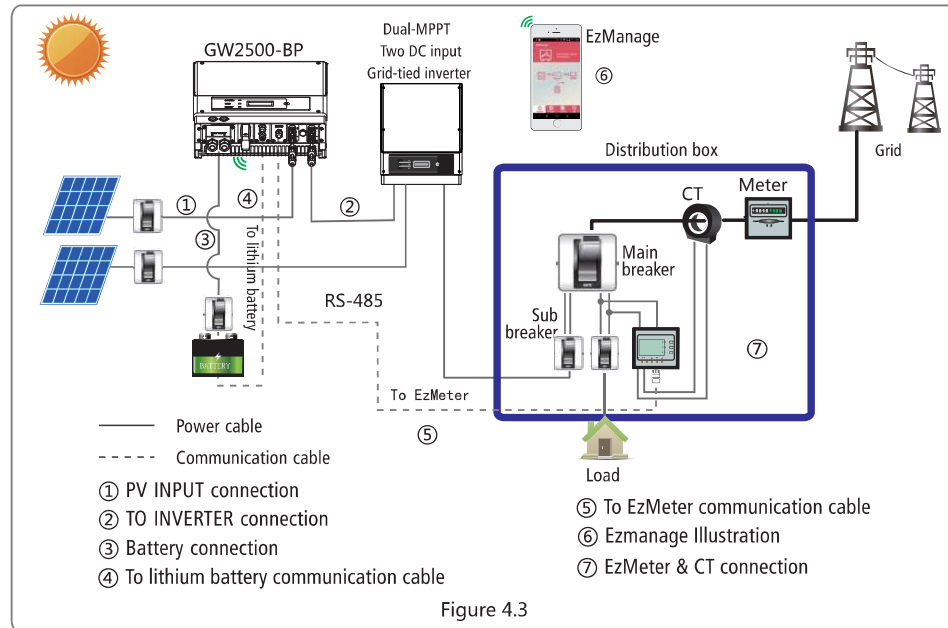

Figure 4.3

Power cable
----- Communication cable
① PV INPUT connection
② TO INVERTER connection
③ Battery connection
④ To lithium battery communication cable

⑤ To EzMeter communication cable
⑥ Ezmanage Illustration
⑦ EzMeter & CT connection

Note: if equipped with lead-acid battery, do not need to connect④.

For SDT With three-phase EzMeter, system connection diagram as below：

Figure 4.3

Power cable
----- Communication cable
① PV INPUT connection
② TO INVERTER connection
③ Battery connection
④ To lithium battery communication cable

⑤ To EzMeter communication cable
⑥ Ezmanage Illustration
⑦ EzMeter & CT connection
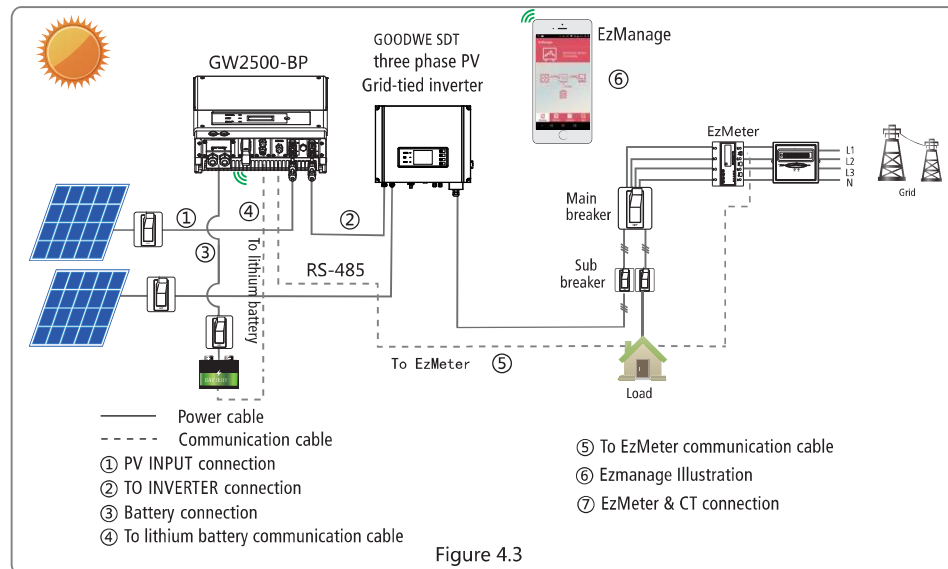
Unsuitable Configurations for GW2500-BP

1) Single MPPT grid-tied inverter, with two DC inputs
The separate strings cannot be connected as shown below. Reconnect the strings as shown in figure4.2.

Figure 4.5

Power cable
----- Communication cable
① PV INPUT connection
② TO INVERTER connection
③ Battery connection
④ To lithium battery communication cable

⑤ To EzMeter communication cable
⑥ Ezmanage Illustration
⑦ EzMeter & CT connection
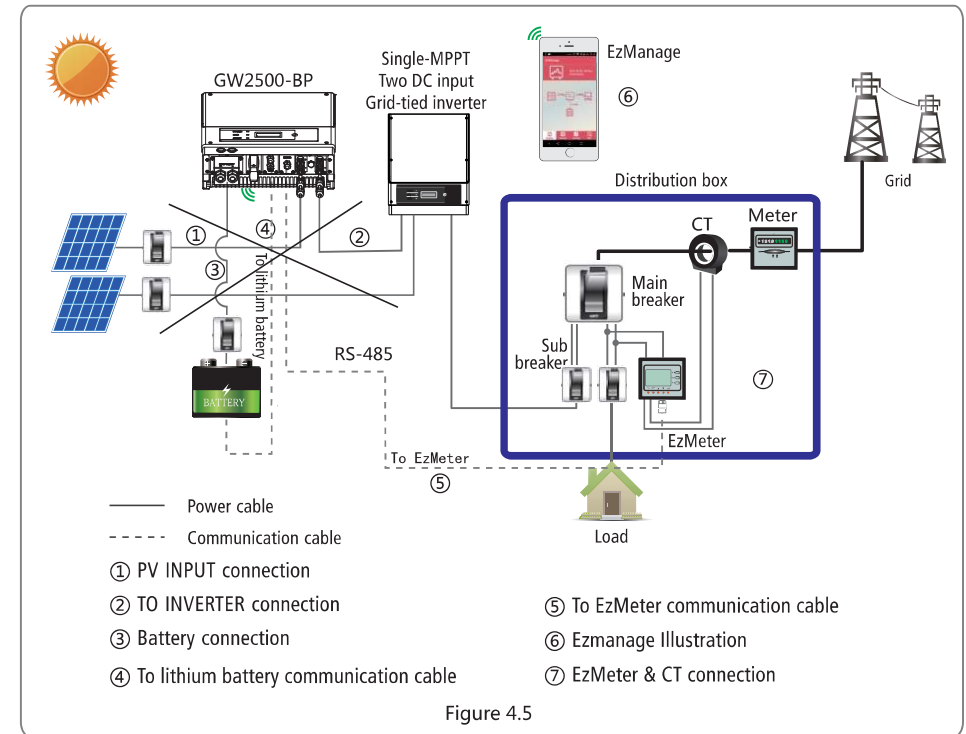
Note: if equipped with lead-acid battery, do not need to connect④.

5.Electrical Connection

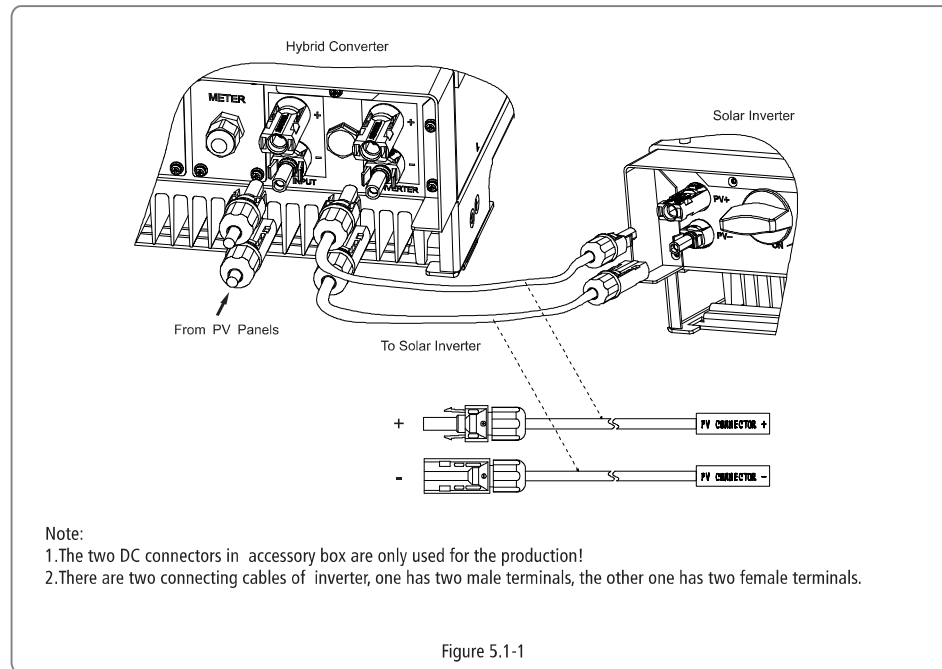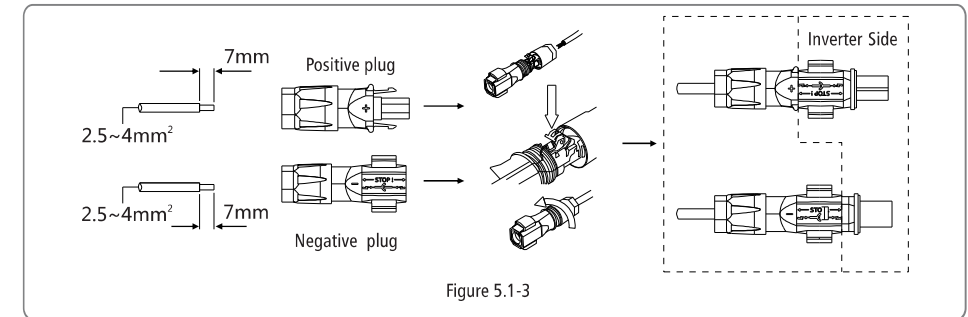## 5.1 PV INPUT and TO INVERTER Connection

⚠   ● Before connecting to PV input, please install a separate DC breaker or switch between hybrid converter and PV panels.
    ● Make sure that PV Input and TO INVERTER are connected correctly, otherwise the system cannot work, or the hybrid converter may even get damaged. Referred to Figure 5.1-1.

● Before connecting PV panels, make sure PV input breaker or switch is turned off.

● Before connecting the PV inputand TO INVERTER, ensure the plug connectors have the correct polarity. Incorrect polarity could permanently damage the hybrid converter and PV inverter.

● PV panels should not be connected to the grounding conductor.

● Check the short-circuit current of the PV panels. The total short-circuit current must not exceed the Hybrid converter's maximum PV current.

● The open circuit voltage of the PV panels cannot exceed the maximum input voltage of the Hybrid converter.
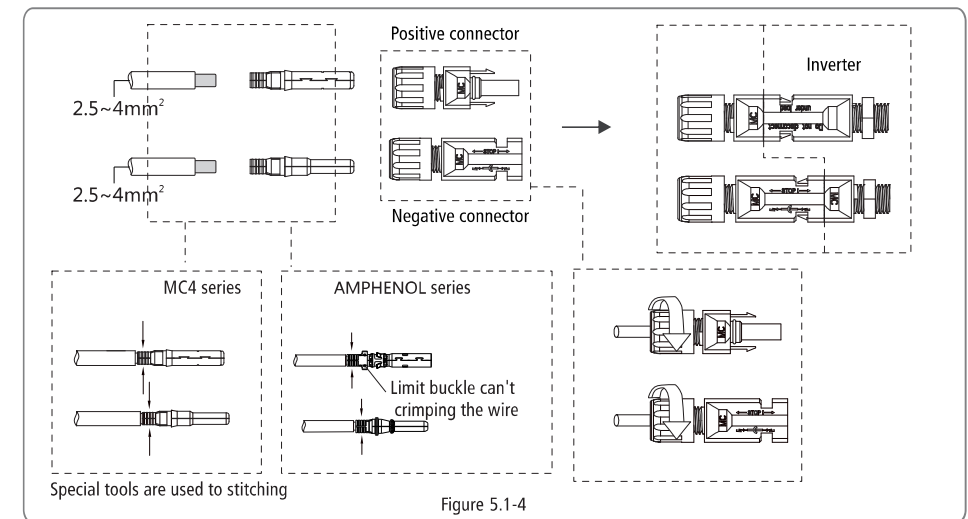
● Must use DC plugs in accessory bag.

Hybrid Converter

Solar Inverter

From PV Panels

To Solar Inverter

+

-

Note:
1.The two DC connectors in accessory box are only used for the production!
2.There are two connecting cables of inverter, one has two male terminals, the other one has two female terminals.

Figure 5.1-1

There are three types of DC plugs, SUNCLIX and MC4 or AMPHENOL series. Please refer to Figure 5.1-2.

SUNCLIX series

MC4 or AMPHENOL
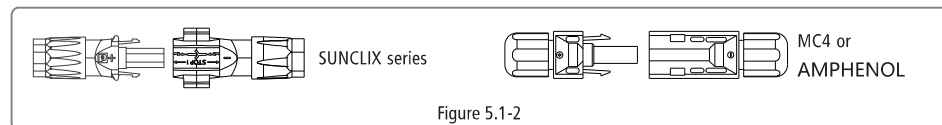
Figure 5.1-2

Installation instructions of SUNCLIX please refer to Figure 5.1-3.

7mm   Positive plug

Inverter Side

2.5~4mm²

2.5~4mm²   7mm

Negative plug

Figure 5.1-3

Installation instruction of MC4 and Amphenol please refer to Figure 5.1-4.

Positive connector

Inverter

2.5~4mm²

2.5~4mm²

Negative connector

MC4 series   AMPHENOL series

Limit buckle can't crimping the wire

Special tools are used to stitching

Figure 5.1-4

5.2 Battery Connection

⚠   ● Before connecting to battery, please install a separate DC breaker (63A or above) between hybrid converter and battery. This will ensure the machine can be securely disconnected during maintenance.
    ● Reversed polarity will damage the Hybrid converter!

● Be aware of electric shock and chemical hazards!

● It is a normal phenomenon that electric arc occurs when connecting battery to the connecting the battery to the hybrid converter without using a DC breaker.

● It's very important for system safety and efficient operation to use the appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable size. Refer to Figure 5.2-1.

A   B

C

Grade	Description	Value
A	O.D	8~12mm
B	Conductor Material Sectional Area	16~25mm²
C	Bare Wire Length	10mm around

Figure 5.2-1
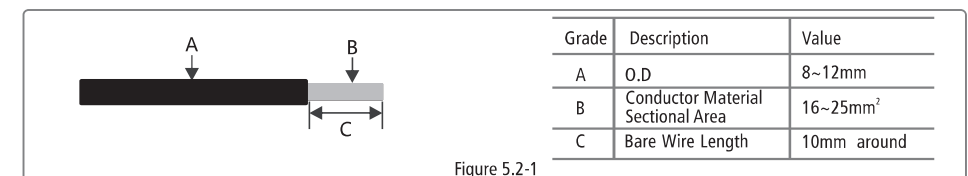
Suggestion: if the battery is to be installed indoors, please refer to the battery manufacturer's user manual for details.

• Suggestion: Batteries must be installed with a certain distance from each other, for details please refer to the battery manufacturer's user manual.

• As for the number of cells used, it will be decided by the customer's choice, the choice must comply with the requirement that the voltage range is 40-60V.

Please follow the steps below to implement the battery connection:

(1) Check the nominal voltage of batteries. The nominal output voltage should meet GoodWe's product specification.

(2) Disconnect DC breaker between the hybrid converter and the battery.

(3) Disconnect screw cap from insulator.

(4) Disconnect waterproof ring from insulator.

(5) Put the cable through the components in this order: screw cap, waterproof ring, insulator, battery cover and battery terminal. Refer to Figure 5.2-2.
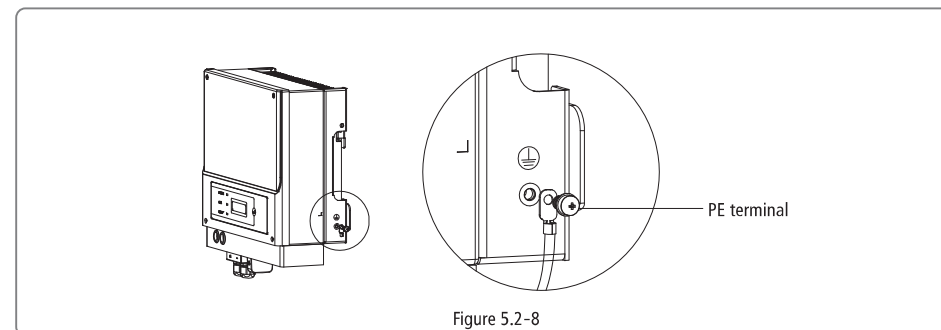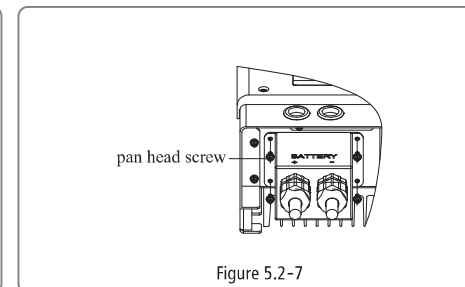
(6) Compress the terminal head using a professional tool and screw down the screw cap slightly. Refer to Figure 5.2-3, Figure 5.2-4.

(7) Put battery terminals into the corresponding holes (Red to the positive terminal; Black to the negative terminal) and fasten them by screwdriver and spanner (recommended torsion:50~70Kg-f.cm), then fasten battery cover with the pan head screws supplied in the accessory bag. Refer to Figure 5.2-5, Figure 5.2-6, Figure 5.2-7.

(8) Screw down screw cap again.

(9) An earth wire terminal is set on the right hand side of the Hybrid converter. It must be connected to the earth wire, the earth wire size should be the same as the phase conductor. Refer to Figure 5.2-8.

Cable   Waterproof ring   Battery terminal
        Insulator
+   BATTERY   −
Screw cap   Battery cover

Figure 5.2-2

Crimp
+   BATTERY   −

Figure 5.2-3

Hexagon head screw

Figure 5.2-4

+ ---- red cable   − ---- black cable

positive   negative
terminal   terminal

Figure 5.2-5

hexagon head screw

Figure 5.2-6

pan head screw

Figure 5.2-7

PE terminal

Figure 5.2-8
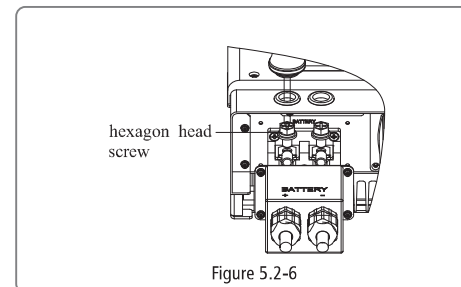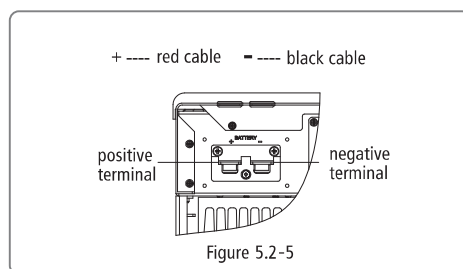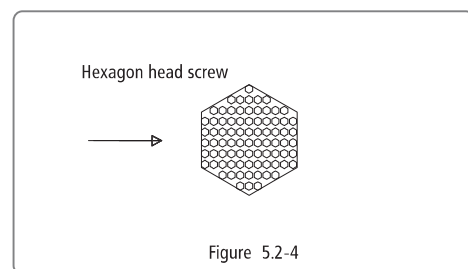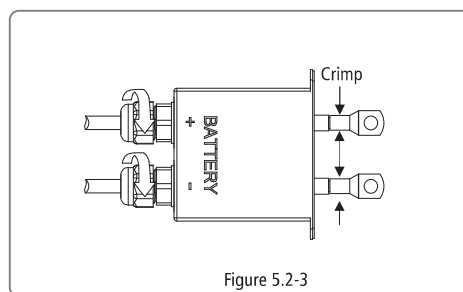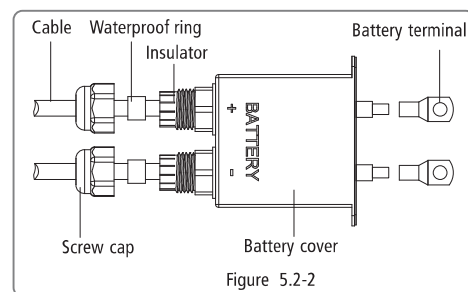
5.3 EzMeter & CT Connection

The EzMeter can detect the grid voltage, magnitude and direction of current to control the working condition of the hybrid converter via RS-485 communication. The cable length should not exceed 100m.

For the connection method of EzMeter & CT, please refer to Figure 5.3-1.

Please follow steps below to implement the EzMeter & CT connection:

(1) Connect the CT to the main 'L' line as the Figure 5.3-1 shows, making sure that the CT direction is 'K→L';

(2) Connect the EzMeter to the random 'L' and 'N' line, as per figure 5.3-1. To power up the EzMeter and detect the grid voltage, please make sure that '1' connects to 'L' and '4' connects to 'N'.
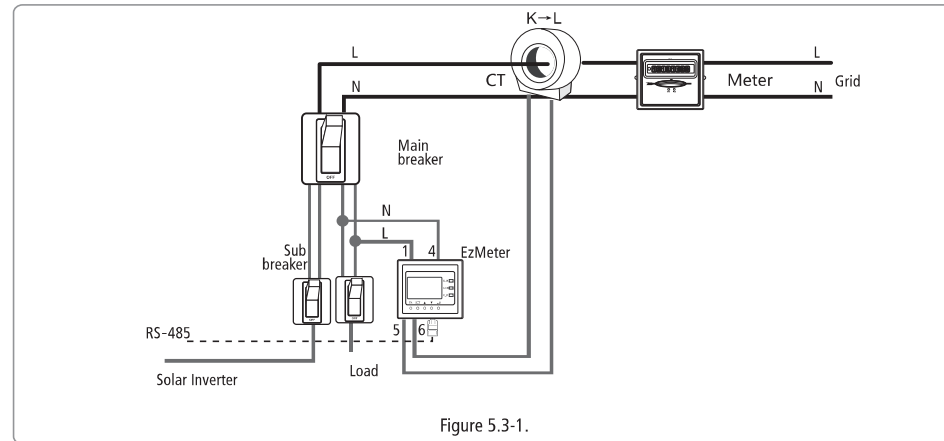

Figure 5.3-1.

EzMeter LED light illustration (table 5.3-1)

	OFF	ON	Blink
Run(Green)	Not working	/	Working normal
Com(Red)	Not communicating	/	Communicating
R-P(Red)	Power Positive	Power Negative	/
— (Red)		Negative Value Indicator	/

Table 5.3-1

EzMeter will work automatically after installation, no configuration is needed.

Users can see if communication is normal by checking if Com(Red) is blinking;

Make sure that the CT direction K→L and L/N line connection is correct when installing EzMeter.

For SDT with three-phase EzMeter, EzMeter installation diagram as Figure 5.3-2.
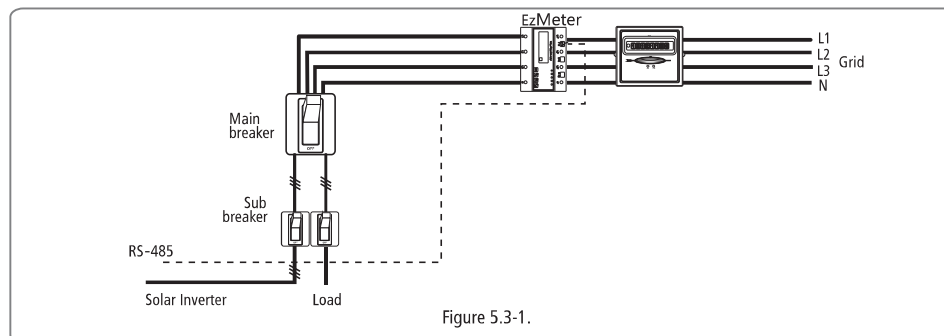
Figure 5.3-1.

5.4 Communication Connection
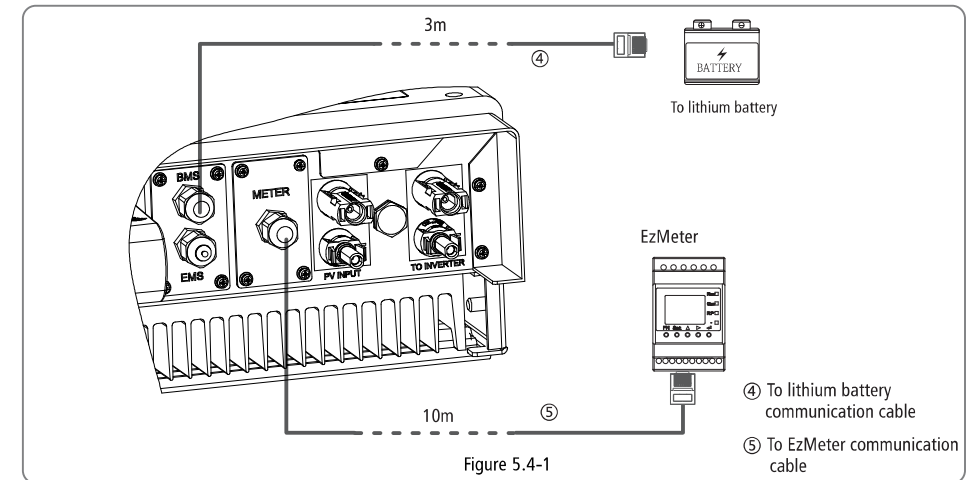
Figure 5.4-1

There are two ready-made cables connected to the unit's RS485 port; one cable is 3m long which is marked 'To lithium battery' and should be connected to lithium battery BMS port, the other cable is 10m long which is marked 'To EzMeter' and should be connected to EzMeter's 'RS485' port.

Note: if equipped with lead-acid battery, do not need to connect BMS cable and the BP is installed outside, please take out the ④ 'To lithium battery' cable by removing the RS485 cover, then put the RS485 cover back and install the waterproof terminal.

For SDT with three-phase EzMeter,Please snip the "To EzMeter" communication cable,then EzMeter communication cable should installation diagram as Figure 5.4-2.

Color	EzMeter port No.
Orange/white	NC
Orange	NC
Green/white	8
Blue	NC
Blue/white	NC
Green	7
Brown/white	8
Brown	7

Figure 5.4-2.

5.5 EzManage App Illustration
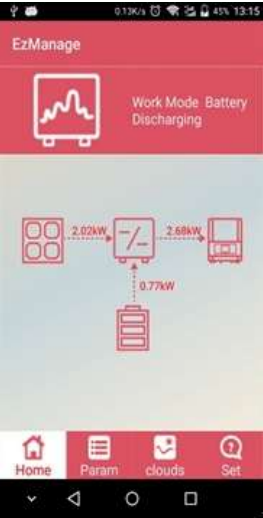
The BP Series hybrid converter can be controlled by an APP called EzManage. Current working status of system, PV Panel parameters, battery parameters, meter communication status and BMS communication status can all be checked by EzManage. Working modes can also be set by EzManage.

For IOS Systems, please go to AppStore and search for "EzManage", then download and install it.

For Android Systems, please go to Google Play and search for "EzManage", then download and install it.

The App can also be installed by scanning the QR code on the back cover of this manual.

When the BP Series hybrid converter is working, please use mobile devices to select the SSID of the hybrid converter (Factory default is SolarWiFi, and initial password is 12345678. For any questi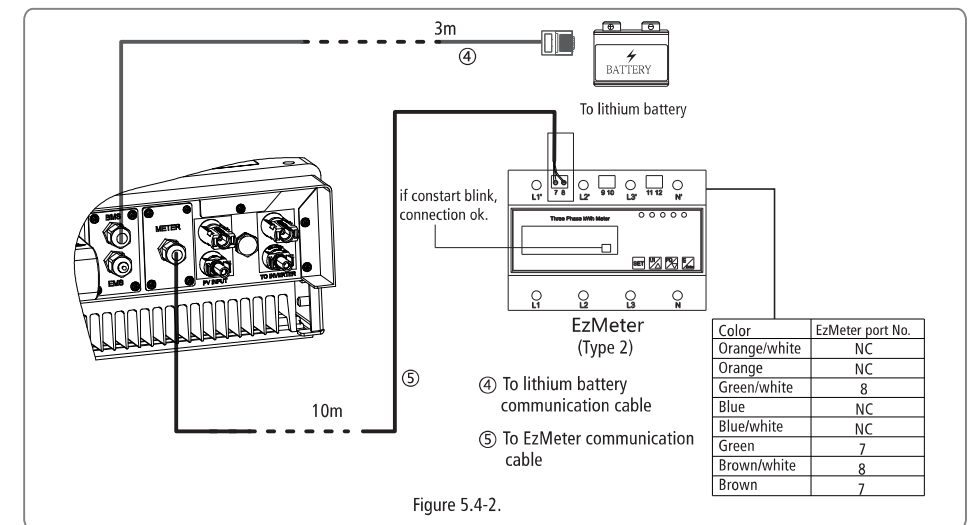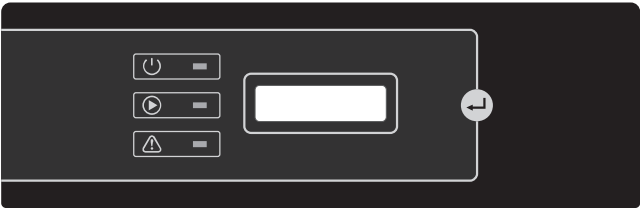ons, please refer to the Wi-Fi Connection Guide). After accessing the hybrid converter's Wi-Fi network, you can open the App and operate the hybrid converter.

6 System Operation

6.1 Indicator Lights

Indicator lights in Yellow/Green/Red correspondently refer to ⏻ / ▶ / ⚠

LED INDICATORS

INDICATOR	STATUS	EXPLANATION
⏻ POWER		ON=WiFi CONNECTED/ACTIVE
		BLINK 1 = WiFi SYSTEM RESETTING
		BLINK 2 = WiFi ROUTER PROBLEM
		BLINK 4 = WiFi SERVER PROBLEM
▶ RUN		ON = SYSTEM IS READY
		BLINK = SYSTEM IS STARTING UP
		OFF = STSTEM IS NOT OPERATING
⚠ FAULT		ON = FAULT HAS OCCURRED
		OFF = NO FAULT

6.2 User Interface And Use Of The Display

(1) Schematic of the display screen is shown as below:

```
      S t a n d b y
  P b a t = 5 . 0 W
```
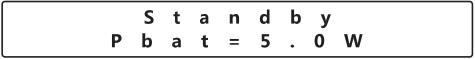
Instructions of main user interface:

Line ①
Line ②

(1) The first line:"Waiting" indicates BP is stand by for power generation; " Checking **S" indicates BP is self-checking; "Standby" indicates BP has entered into battery module, electricity meter communication is normal, the power is low, entering charging and discharging mode.; "Discharge" indicates that electricity meter checks downstream power, when battery is in normal situation, BP is entering discharging mode; "Charging" indicates that electricity meter checks upstream power, BP is entering charging mode; the screen will display error message when system occurs abnormal situation.

The second line: battery real-time power

(2) Through button operation, the screen can display different information such as operation parameters and power generation status in this area. There are two levels of menus, and the flow chart of first level menu is shown below:

First Level Menu

Standby
Pbat=25. 2W

↑ Double click ↓ Short press

Vbat=50.0V
Pbat=25. 2W

↑ Double click ↓ Short press

Ibat=0.1A
Pbat=25. 2W

↑ Double click ↓ Short press

Vdc=0.0V
Pdc=0.0W

↑ Double click ↓ Short press

Idc=0.0A
Pdc=0.0W

↑ Double click ↓ Short press

Vpv=0.0V
Ppv=0.0W

↑ Double click ↓ Short press

Ipv=0.0A
Ppv=0.0W

↑ Double click ↓ Short press

Pmeter=+30.0W
SOC=60%

↑ Double click ↓ Short press

XXXXXX-BP
SOC=60%

↑ Double click ↓ Short press

Ver:V1.XX
SOC=60%

↑ Double click ↓ Short press

Languge:English
SOC=60%

↑ Double click ↓ Short press

Error Histroy

↑ Double click ↓ Short press

Mcter Comm OK/Fail
BMS Comm OK/Fail

↑ Double click ↓ Short press

Charge Voltage
CHGV=57.5V

↑ Double click ↓ Short press

Charge Current
CHGI=50A

⋮

Batt Float Time
Float T=30m

↑ Double click ↓ Short press

Settings

Long press / Short press / Double click

Second Level Menu

Lock

Long press 2 seconds →

Error Code2:XX ← or → No Error

↕ Short press

Error Code1:XX

Long press 2 seconds →

Batt DisCHG Mode Day & Night → Long press 2seconds → Batt DisCHG Mode Day & Night → Short press to choose on or off → Batt DisCHG Mode Night Only

↑ Double click ↓ Short press

Languge:English

↑ Double click ↓ Short press

WiFi Reset → Long press 2seconds → WiFi Resetting → WiFi Reset OK / WiFi Reset Fail

↑ Double click ↓ Short press

WiFi Reload → Long press 2seconds → WiFi Reloading → WiFi Reload OK / WiFi Reload Fail

↑ Double click ↓ Short press

Exit

(3)Press instruction:

There are 3 modes of button operation: Short press, double press and long press

(4)Detailed instruction of press and LCD display

The display allows accessing the configurations of the basic parameters, as well as setting battery parameters.

The menu, shown in the LCD display area has two levels of menu. Short and long key presses will take you between menus and

through each menu. Long press 2 seconds could enter the first level menu and the information shown on the screen will be locked, otherwise it will back to main menu after 10 seconds. Or long press 2 seconds "Setting " in the first level menu, then entering into

(5)Instruction of Menu：

When the machine is switched on，level one menu is on the main interface. This interface manifest the current condition of the machine.(the same as(1))，If there is something wrong with the machine, it manifest the fault information. More details on 5.4.

A short press on the button, voltage and power of the battery are displayed on the interface.

A short press on the button, current and power of the battery are displayed on the interface.

A short press on the button, output DC voltage and power are displayed on the interface.

A short press on the button, output DC current and power are displayed on the interface.

A short press on the button, PV input voltage and power are displayed on the interface.

A short press on the button, PV input current and power are displayed on the interface.

A short press on the button, power of meter and SOC are displayed on the interface.

A short press on the button, the machine model and SOC are displayed on the interface.

A short press on the button, current software version and SOC are displayed on the interface.

A short press on the button, language type and SOC are displayed on the interface.

A short press on the button, error history is displayed on the interface.

A short press on the button, meter comm & BMS comm status is displayed on the interface.

A short press on the button, the largest charging voltage of the battery is displayed.

A short press on the button, the largest charging current of the battery is displayed.

A short press on the button, the largest discharge current of the battery is displayed.

A short press on the button, the battery capacity is displayed.

A short press on the button, depth of discharge allowed by the battery is displayed.

A short press on the button, battery float voltage is displayed.

A short press on the button, battery float current is displayed.

A short press on the button, battery float time is displayed.

A short press on the button, setting interface is displayed.

All the above operations can return to the previous interface by double press on the button.

A 2s' press on the setting interface leads to the mode of parameter setting.

A short press on the button, battery discharge mode is displayed.

A short press on the button, language setting is displayed.

A short press on the button, WiFi reset is displayed.

A short press on the button, WiFi reload is displayed.

A short press on the button, exit is displayed.

All the above operations can return to the previous main interface by double press on the button.

By pressing the button for 2 second, each parameter can be changed according to the battery used by the customer. After setting all the parameters, enter the "Exit" interface. Press the button for 2s to exit level menu. Enter the first level menu to check all the parameters of the machine.

6.3 Failure information

An error message will be displayed on the LCD if a fault occurs.

Error code	Error message	Description
17	PV Over Voltage	Over voltage at PV input
14	DC Bus High	Bus is over voltage
19	Over Temperature	Over temperature on the case
24	Batt Voltage Low	Battery voltage is low

7 Work Modes

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

Mode 1:
If the PV energy generated is higher than the total household loads, then the PV power will supply the local loads first through the PV grid-tied inverter, and the excess power will charge the battery.
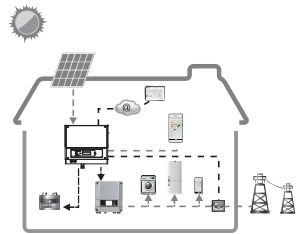
Mode 2:
If the PV energy generated is higher than the total household loads, and the battery is fully charged, the PV power will supply the local loads first through the PV grid-tied inverter, and the excess energy will be exported on to the grid.
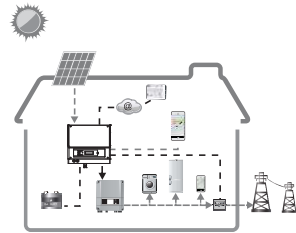
Mode 3:
If the PV energy generated is lower than the total household loads, the battery will be used to compensate for the lack of power.
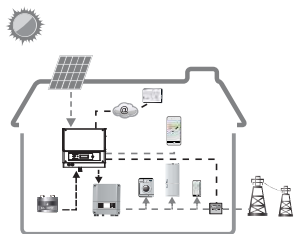
Mode 4:
If there is no PV power the battery will discharge to balance the total household loads needs.
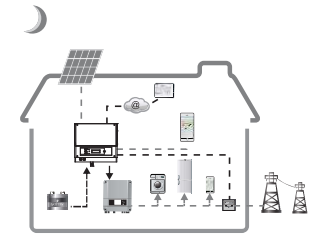
Mode 5:
If there is no PV power and battery power cannot reach the value of total household loads, the power deficit required will be supplied by the grid.
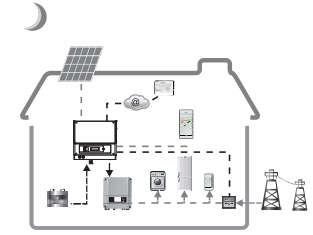
Mode 6:
If there is no grid and the PV grid-tied inverter stops working,PV energy will charge the battery via the hybrid converter.

8 Troubleshooting

Below table is only providing possible solutions on some common problems or customer confusions.

BP trouble shooting for common problems		
After all the system connection done, please check if the following items OK or not. If not, please shut down the system till all problems solved or call for GoodWe assistance if cannot solve by yourself.		

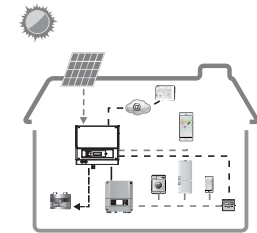|		Checking Items	Checking Description
Checking items on first installation	Check items before BP start-up		
		Battery connection	Confirm the connection between BP and battery : polarity (+/-) not reversed
		PV INPUT connection	Confirm the connection between BP and PV panels : polarity (+/-) not reversed
		TO INVERTER connection	Confirm the connection between BP and inverter : polarity (+/-) not reversed
		EzMeter / CT connection	Make sure EzMeter&CT connected between house loads and grid.
	Checking items when start up system	EzMeter Communication check	Checking details： 　1.Check if the" COM" led on EzMeter triple blinking or not. 　2.Or connect Solar-Wifi, check in EzManager App ("Param→Power Parameter") ifMeter Status is "OK" or "NG".If EzMeter " COM" led does not blink, or show "NG" on App, then please check the connection between EzMeter and BP, like: 　1.RJ45 port broken or not; 　2.communication cable looses or broken? 　3.EzMeter communication cable should connect to BP EzMeter port If everything is Ok, but problem still there, please contact GoodWe after-sales services.
		CT & EzMeter connection direction	1. Turn off PV and open Loads, check on EzMeter if "R-P" led is solid or not. If "R-P" led not solid, please check a.Wether CT or EzMeter connected in a wrong direction. b.Wether connection between EzMeter and CT (port 1 and 4 on EzMeter) is OK or not. If both are OK but problem still there, please contact GoodWe after-sales services.

		Checking Items	Checking Description
Checking items on first installation	Checking items when start up system	BMS Communication	NOTE: do not need check if it is Lead-acid battery. For lithium battery, please check following(1 or 2): 1. Connect Solar-Wifi, check on EzManager APP (Param ⟶ Battery) if BMS status shows "BMS Communication OK" or not, BMS Status on APP says "NG", please restart BP. if problem is still there, please check further: a.whether the battery type you select on EzManager APP is same as the battery you connected. b.Connection between battery/BP is OK or not; c.Communication cable looses or broken? d.RJ45 port/CAN connector / cables broken or not; If everything is Ok, but problem still there, please contact GoodWe after-sales services.
		Battery settings on APP	1.For Lithium battery: Connect Solar-Wifi, check on EzManager APP (Param→ Battery) if Battery Mode is right what you have or not, if not right, please set it right in (Help Boot settings) 2.For lead-acid battery: All the settings should comply with the parameter of the battery (GoodWe do not suggest the settings for lead-acid batteries)

	Problems	Solutions
Problems During Operation	BP not start up with ONLY battery connected	1.Make sure the voltage of battery is higher than 48V, 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 battery connected	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.

Problems	Solutions
There is no discharge or output power from BP at night time	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 ("Meter Power" changed a lot between buy/sell power to grid, battery cannot discharge continuously) 2. Communication between BP and EzMeter is OK or not; 3. Make sure EzMeter power is lower than -100W. a.BP/battery will not discharge unless Meter Power is lower than -100W; b.If Meter Power is lower than -100W, but BP/Battery still not discharge, then please check Ezmeter & 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 SOC 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.
PV power ＜P-load （PV is on）but battery does not discharge	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*Battery voltage-20V, if not, please decrease panels;If everything is OK, but problem still there, please contact GoodWe after-sales services.
Battery not charge when PV＞P-load	Check items: 1.It takes 20-30s before battery charge. 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 ("Meter Power" changed a lot between buy/sell power to grid, battery cannot charge continuously) 2.Make sure Meter power is large than +100W; 3.Make sure PV voltage higher than 100V; 4.Make sure battery is fully charged or not, or battery voltage reach "charge voltage" or not. If everything is OK, but problem still there, please contact GoodWe after-sales services.

(left margin label: Problems During Operation)

Problems	Solutions
Big Power fluctuation on Battery charge/discharge	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 change between Charge/discharge continually	Check items: 1.Make sure battery settings are saved successfully; 2.Check if there is a fluctuation on PV power on GoodWe Portal If PV power is stable but problem still exist, please contact GoodWe services.
Battery does not charge	Check items: 1.Make sure EzConverter communication OK. if not, please try to restart EzConverter, and check the connection; 2.Check if EzMeter & 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. If everything is OK, but problem still there, please contact GoodWe after-sales services.

(left margin label: Problems During Operation)

Confusions	Answers
Difference on work mode "Day and night mode"and " Night only mode"	1. Day and night mode：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 EzManager 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 gird.
The threshold of Meter power to charge/discharge battery	1Meter power >+100W，battery can start to charge； 2Meter power <-100W，battery can start to discharge；
On Portal, SOC has a sudden jump up to 95%	1. Happened on Lead-acid battery or when BMS communication NG on lithium battery; 2. if battery charge current keep lower than floating charge current set on APP for 30mins, SOC will be reset to 95% compulsively;

(left margin label: Q/A (Questions and Answers))

Confusions	Answers
On Portal, SOC has a sudden jump down to 95%	1. Happened on Lead-acid battery or when BMS communication NG on lithium battery; 2. If battery voltage reached discharge voltage set on EzManager APP; If battery voltage reach discharge voltage or lower, battery will stop discharge and compulsively set SOC as 9%.
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 EzManager APP;
Cannot see Solar-wifi signal on mobile devices	1.Solar-wifi signal will disappear when WiFi connected to router; if need change settings, can connect to customers' router to change. 2.If cannot see wifi signal when not connect to router, then please try to reload wifi on LCD as steps: "settings"--- long press to "wifi reload"--- long press till "Wifi reloading"--- "wifi reload OK" If still cannot find wifi signal, then restart BP If cannot find Solar-wifi after all these try, please contact GoodWe after-sales services.
Cannot save settings on EzManager APP	1.Make sure you connected solar-wifi(make sure no other devices connected) or router (if connected Solar-wifi to router) 2.Make sure BP under waiting mode before you change any settings on EzManager APP If all these try does not help, please contact GoodWe services.
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.
How BP used with on-grid inverters	1.Only used with single-phase on-grid inverters; 2.For each system, can only use one BP;
Battery configuration	1.Lithium battery must connect BMS communication; 2.Nominal voltage for Lead-acid battery is 48V, max charge voltage 60V; 3.For example, serial connection of 4*12V 100Ah lead-acid battery, the capacity will still be 100Ah.
About forced charging	PV will charge battery in priority to protect battery from over-discharge when battery SOC is lower around 15% (depends on individual battery).

Q/A (Questions and Answers)

9 Technical Parameters

Model Name	GW2500-BP
PV input	
Max. allowed PV input power(W)	6000
Max. allowed PV input voltage (V)*	600
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	Lead-acid or 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	3-stage adaptive with maintenance
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%
Battery over & low voltage protection	Integrated
Over current protection	Integrated
Output short protection	Integrated
Safety/EMC	CE
General data	
Dimensions (WxHxD)	344*274.5*128mm
Weight (kg)	8
Mounting	Wall bracket
Ambient temperature range	-25~60°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	Grade1、2、3

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

* PV input Max. allowed voltage is 600V， But the BP really working voltage range is 100~450V；

* For lead-acid battery, default charge current is 0.15C, which is can be configurable up to 0.5C by APP EzManage and
   cannot exceed 50A.
   For Li-Ion battery, charge current follows the command of BMS which doesn't exceed 50A. Note: Pylon US2000A
   default charge rate is 0.5C.
   C means the battery capacity, such as the capacity is 50Ah, default charge current 0.5C is 0.5 * 50 = 25A

Note:

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, portable tools and other
plug-connected equipment;

Category III: applies to 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 overcurrent 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℃	-33~+40℃	-20~ +55℃
Humidity Range	5%~85%	15%~100%	4%~100%

Environment category definition

Outdoor : the ambient air temperature is -20~50°C, Relative humidity range is 4 % to 100 %, applied to PD3

Indoor unconditioned: the ambient air temperature is -20~50°C, Relative humidity range is 5 % to 95%,applied to PD3

Indoor conditioned: the ambient air temperature is 0~40°C, Relative humidity range is 5 % to 85%,applied to PD2

Pollution degree definition

Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.

Pollution degree 2 : Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by
                     condensation must be expected.

Pollution degree 3: Conductive pollution occurs or dry, non-conductive pollution occurs which becomes conductive due to
                     condensation which is expected.

Pollution degree 4: Persistent conductive pollution occurs, for example, the pollution cause by conductive dust, rain and snow.

10 Certificates