GOODWE
YOUR SOLAR ENGINE

ES QUICK INSTALLATION INSTRUCTIONS

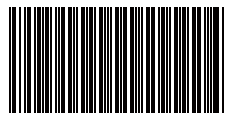| PART 1	PART 2	PART 3
QUICK INSTALLATION	BATTERY CONNECTION	Wi-Fi CONFIGURATION

340-00003-03

Step1
Instructions for quick installation

Step2
SOP of battery connection

Step3
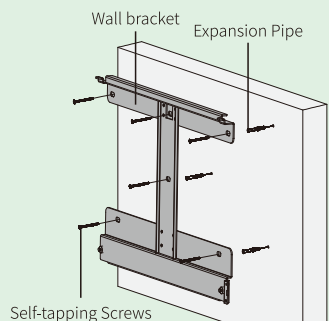Wi-Fi configuration instruction

Step 1. Instrucitons for quick installation

A Installation space

Upward ──────── 300mm
Downward ──────── 500mm
Front ──────── 300mm
Left and right side ──── 200mm

300mm
200mm   200mm   300mm
500mm
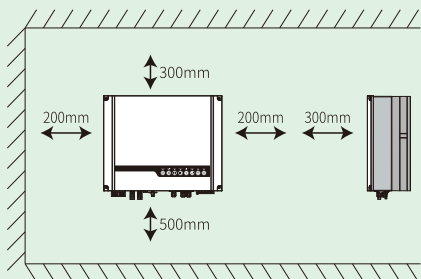
B Dimensions for drilling holes

228.5mm   228.5mm

117.5mm

104.5mm

400mm

C Fix the wall bracket

Wall bracket   Expansion Pipe

Self-tapping Screws

D Installation

Inverter could be locked for anti-theft, if it is needed.

Ground cable is needed connecting to ground plate on grid side
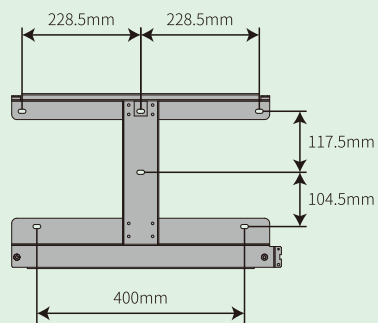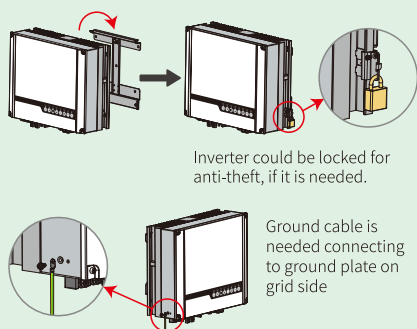
E Battery wiring assembly and connection

A   B
←── C

Grade	Description	Value
A	Outside Diameter Insulation	10-14 mm
B	Isolation Section	NA
C	Conductor Core Section	20-35 mm²

Waterproof Ring   Battery Terminal
Cable
Insulator
Screw Cap

a   b   c

Step1
Instructions for quick installation

Step2
SOP of battery connection

Step3
Wi-Fi configuration instruction

d   e   f   g

⊕ —--Red cable
⊖ —--Black calbe

DC Breaker 125A
BATTERY

Positive Terminal (red)
Negative Terminal(black)

It is normal if electric arc occurs when connecting battery to inverter without DC breaker.

Warning
Reversed polarity will damage the inverter!

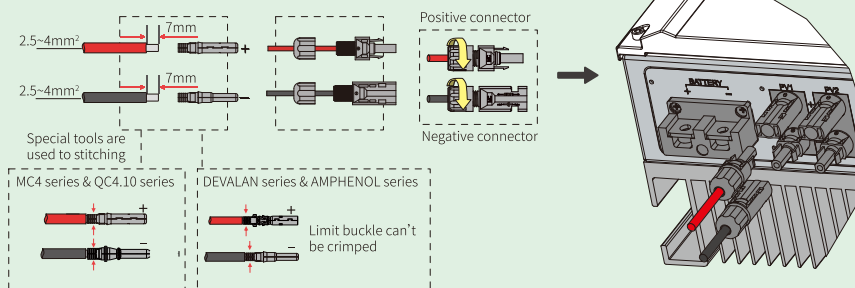Fastening torsion 6-8N.m

Pan Head Screw

F DC Cable assembly and connection

⚠ DC cable should be dedicated PV cable (suggest using 4mm² PV1-F cable)

2.5~4mm²   7mm
2.5~4mm²   7mm

Positive connector

Negative connector

Special tools are used to stitching

MC4 series & QC4.10 series

DEVALAN series & AMPHENOL series
Limit buckle can't be crimped

BATTERY   PV1   PV2

G AC cable assembly and connection

A   B   C
D

Grade	Description	Value
A	Outside diameter	13-18 mm
B	Separated wire length	20-25 mm
C	Conductor wire length	7-9 mm
D	Conductor core section	4-6 mm²

AC Cover

Cable   Screw Cap   The Insulator   Connection Terminal
Single Hole Seal Ring

Make sure the cables (L/N/PE) are connected to right position

Step1	Step2	Step3
Instructions for quick installation	SOP of battery connection	Wi-Fi configuration instruction

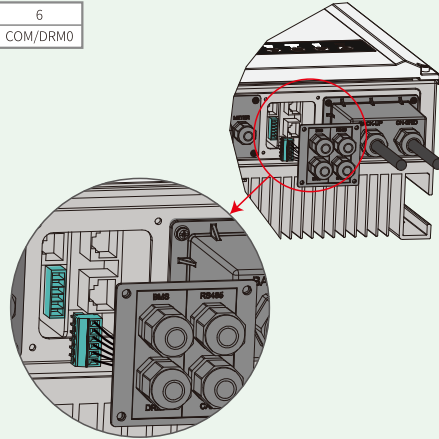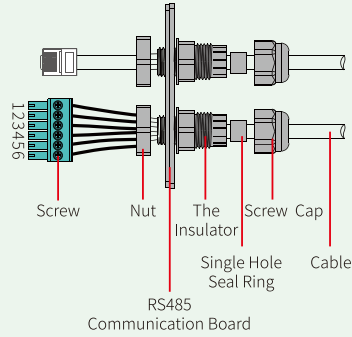| Step1	Step2	Step3
Instructions for quick installation	SOP of battery connection	Wi-Fi configuration instruction

H **DRED cable assembly**

⚠ DRED connection is only available for Australia and New Zealand.

NO	1	2	3	4	5	6
Function	DRM1/5	DRM2/6	DRM3/7	DRM4/8	REFGEN	COM/DRM0

123456

Screw · Nut · The Insulator · Screw · Cap

Single Hole Seal Ring · Cable
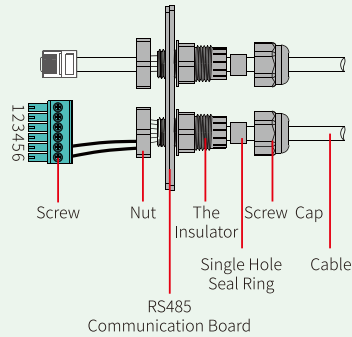
RS485 Communication Board

1. Plug out the 6-pin terminal and dismantle the resistor on it.
2. Plug the resistor out, leave the 6-pin terminal for next step.

Note: The 6-pin terminal in the inverter has the same function of DRED device. Please leave it in the inverter if no external device connected.

I **Remote shutdown cable assembly**

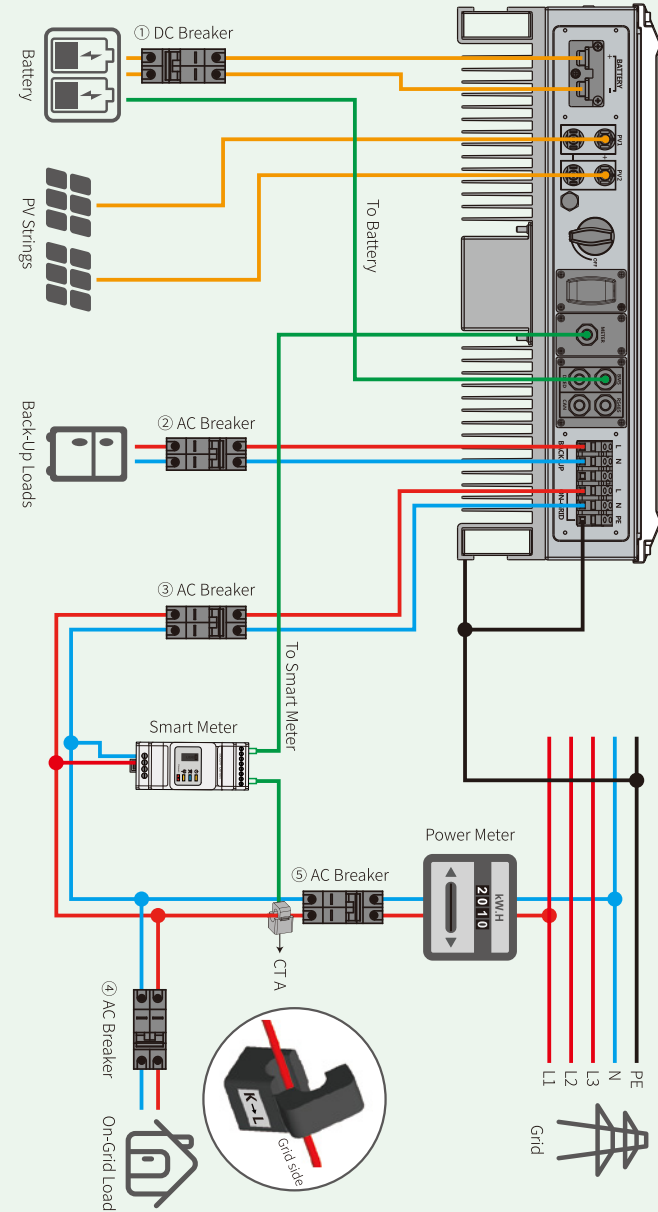⚠ Remote shutdown connection is only available for Europe.

NO	5	6
Function	REFGEN	COM/DRMO
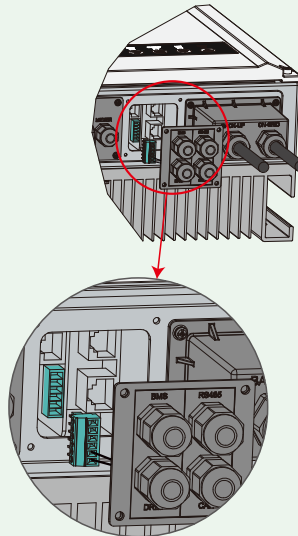
123456

Screw · Nut · The Insulator · Screw · Cap

Single Hole Seal Ring · Cable

RS485 Communication Board

J **Wiring system for ES series hybrid inverter**

Note: This diagram indicates wiring structure of ES series hybrid inverter, not the electric wiring standard.

① DC Breaker

Battery

PV Strings

To Battery

Back-Up Loads

② AC Breaker

③ AC Breaker

To Smart Meter

Smart Meter

Power Meter

⑤ AC Breaker

kWH 2010

CT A

④ AC Breaker

On-Grid Load

K→L

Grid side

Grid

L1 L2 L3 N PE

Please select Breaker according to the specification below

Inverter	①	②	③	④	⑤
GW3648D-ES	125A/60V DC breaker	25A/400V AC breaker	16A/230V AC breaker	Depends on household loads	
GW5048D-ES		32A/400V AC breaker	20A/230V AC breaker		

1. For batteries with attached breaker, the external DC breaker could be omitted.
2. Only for lithium battery which has BMS communication.
3. Please use CT A for L1, CT B for L2 and CT C for L3. And follow "House(k) →Grid(L)" direction to do the connection. Otherwise there will be an error reminded by PV Master App.

Step 2. SOP of battery connection with EM inverter

Note: This manual only tells connection methods between battery and GoodWe inverters. Other operations on battery, please refer to battery user manual. This manual only includes some battery models, not all of them. Battery models are subject to change without prior notice.
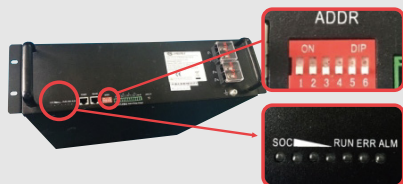
1. BYD

For BYD B-BOX series with hybrid inverter.

A
Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.

Note: ADDR setting of battery is required if there are more than one battery banks connected to the inverter. Please refer to battery user manual for detailed instruction.
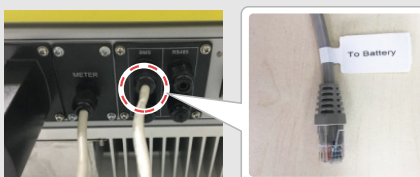

B
To connect the cables coming from the inverter to the BYD battery pack, take the following steps.
Connect the power cables to the terminal block of BYD battery pack.
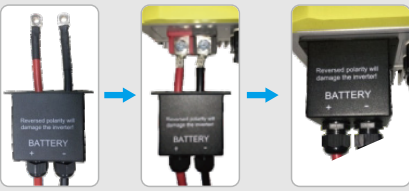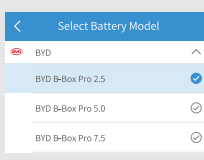Connect the negative cable to "P-" and the positive cable to "P+".

C
1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in the accessories box, the crimp the terminal tightly.
4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.

D
To communication cable for battery is attached on the inverter.
Please use this cable as battery communication cable.

E
The other side of "To Battery" cable should be connected to CAN port of BYD BMU box.

F
On PV Master, should choose the right battery type used in your system by "Battery Model" selection or battery communication will fail.
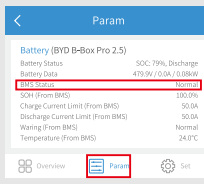
‹	Select Battery Model
BYD	∧
BYD B-Box Pro 2.5	✔
BYD B-Box Pro 5.0	⊘
BYD B-Box Pro 7.5	⊘

G
After all connection and setting done, please check if battery communication is OK on PV Master→Param→ BMS Status, which should be "Normal".

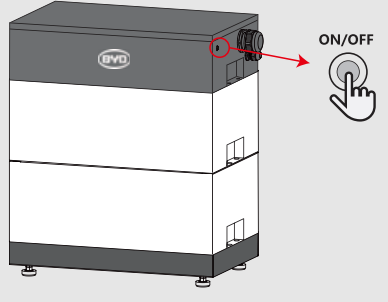| ‹	Param
Battery (BYD B-Box Pro 2.5)	
Battery Status	SOC: 79%, Discharge
Battery Data	479.9V / 0.0A / 0.08kW
BMS Status	Normal
SOH (From BMS)	100.0%
Charge Current Limit (From BMS)	50.0A
Discharge Current Limit (From BMS)	50.0A
Waring (From BMS)	Normal
Temperature (From BMS)	24.0°C

| Overview | Param | Set |

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2. BYD

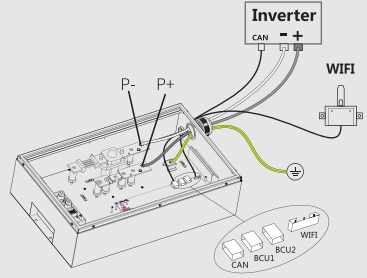For BYD LV series with hybrid inverter.

A
Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.
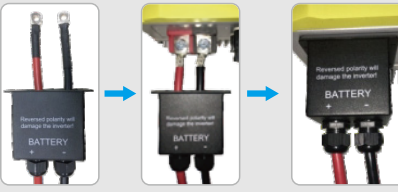

ON/OFF

B
To connect the cables coming from the inverter to the BYD battery pack, take the following steps.
Connect the power cables to the terminal block of BYD battery pack.
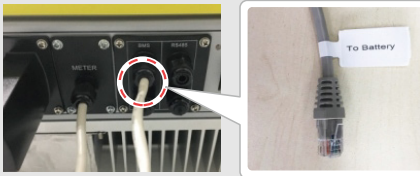Connect the negative cable to "-" and the positive cable to "+".

C
1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in the accessories box, the crimp the terminal tightly.
4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.
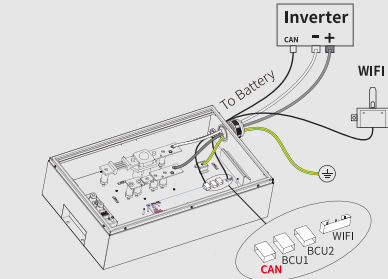

D
To communication cable for battery is attached on the inverter.
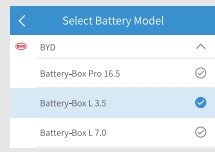Please use this cable as battery communication cable.

E
The other side of "To Battery" cable should be connected to CAN port of BYD BCU.
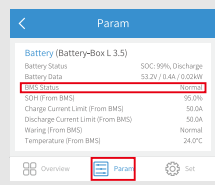

F
On PV Master, should choose the right battery type used in your system by "Battery Model" selection or battery communication will fail.

‹	Select Battery Model
BYD	∧
Battery-Box Pro 16.5	⊘
Battery-Box L 3.5	✔
Battery-Box L 7.0	⊘

G
After all connection and setting done, please check if battery communication is OK on PV Master→Param→ BMS Status, which should be "Normal".

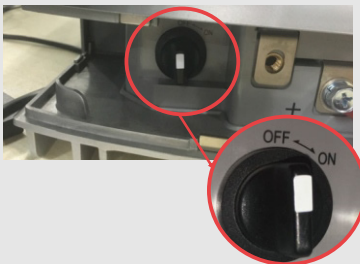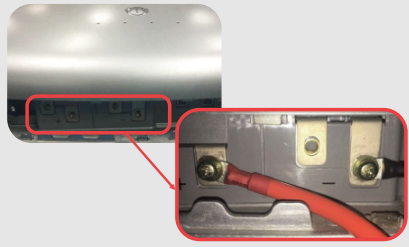| ‹	Param
Battery (Battery-Box L 3.5)	
Battery Status	SOC: 99%, Discharge
Battery Data	53.2V / 0.4A / 0.02kW
BMS Status	Normal
SOH (From BMS)	95.0%
Charge Current Limit (From BMS)	50.0A
Discharge Current Limit (From BMS)	50.0A
Waring (From BMS)	Normal
Temperature (From BMS)	24.0°C

| Overview | Param | Set |

3. GCL

For GCL E-KwBe series with hybrid inverter.

A

⚠ Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.

Note: If connect multi batteries (max 4 pieces), please refer to battery user manual to do configuration on batteries.
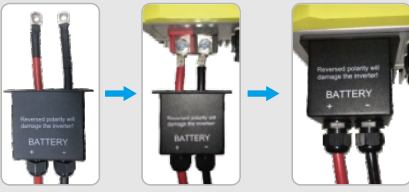

B

To connect the cables coming from the inverter to the GCL battery pack, take the following steps. Connect the power cables to the terminal block of GCL battery pack.
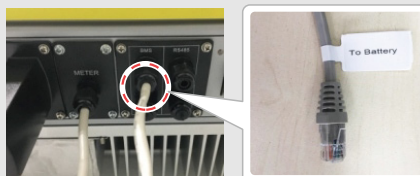Connect the negative cable to "-" and the positive cable to "+".

C

1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in the accessories box, the crimp the terminal tightly.
4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.

D

To communication cable for battery is attached on the inverter.
Please use this cable as battery communication cable.

E

The other side of "To Battery" cable should be connected to CAN port of BYD BMU box.

F

On PV Master, should choose the right battery type used in your system by "Battery Model" selection or battery communication will fail.

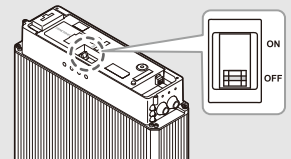| < Select Battery Model	
⚙ GCL	∧
GCL 5.6kWH	✓
GCL 5.6kWH*2	⊘
GCL 5.6kWH*3	⊘

G

After all connection and setting done, please check if battery communication is OK on PV Master→Param→BMS Status, which should be "Normal".

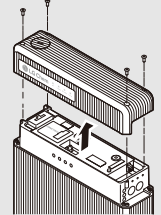| < Param |
|---|
| Battery (GCL 5.6kWH) |
| Battery Status | SOC: 80%, Discharge |
| Battery Data | 51.1V / 0.3A / 0.02kW |
| BMS Status | Normal |
| SOH (From BMS) | 100.0% |
| Charge Current Limit (From BMS) | 50.0A |
| Discharge Current Limit (From BMS) | 50.0A |
| Waring (From BMS) | Normal |
| Temperature (From BMS) | 25.0°C |

Overview | Param | Set

4. LG

For LG RESU series hybrid inverter.

A

⚠ Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.
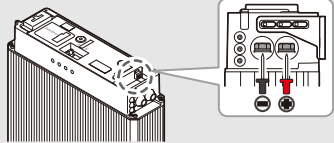

B

Remove the top cover. Hold both sides of the top cover and pull it upwards.

C

Connect the power cables to the terminal block through the grommet.
1. Remove the terminal cover plate, which is placed over the terminal block.
2. Plug the metal part into the battery R-type terminal (25-8) which in Cable Accessories for LG battery, then crimp the terminal tightly.
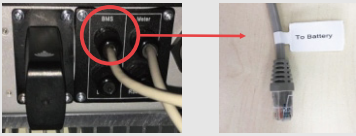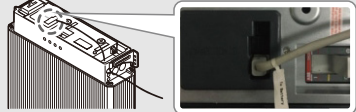3. Restore the battery termianl cover plate.

D

1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in the accessories box, the crimp the terminal tightly.
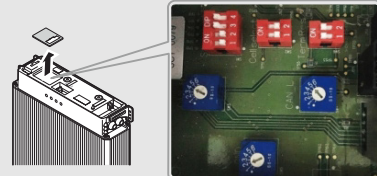4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.

E

The communication cable for battery is attached on the inverter.
Please use this cable as battery communication cable.

F

The other side of "To Battery" cable should be connected to CAN port on the top side of LG battery.

G

There are three DIP switches and three rotary switches on battery, which should be set as below.

Note: RESU6.4EX has no DIP switches, you can ignore this part.

H

On PV Master, should choose the right battery type used in your system by "Battery Model" selection or battery communication will fail.

< Select Battery Model	
● LG	∧
LG RESU 6.4EX	⊘
GCL RESU 6.5	✓
GCL RESU 3.3	⊘

I

After all connection and setting done, please check if battery communication is OK on PV Master→Param→BMS Status, which should be "Normal".

< Param
Battery (LG RESU 6.5)
Battery Status	SOC: 80%, Discharge
Battery Data	51.1V / 0.3A / 0.02kW
BMS Status	Normal
SOH (From BMS)	100.0%
Charge Current Limit (From BMS)	80.0A
Discharge Current Limit (From BMS)	80.0A
Waring (From BMS)	Normal
Temperature (From BMS)	25.0°C

Overview | Param | Set

5. Pylon

For Pylon US2000&US3000 series hybrid inverter.

A Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.

B To connect the cables coming from the inverter to the GCL battery pack, take the following steps. Connect the negative cable to the black terminal and the positive cable to the orange terminal.

C
1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in GoodWe accessories box, then crimp the terminal tightly.
4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.

D The communication cable for battery is attached on the inverter.
Please use this cable as battery communication cable.

E The other side of "To Battery" cable should be connected CAN port of Pylon battery.

F On PV Master, should choose the right battery type used in your system by Battery type used in your system by "Battery Model selection" or battery communication will fail.

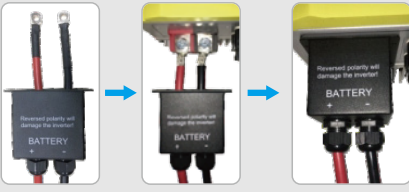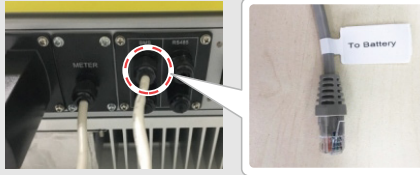| Select Battery Model	
PYLON	^
PYLON US2000B*3	⊘
PYLON US2000B*4	⊘
PYLON US2000Plus*1	✔

G After all connections and settings are done, please check if battery communication is OK on PV Master → Param → BMS Status, which should be "Normal"

Param	
Battery (PYLON US2000Plus*1)	
Battery Status	SOC: 91%, Discharge
Battery Data	53.2V / 0.7A / 0.04kW
BMS Status	Normal
SOH (From BMS)	100.0%
Charge Current Limit (From BMS)	101A
Discharge Current Limit (From BMS)	101A
Waring (From BMS)	Normal
Temperature (From BMS)	26.0°C

Overview Param Set

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6. Dyness

For Dyness B4850 series hybrid inverter.

A Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.

Switch

Note: ADDR setting of battery is required if there are more than one battery banks connected to the inverter. Please refer to battery user manual for detailed instruction.

B To connect the cables coming from the inverter to the Dyness battery pack, take the following steps. Connect the negative cable to the black terminal and the psaitive cable to the Red terminal.

C
1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in GoodWe accessories box, then crimp the terminal tightly.
4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.

D The communication cable for battery is attached on the inverter.
Please use this cable as battery communication cable.

E The other side of "To Battery" cable should be connected CAN port of Dyness battery.

F On PV Master, should choose the right battery type used in your system by "Battery Model" selection or battery communication will fail.

Select Battery Model	
DYNESS	^
B4850*1	⊘
B4850*2	✔
B4850*3	⊘

G After all connections and settings are done, please check if battery communication is OK on PV Master → Param → BMS Status, which should be "Normal"
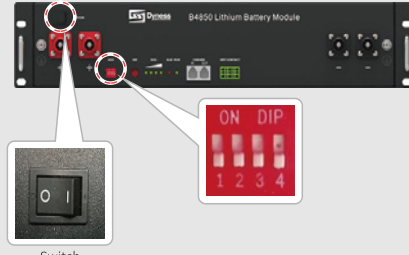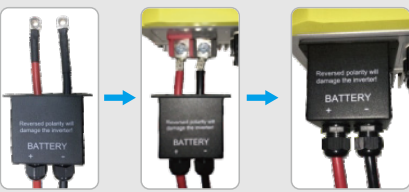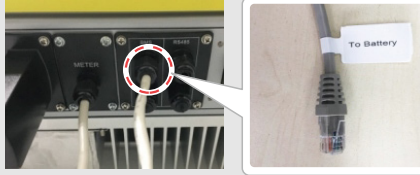
Param	
Battery (B4850*2)	
Battery Status	SOC: 95%, Discharge
Battery Data	49.9V / 0.0A / 0.04kW
BMS Status	Normal
SOH (From BMS)	100.0%
Charge Current Limit (From BMS)	50A
Discharge Current Limit (From BMS)	50A
Waring (From BMS)	Normal
Temperature (From BMS)	29.3°C

Overview Param Set

7. Alpha

For Alpha Smile5-Bat series hybrid inverter.

A Make sure that the inverter and the battery pack is turned off before connecting the battery pack to the inverter.

Note: If connect multi batteries(max 40 pieces),please refer to battery user manual to do configuration on batteries. The battery indicator is off.

B To connect the cables coming from the inverter to the SMILE5 battery pack, take the following steps. Connect the negative cable to the black terminal and the psaitive cable to the Red terminal.

C
1. Cut off the plastic skin of the cable.
2. Put the cable through the terminal cover plate.
3. Plug the metal part into the battery R-type terminal (25-8) which in GoodWe accessories box, then crimp the terminal tightly.
4. Connect the power cable to the terminal block of the hybrid inverter and restore the inverter terminal cover plate.
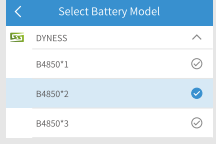

D The communication cable for battery is attached on the inverter.
Please use this cable as battery communication cable.

E The other side of "To Battery" cable should be connected CAN port of Pylon battery.
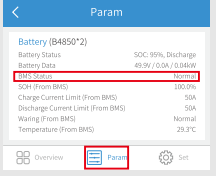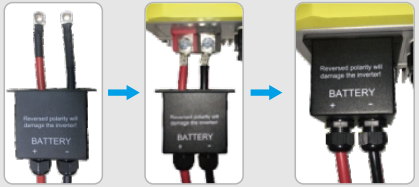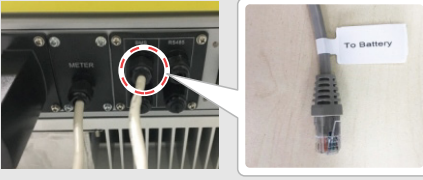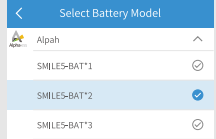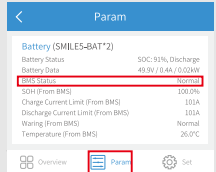

F On PV Master, should choose the right battery type used in your system by Battery type used in your system by "Battery Model selection" or battery communication will fail.

Select Battery Model	
Alpah	^
SMILE5-BAT*1	⊘
SMILE5-BAT*2	✓
SMILE5-BAT*3	⊘

G After all connections and settings are done, please check if battery communication is OK on PV Master → Param → BMS Status, which should be "Normal"

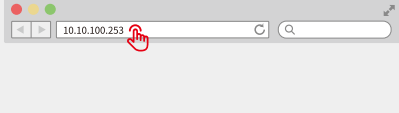| Param	
Battery (SMILE5-BAT*2)	
Battery Status	SOC: 91%, Discharge
Battery Data	49.9V / 0.4A / 0.02kW
BMS Status	Normal
SOH (From BMS)	100.0%
Charge Current Limit (From BMS)	101A
Discharge Current Limit (From BMS)	101A
Waring (From BMS)	Normal
Temperature (From BMS)	26.0°C
Overview	Param	Set

Step 3. Wi-Fi configuration instruction

Note: Wi-Fi configuration could also be done on PV Master App. For details, please download "PV Master Operation Introduction" from www.goodwe.com

A Preparation
1. Power Wi-Fi inverter (or Power on inverter) on.
2. Power router on.
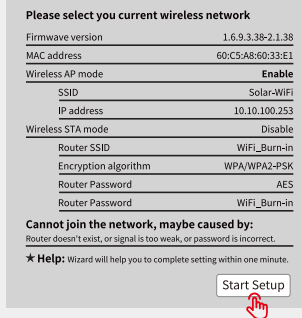
B Connect to "Solar-WiFi"

10.10.100.253

B-3: Enter User name: admin, Password:admin, clik OK

Admin(U) :	admin
Password :	*****

☑ Remember the password(R)

OK   Cancel

C Preparation

Click "Start Setup"

Please select you current wireless network

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 algorithm	WPA/WPA2-PSK
Router Password	AES
Router Password	WiFi_Burn-in

Cannot join the network, maybe 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

The Wi-Fi module refers to "Device information" column left.

Please select you current wireless network

	SSID	AUTH/ENCRY	RSSI	Channel
O	WiFi_Burn-in	WPAPSKWPA2PSK/TKIPAES	66	1
O	WiFi_Burn-in	WPAPSKWPA2PSK/TKIPAES	100	1
O	WiFi_Burn-in	WPAPSKWPA2PSK/TKIPAES	70	1
O	WiFi_Burn-in2	WPAPSKWPA2PSK/TKIPAES	72	1
O	WiFi_Burn-in2	WPAPSKWPA2PSK/TKIPAES	100	1
O	WiFi_Burn-in2	WPAPSKWPA2PSK/TKIPAES	70	1
O	WiFi_Burn-in3	WPAPSKWPA2PSK/TKIPAES	76	1
O	WiFi_Burn-in3	WPAPSKWPA2PSK/TKIPAES	76	1

Refresh

★ **Help:** When RSSI of the selected Wi-Fi network is lower than 15%, the connection may be unstable.Please select other available network or shorten the distance between the device and router. If your wireless router does not broadcast SSID, please click "Next" and add a wireless network manually.
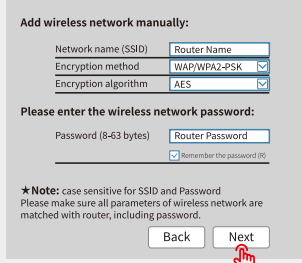
Back   Next

If the router is not in the site list, please refer to No.4 in "Troubleshooting".

D Connect to "Solar-WiFi"

Fill in router password and click "Next".

Add wireless network manually:

Network name (SSID)	Router Name
Encryption method	WAP/WPA2-PSK
Encryption algorithm	AES

Please enter the wireless network password:

Password (8-63 bytes)	Router Password

☑ Remember the password (R)

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

Back   Next

Please make sure all parameters of wireless network are matched with the router's, including password.

Note:
If the Wi-Fi module fail to connect to network after enter the right password. It's possible that there is special characters not supported by module in the hotspot passwords.

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.

Configuraton is completed, you can log on the Management page to restart device by click on "OK" button.

Confirm or complete?

Back   Complete

Note:
The "Solar-WiFi" signal will disappear after inverter is connected to WiFi router. Turn off the router or do Wi-Fi reload operation via button on inverter if you need to reconnect to "Solar-WiFi" once again.

E Troubleshooting

No.	Problem	Checking items
1	Cannot Find Solar-WiFi Signal	1. Make sure inverter is powered on; 2. Move your smart device closer to inverter; 3. Restart inverter; 4. Do "WiFi Reload" operation refer to user manual.
2	Cannot connect to Solar-WiFi Signal	1. Try password: 12345678; 2. Restart inverter; 3. Make sure there is no other device connected to Solar-WiFi; 4. Do "WiFi Reload" operation and try again.
3	Cannot login website 10.10.100.253	1. Make sure user name and password you use are both admin; 2. Do "WiFi Reload" operation and try again; 3. Try another browser (suggest use Google, FireFox, IE, Safari etc.); 4. Make sure website you log in is 10.10.100.253
4	Cannot find router SSID	1. Move router closer to inverter or use a Wi-Fi repeater device; 2. Connect to router and login the setting page to check the channel it uses. Please make sure the channel is not bigger than 13. Otherwise, modify it.
5	Cannot Find Solar-WiFi Signal	1. Restart inverter. 2. Connect to Solar-WiFi and login again, check the "SSID", "Security Mode", "Encryption Type" and "Pass Phrase" is matching with that of router or not; 3. Connect to router and login to check if the connection reaches the maximum amount or not, and to check the channel of it uses. Please majke sure the channel is not bigger than 13. Otherwise, modify it; 4. Restart router; 5. Move router closer to inverter or use a Wi-Fi repeater device.
6	After configuration, WiFi Led on inverter blink four times repeatedly	1. Connect to the router and visit the portal www.semsportal.com, Check the portal is available or not; 2. Restart router and inverter;