

# Energy Storage Battery Unit

## CPS ESSR-05/10/15/20KL1

### Quick Installation Guide

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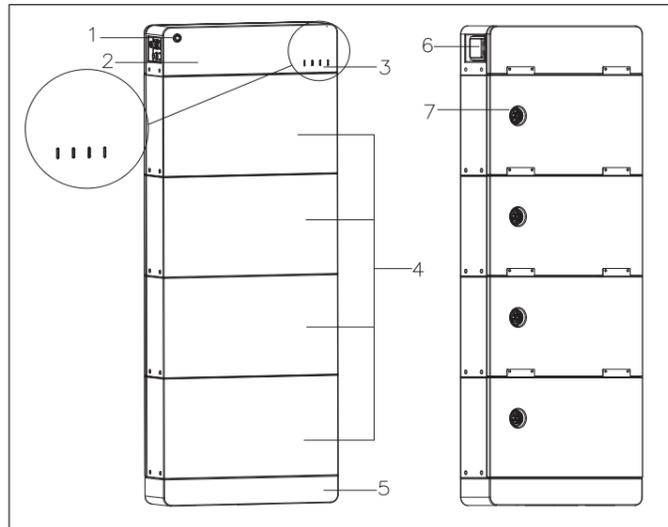
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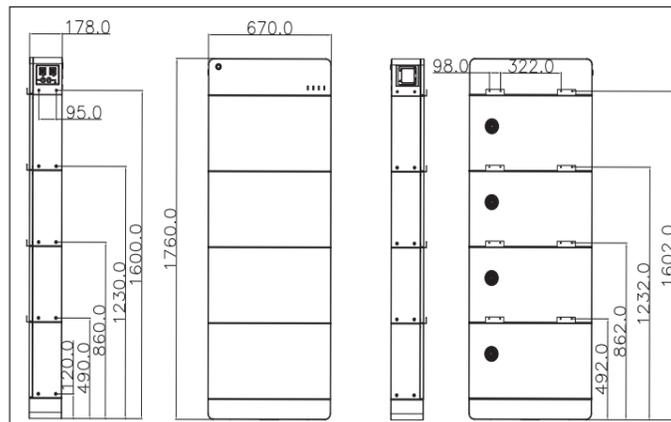
## 1 Product Components and Dimensions

### 1.1 Product Components



No.	Name	Function
1	ON/OFF button	Indicating startup/shutdown and operation state
2	Power control module	Control battery operation and inverter communication
3	LED indicator	Indicate SOC of the battery unit
4	Battery extension module	Battery extension unit
5	Base	Carry battery extension module
6	Circuit Breaker	Manually break switch
7	Pressure-relief valve	Release battery pack pressure

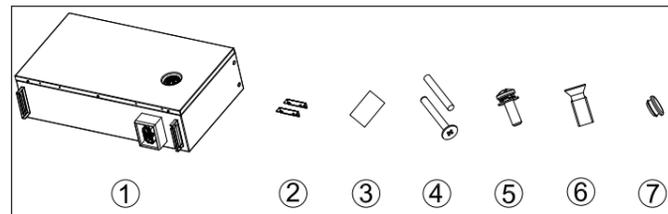
### 1.2 Dimension



## 2 Installation

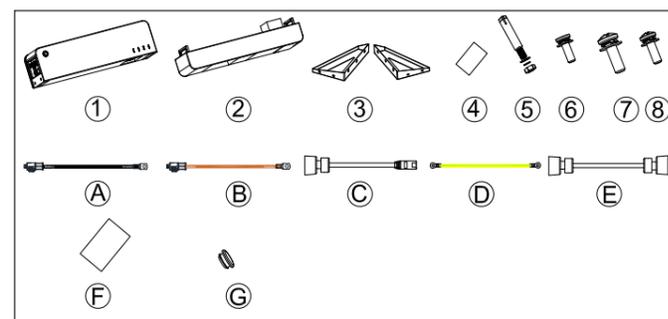
### 2.1 Scope of Delivery

Packing list of each battery extension module



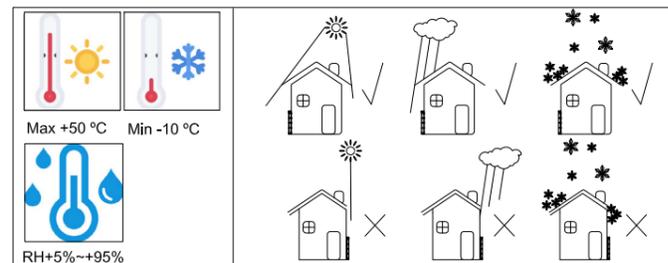
No.	Name	QTY	Usage
1	Battery extension module	1	One extension module is 5.12kwh
2	Wall anchor	2	Fasten extension module onto wall
3	Document bag	1	Include packing list, warranty card
4	Φ8x40 tapping screw	4	Lock wall anchor onto wall
5	M4x14 combination screw	4	Lock battery extension modules
6	M4x10 countersunk head screw	4	Fasten wall anchor onto battery extension module
7	Dust cap	4	Dust prevention

Packing list of each power control module



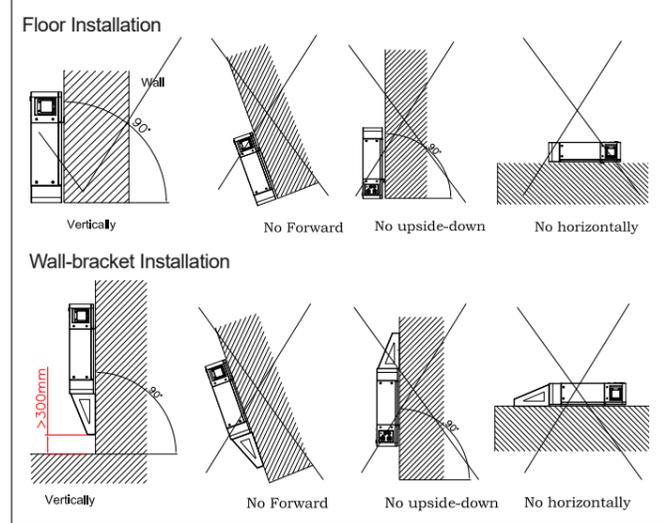
No.	Name	QTY	Usage
1	Power control module	1	Control battery operation and inverter communication
2	Base	1	Install battery extension module
3	Wall bracket	1	Support the whole battery unit
4	Document bag	1	Include packing list, warranty card and quick guide
5	M12x100 expansion screw	6	Fasten wall bracket
6	M6x14 combination screw	4	Fasten wall bracket and base
7	M4x14 combination screw	4	Fasten power control module
8	M4x10 combination screw	1	Fasten GND cable
A	Negative power output line	1	Connect inverter to battery P-
B	Positive power output line	1	Connect inverter to battery P+
C	Inverter communication cable	1	Communicate with inverter
D	Grounding cable	1	GND
E	Parallel communication line	1	Communicate between multiple battery units
F	Positioning template	1	Locate mounting holes
G	Dust cap	4	Dust prevention

### 2.2 Installation Environment



### 2.3 Installation Mode Requirements

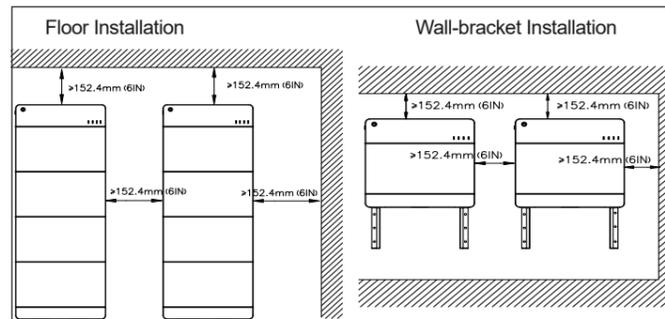
**CAUTION** Before installing the battery unit, ensure that the supporting structure can support the weight of the whole battery unit.



### 2.4 Tools Required & Torque Values

No.	Tools	Usage	Torque
1	M4 torque screwdriver	Tighten M4x14 combination screw and M4x10 countersunk head screw	1.2 N.m
2	M6 Torque screwdriver	Tighten Φ8x40 tapping screw and M6x14 combination screw	5 N.m
3	#19 socket wrench	Tighten M12x100 expansion screw	40-45N.m

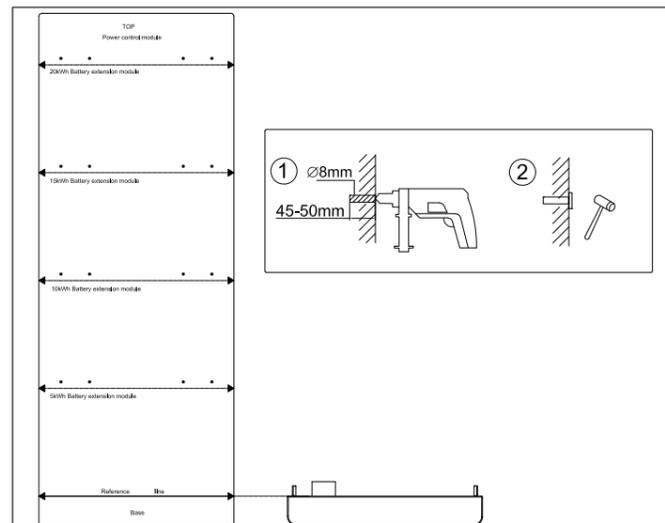
### 2.5 Recommended Clearances



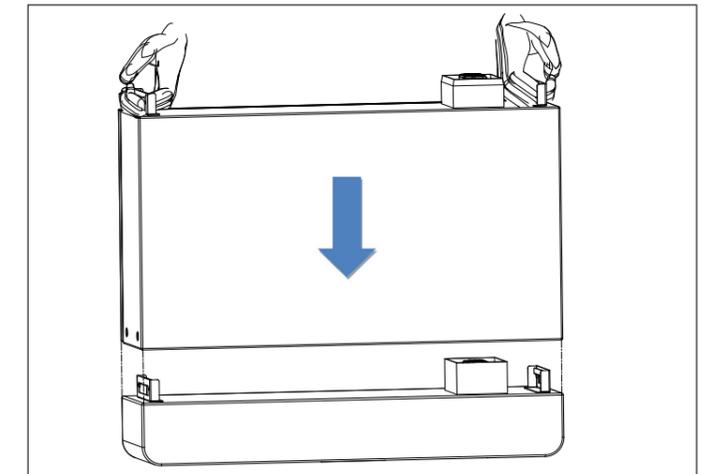
**NOTICE** The clearance between two parallel battery units shall be more than or equal to 152.4mm (6in.). If battery units are installed in relatively enclosed space, this clearance shall be increased properly to maintain well ventilated condition.

### 2.6 Floor Installation

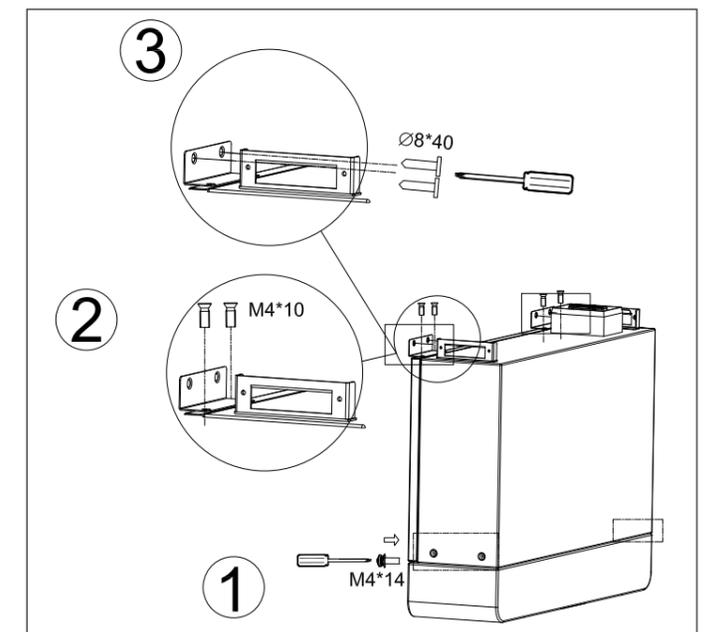
1. Place base on a level floor and keep within mm from wall surface. Align reference line of positioning template with the top surface of base and then position the template onto wall. Drill correct number of holes according to hole positions on the template, and then knock expansion pipes of Φ8x40 tapping screws into the wall.  
Tools: electric drill (with Φ8mm drill bit), and rubber mallet.



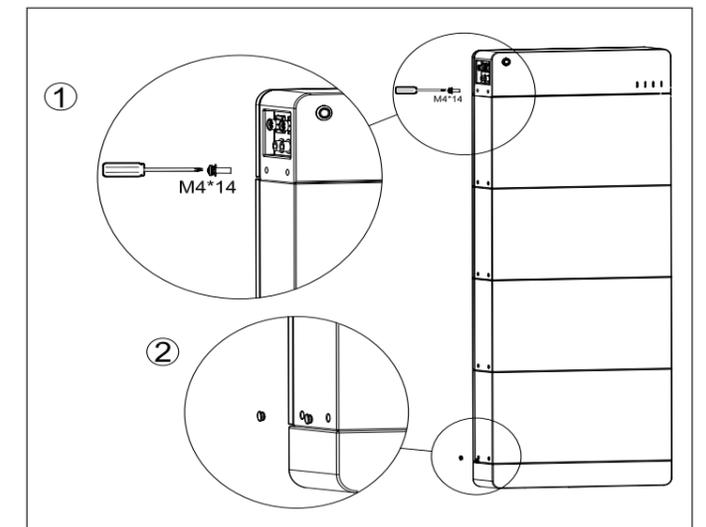
2. Two people jointly lift the battery extension module, align the battery extension module with base and position it on the base.



3. Lock screws into screw holes on both sides of the battery extension module, to ensure extension module is securely installed on the base; fasten wall anchor on the battery extension module, and then fasten it on the wall. Similarly, install other battery extension modules in turn and fasten them.  
Tools: M4x14 combination screw, M4x10 countersunk head screw, Φ8x40 tapping screws, M4 torque screwdriver, M6 torque screwdriver.



4. Fasten power control module onto the battery extension module. Then insert Dust caps into all the screw holes on the both sides.  
Tools: M4x14 combination screw and M4 torque screwdriver, Dust caps.





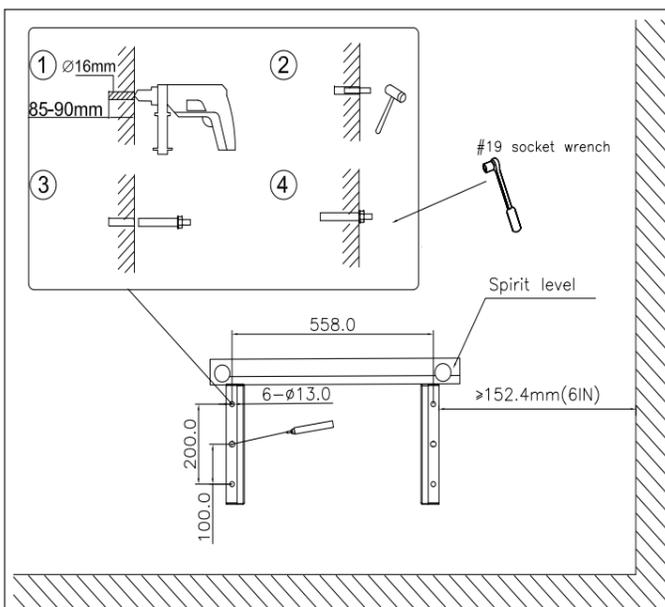
### NOTICE

- Each time a battery extension module is placed well, lock screws into screw holes on the left and right sides of battery extension module at first, then lock the wall anchors on the battery extension module and wall. Then the next extension module can be installed.
- In order to prevent damage caused by equipment toppling, the installation floor must be level and free of foreign objects.

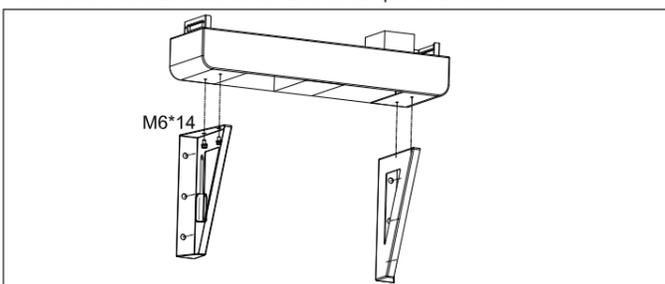
### 2.7 Wall-bracket Installation

1. Make sure the installation position is level with a level ruler at first, and then mark the hole positions on the structure wall according to the dimensions of the wall bracket. Drill holes at the marked positions, knock external steel tube of M12x100 expansion screws into wall, and then fix the wall bracket on the wall with M12x100 expansion screws.

Tools: marker, electric drill (with  $\Phi 16\text{mm}$  drill bit), rubber mallet and #19 socket wrench.



2. Fasten the base onto the wall bracket.  
Tools: M6x14 combination screw and M6 torque screwdriver.



3. Finish all the subsequent steps by referring to the procedures of floor installation.

## 3 Electrical connection

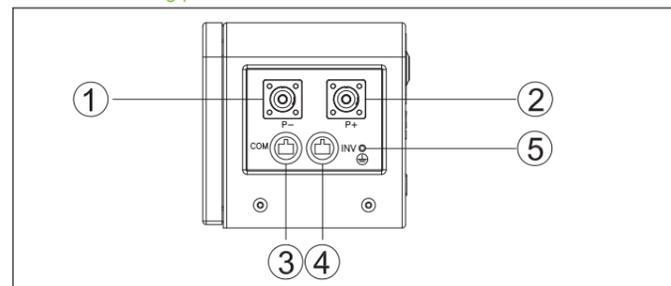
### 3.1 Cable specification

Cable Name	Cable Type	OD (mm)	Cross-sectional area (mm <sup>2</sup> )
DC cable	Silicon wire, 600V, 4 AWG	8~10	25
Grounding cable	10 AWG, yellow-green wire	/	5.26
Communication cables	CAT5e shielded twisted pair	/	0.5

### 3.2 Tools and torques

No.	Tools	Usage	Torque value
1	M4 Phillips screwdriver	Locking grounding cable	20~30kgf.cm
2	Diagonal pliers	Cutting cables	-
3	Wire stripper	Stripping cables	-
4	Crimping pliers	Crimping terminals	-

### 3.3 External wiring ports

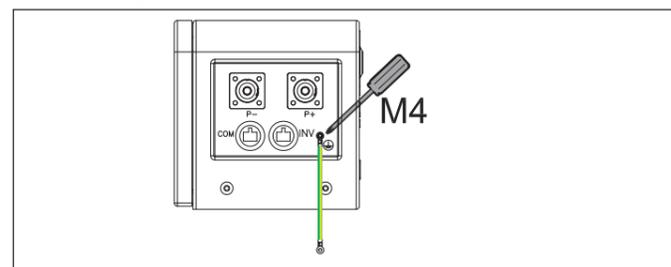


No.	Name	Function
1	DC output negative quick-plug terminal	Connect negative power cable
2	DC output positive quick-plug terminal	Connect positive power cable
3	Multi-cluster extension communication port	Communicate between battery extension modules
4	Communication interface	Communicate with inverter
5	Grounding terminal	Connect to external Grounding point

### 3.4 Grounding

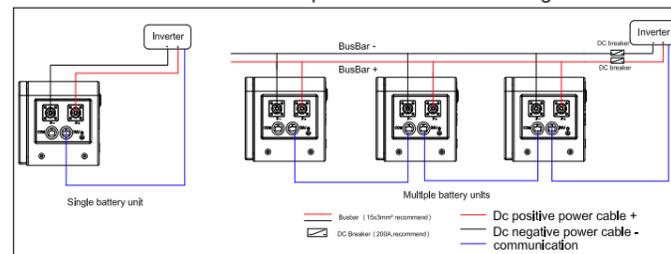
**WARNING** Confirm that the protective Grounding cable is reliably connected. Disconnection or looseness may cause electric shock.

- Connect grounding cable from the grounding point of power control module to external grounding point.
- After connecting the grounding cable, tighten the compression nut of the cable fastening head.

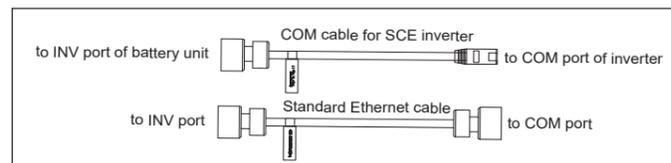


### 3.5 Communication connection and Power line connection

Connect communication cable and power line cable acc. to diagram below.



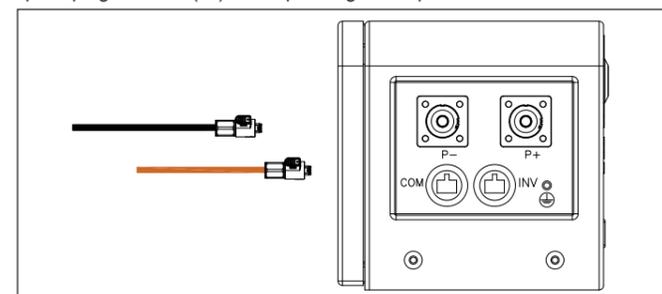
- For CPS SCE3.6/4.6/5/6KTL-60/120-EU inverter: If inverter connects to single battery unit or the first one of multiple networking battery units, connect the COM cable for SCE inverter to COM port of inverter and INV port of battery unit according to cable stickers, for the remaining networking battery units, choose standard Ethernet cable with the same connectors;
- For other series of CPS inverters, choose standard Ethernet cable with the same connectors in all communication cases.



- Identify carefully cable stickers on Positive and Negative power output lines. Tighten OT terminals onto DC busbars of inverter.

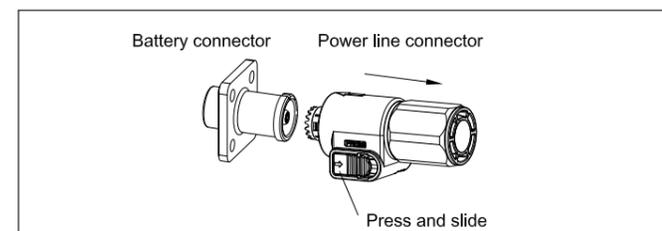


- Insert the other end of the power output line of the battery unit into the DC output positive quick-plug terminal (P+) and the DC output negative quick-plug terminal (P-) corresponding to the power control module.

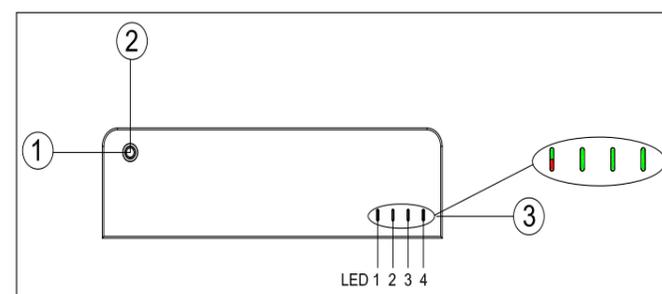


**NOTICE** Adjust cable length to ensure that the power output line does not generate significant tension on the connector, to prevent poor contact.

- To disconnect power output line, press and hold the button on the cable connector and slide it outward, and pull out the connector with a slight force.



## 4 ON/OFF indicator and LED display



No.	Description	Indicator Meaning
1	ON/OFF button	Power on/off the battery unit
2	Operation state indicator	<ul style="list-style-type: none"> <li>In the standby state, the operation state indicator flashes 1 time (on for 0.25s and off for 3.75s);</li> <li>In the charging process (charging current is greater than 1A), the operation state indicator stays on;</li> <li>In the discharging process (discharge current is greater than 1.6A), the operation state indicator shows a 3-flash pattern (on for 0.5s and off for 1.5s).</li> </ul>
3	Alarm indicator	<ul style="list-style-type: none"> <li>After the alarm is started, the alarm indicator flashes (on for 0.5s and off for 0.5s)</li> <li>After the protection is started (except for undervoltage protection and overvoltage protection), the alarm indicator stays on;</li> <li>When there is no alarm and no protection, the alarm indicator goes out.</li> </ul>
	SOC indicators	<ul style="list-style-type: none"> <li>In the standby state, SOC (State of Charging) indicators display normally;</li> <li>During charging, SOC indicators LED1, LED2, LED3 and LED4 flash slowly accordingly when SOC is 0~25%, 25~50%, 50~75% and <math>\geq 75\%</math>;</li> <li>During the discharging process, SOC indicators LED4, LED3, LED2 and LED1 go out accordingly when SOC is &lt;75%, &lt;50%, &lt;25%, as well as undervoltage protection is reached.</li> </ul>

## 5 Commissioning



**WARNING** Before the battery unit is powered on, it's important to check the installation for any potential hazards.

### 5.1 General startup process

- Close DC Breaker (if any) configured between inverter and battery unit.
- Turn on the circuit breaker of power control module.
- Turn on the inverter.
- Power on the energy storage battery unit (Shortly press the ON/OFF button for 1 second).

### 5.2 Shutdown process

- Turn off the inverter.
- Power off the energy storage battery unit.
- Turn off the circuit breaker of power control module.
- Open DC Breaker (if any) configured between inverter and battery unit.

## 6 Troubleshooting

Faults	Causes	Troubleshooting
All indicators are out	Circuit breaker is opened.	<ol style="list-style-type: none"> <li>Turn the DC switch to the "OFF" position.</li> <li>Click the ON button and observe the indicator status.</li> </ol>
Alarm indicator flashing	The cell voltage is below the undervoltage protection threshold.	There is a risk of over-discharge, so the user shall stop discharging and arrange protection charging.
	The cell voltage exceeds the protection threshold.	There is no safety threat, the user shall stop charging, and the battery will become normal after standing or discharging.
	Inverter communication loss	There is no security threat; check if the Inverter and the battery communication terminal are well connected;
Alarm indicator flashing	The battery temperature is higher than the high temperature protection threshold	<ol style="list-style-type: none"> <li>The user shall stop charging or discharging, and the battery will become normal after standing;</li> <li>Check if there is a heating source in the battery environment, and remove it if any;</li> <li>Check the charging and discharging data of Inverter, and check if there is any fault in Inverter;</li> <li>If protection occurs many times, the user shall contact the installation personnel for maintenance and troubleshooting.</li> </ol>
	The battery temperature is lower than the low temperature protection threshold	<ol style="list-style-type: none"> <li>The user shall stop charging or discharging, stand the battery and wait for it to become normal;</li> <li>Check if the battery environment meets the installation requirements;</li> <li>Check the battery configuration and if there is a heating film;</li> <li>If protection occurs many times, the user shall contact the installation personnel for maintenance and troubleshooting;</li> </ol>
Alarm indicator normally on	External short circuit of battery	There are potential safety hazards, so the user shall stop using the battery and contact the installation personnel to repair Inverter and the battery.
	BMS main power supply circuit failure	There are potential safety hazards, so the user shall stop using the battery. The user shall contact the installation personnel to repair the battery.

Please refer to user manual or contact our service personnel if any more problems.