LUNA2000-200KWH-2H1 Smart String Energy Storage System

Quick Guide

Issue: 03
Part Number: 31500HTW
Date: 2023-02-15

HUAWEI DIGITAL POWER TECHNOLOGIES CO., LTD.

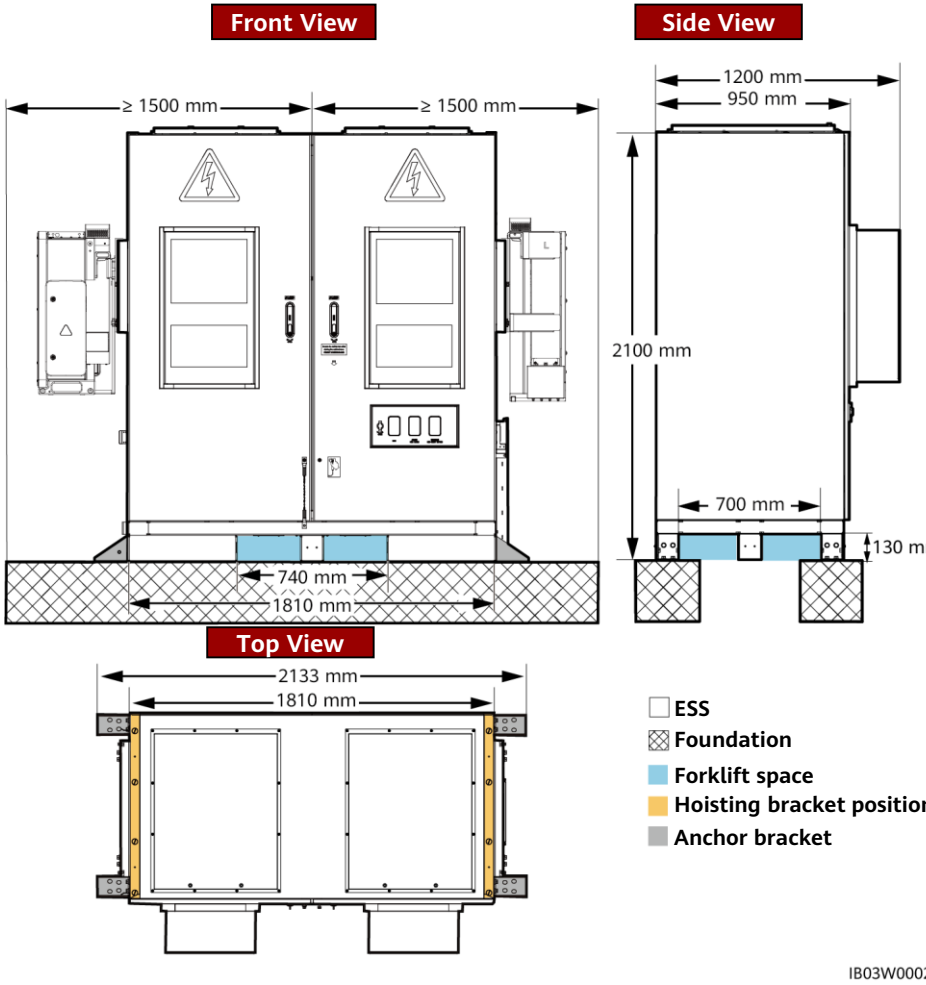
HUAWEI

NOTICE

- **Before installing the device, read the user manual carefully to get familiar with product information and safety precautions. Equipment damage caused by failure to abide by the storage, transportation, installation, and operation guidelines specified in this document and the user manual is not covered by the product warranty. You can scan the QR code next to the nameplate to view the user manual and safety precautions.**
- The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.
- Only qualified and trained electrical technicians are allowed to operate the equipment. Operation personnel should understand the system composition and working principles, as well as the local regulations.
- Do not transport the Smart String Energy Storage System (also referred to as ESS) with battery packs installed.
- Use insulated tools and wear proper personal protective equipment (PPE) when installing the equipment.
- During the installation or operation, close cabinet doors if you leave even for a short time.
- If the paint is damaged due to collision during transportation or installation, use the RAL9003 outdoor paint to repair the damaged area.
- For details about the binding positions of the delivered mounting brackets and screws, see the packing list.

1 Appearance

Copyright © Huawei Digital Power Technologies Co., Ltd. 2023. All rights reserved.

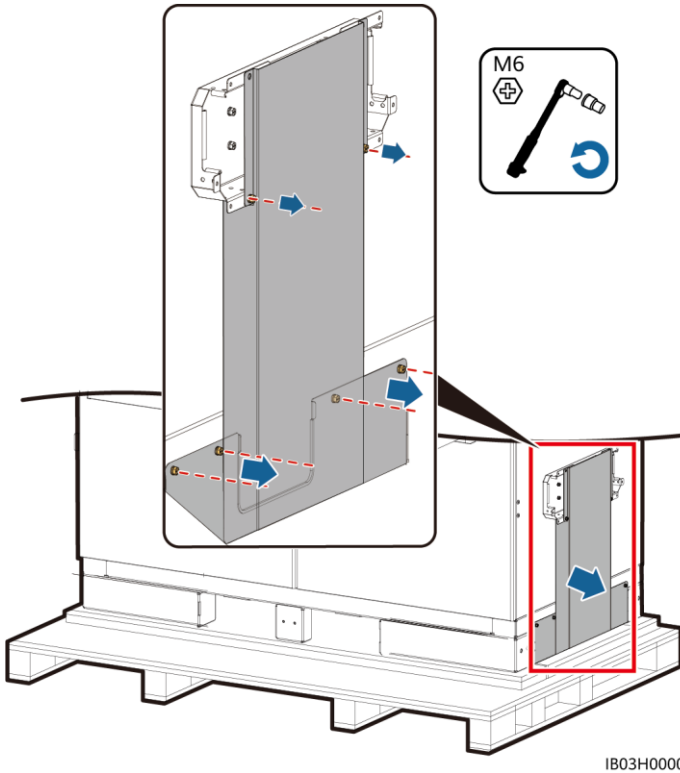


NOTE

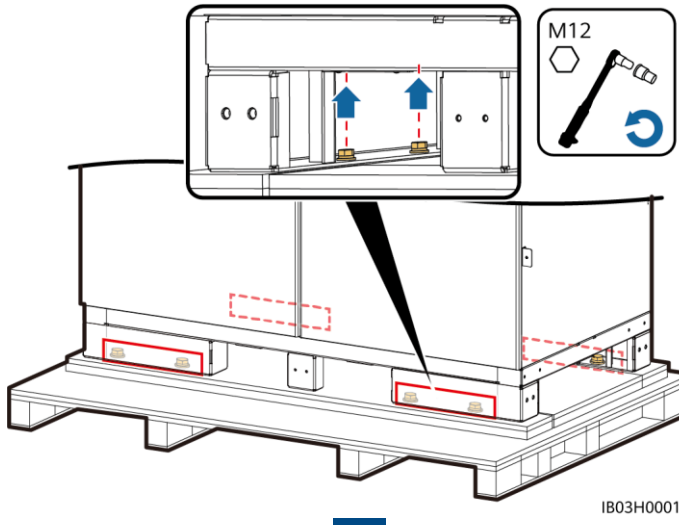
The site foundation must be designed by professional technical personnel such as those from a design institute. The technical personnel can refer to the foundation drawings of the Company. Contact the product manager of the Company to obtain the drawings.

2 Installing the ESS

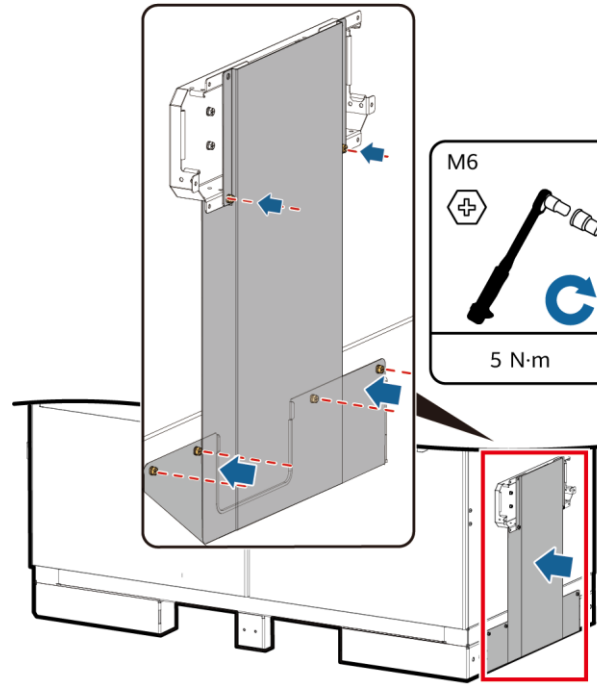
1. Remove the baffle plate from the bottom of the ESS.



2. Remove the pallets.

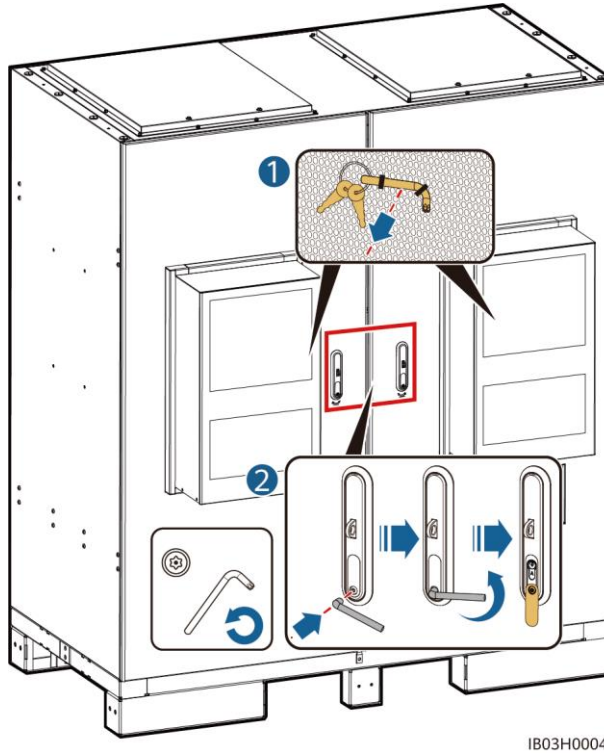


3. Install the baffle plate to the bottom of the ESS.



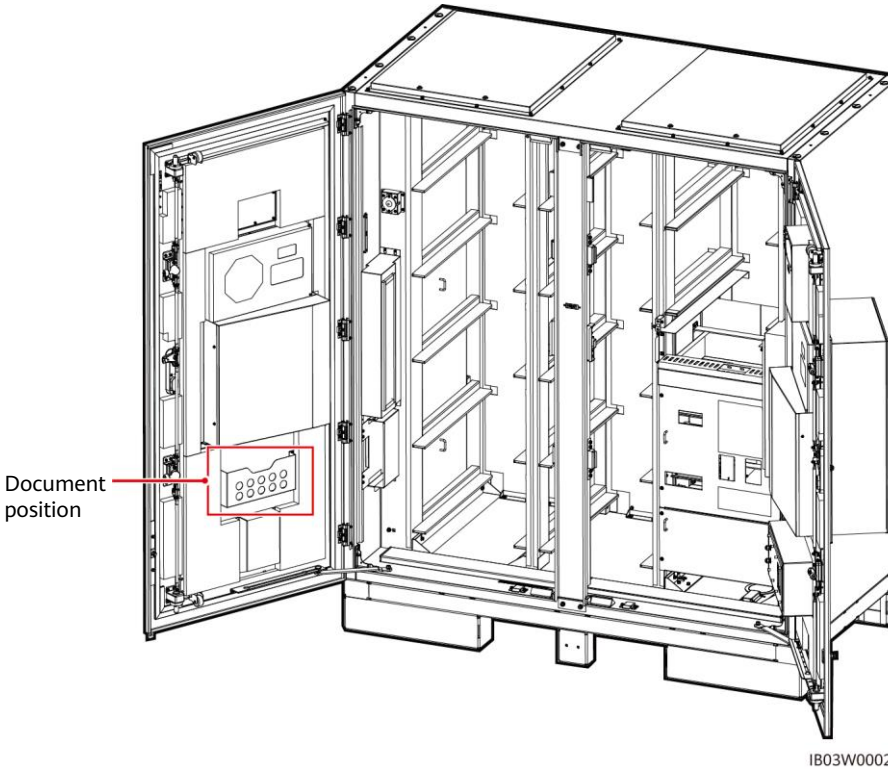
IB03H00021

4. Open the cabinet doors.



IB03H00042

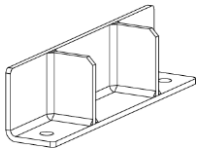
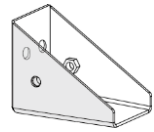
5. Take out the delivered documents, such as the packing list.



6. Take out the mounting brackets delivered with the product.

NOTE

After opening the doors, check the number of deliverables based on the packing list. If any deliverable is missing, contact your dealer immediately.

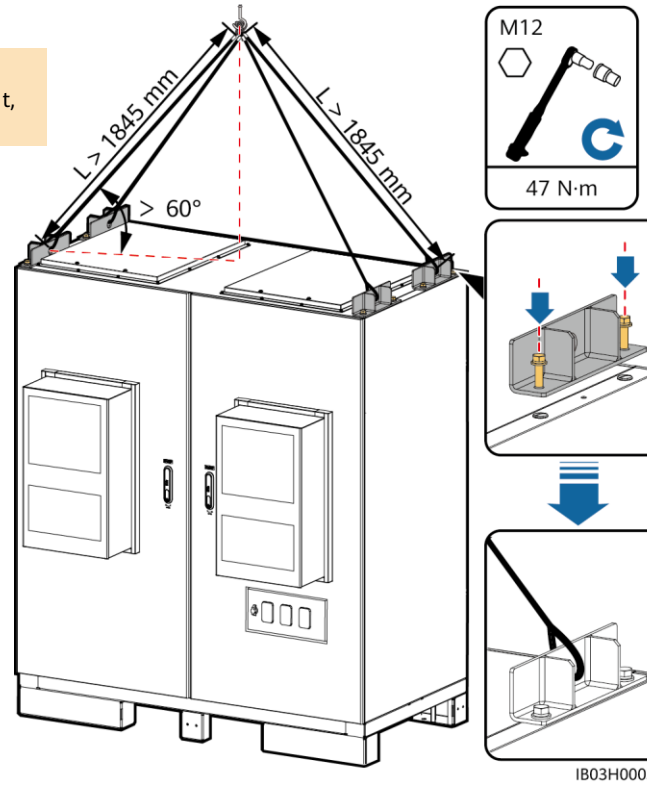
Hoisting bracket and screw		Anchor bracket, anchor bracket screw, and expansion bolt			Leveling spacer
					

7. After closing the cabinet doors, move the ESS to the specified position.

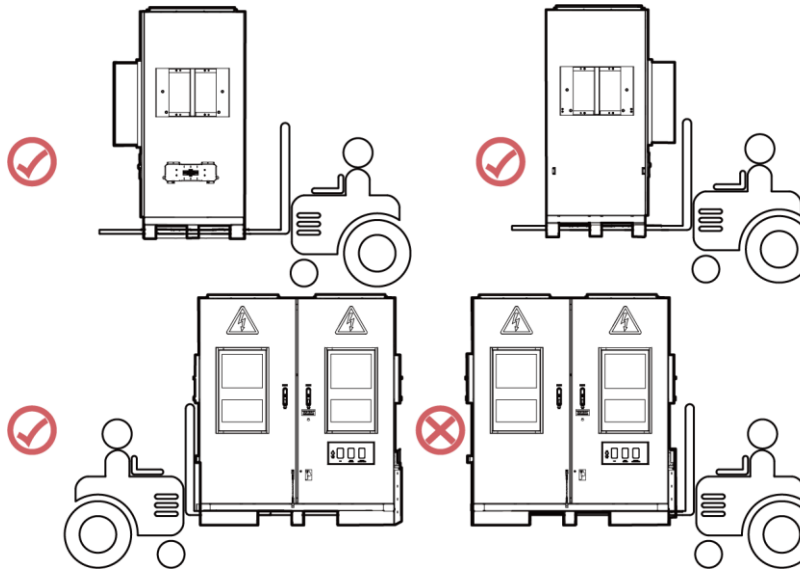
Using a Crane

NOTE

Crane hoisting capacity ≥ 1 t, working radius ≥ 2 m

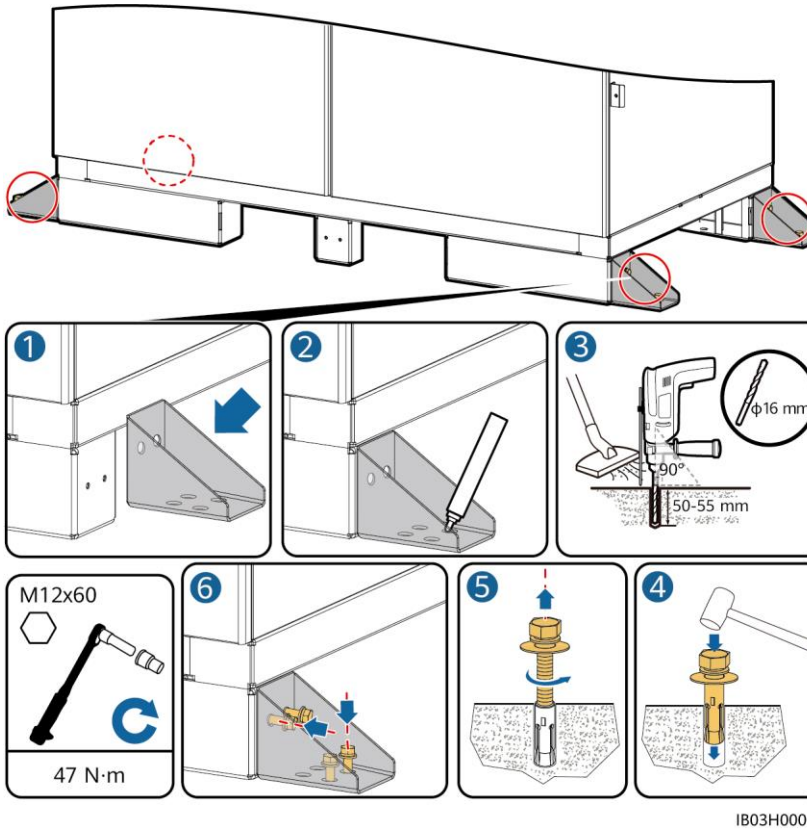


Using a Forklift



8. Secure the ESS.

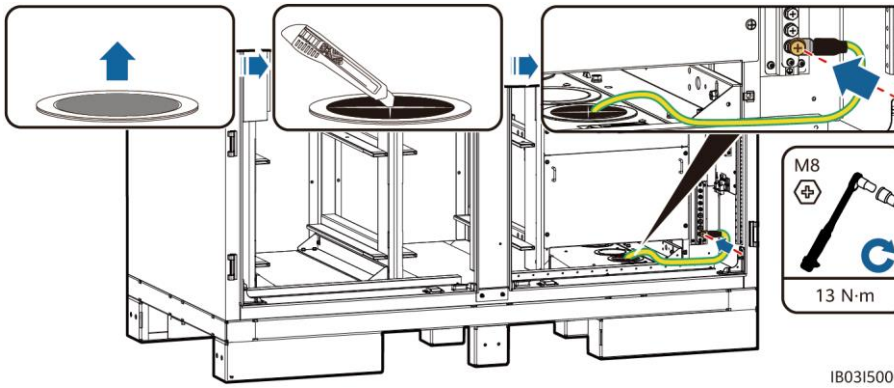
NOTE
If the ESS is not positioned stably, use a spacer to level the ESS before securing it.



3 Connecting a Ground Cable for the ESS

Name	Type	Conductor Cross-Sectional Area	Outer Diameter	Terminal	Source
Ground cable	Single-core outdoor copper/copper-clad aluminum/aluminum alloy cable	25–50 mm^2	15–17.6 mm	M8 OT/DT terminal	Prepared by the customer
The specifications of the ground cable are subject to this table or calculated according to IEC 60364-5-54.					

Open the ESS cabinet doors and connect the ground cable.

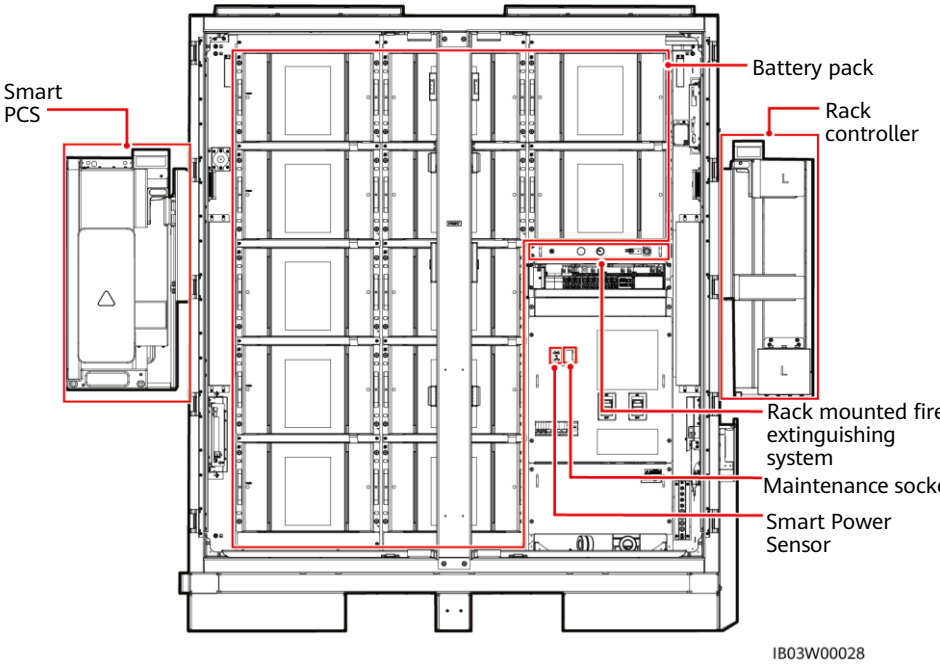


4 Installing Components

4.1 Installation Positions

NOTICE

Before installing components, ensure that the ESS is securely installed.



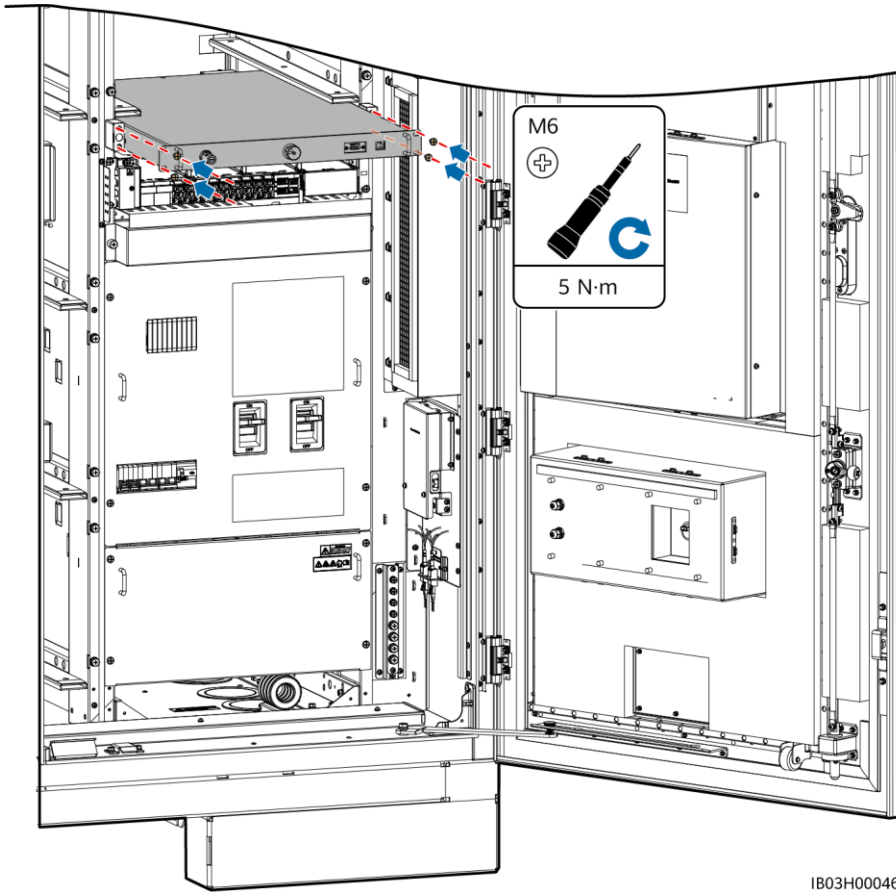
No.	Component	Source	No.	Component	Source
1	Rack mounted fire extinguishing system	Purchased from the Company	4	Smart PCS	Purchased from the Company
2	Battery pack	Purchased from the Company	5	(Optional) Maintenance socket	Prepared by the customer
3	Rack controller	Purchased from the Company	6	(Optional) Smart Power Sensor (DDSU666-H)	Purchased from the Company

4.2 Installing the Rack Mounted Fire Extinguishing System

NOTE

Before installation, read the documents delivered with the rack mounted fire extinguishing system to understand the installation requirements and precautions.

Install the rack mounted fire extinguishing system.

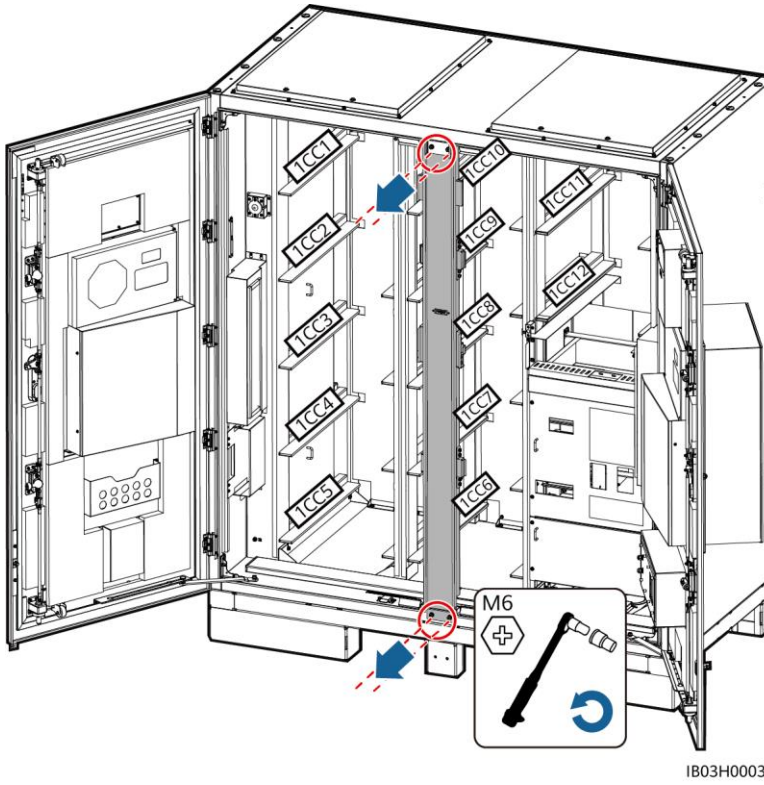


4.3 Installing Battery Packs

NOTICE

- Before installation, ensure that battery packs are stored indoors and that other storage requirements specified in the user manual are met.
- Before installation, check the status of the battery packs. Do not use the battery packs if the packing cases are exposed to rain, damaged, or deformed, or if the battery packs leak or fall.
- Do not install battery packs on rainy, snowy, or foggy days. Otherwise, the battery packs may be eroded by water vapor or rain.

1. Remove the column from the ESS.

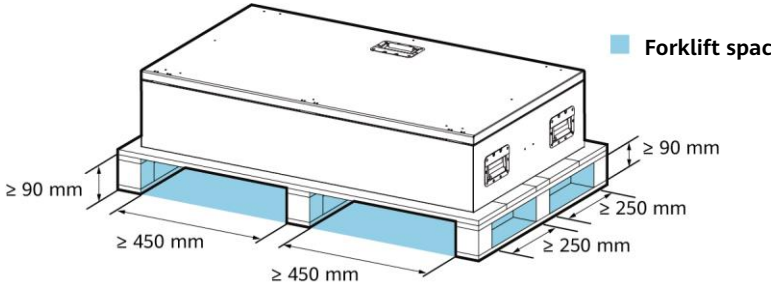


IB03H00036

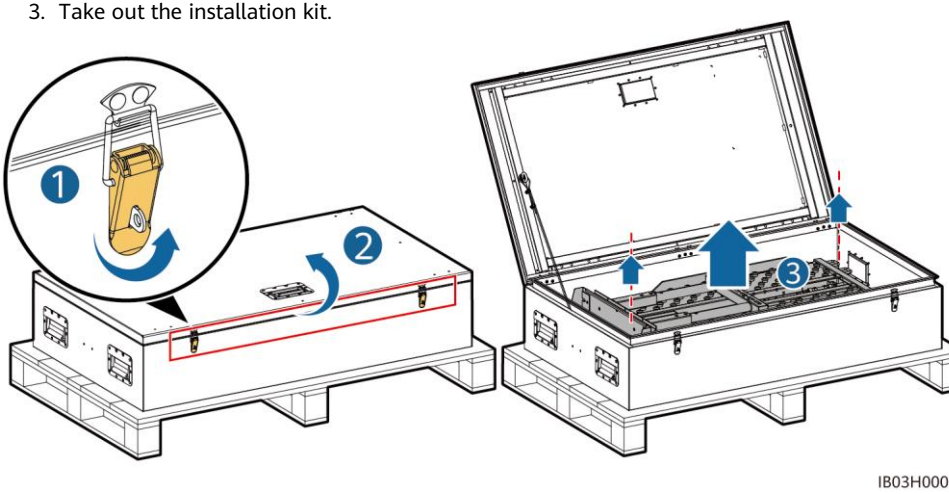
2. Use a forklift to transport the battery installation tray kit (installation kit for short) to the vicinity of the ESS.

NOTE

The installation kit should be purchased from the Company.



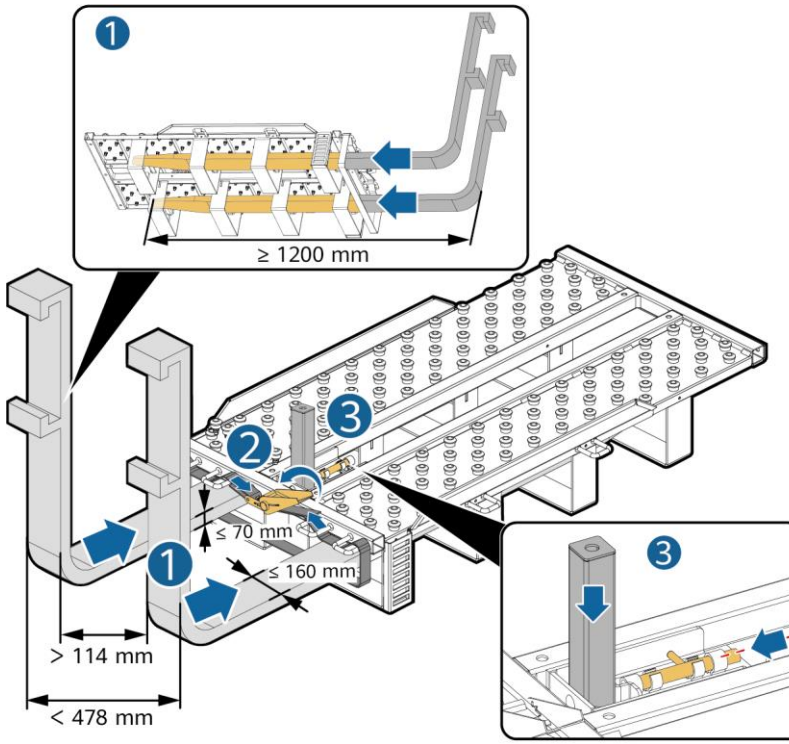
3. Take out the installation kit.



4. Insert, assemble, and secure the installation kit onto the forklift.

NOTE

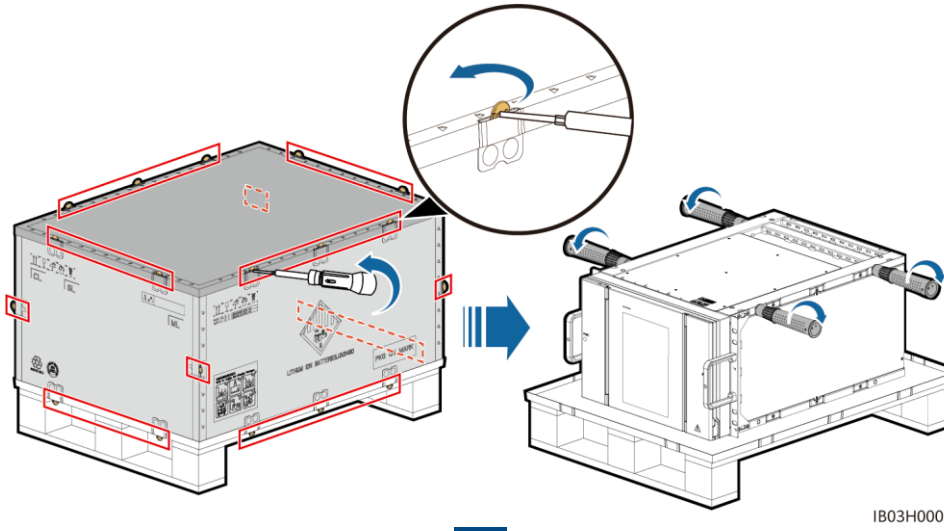
- Requirements for the lifting height of the forklift: If the foundation height is less than or equal to 0.3 m, the lifting height is greater than or equal to 2 m. If the foundation height is greater than 0.3 m, the lifting height increases accordingly.
- The load-bearing capacity of the forklift must be greater than or equal to 1 t.



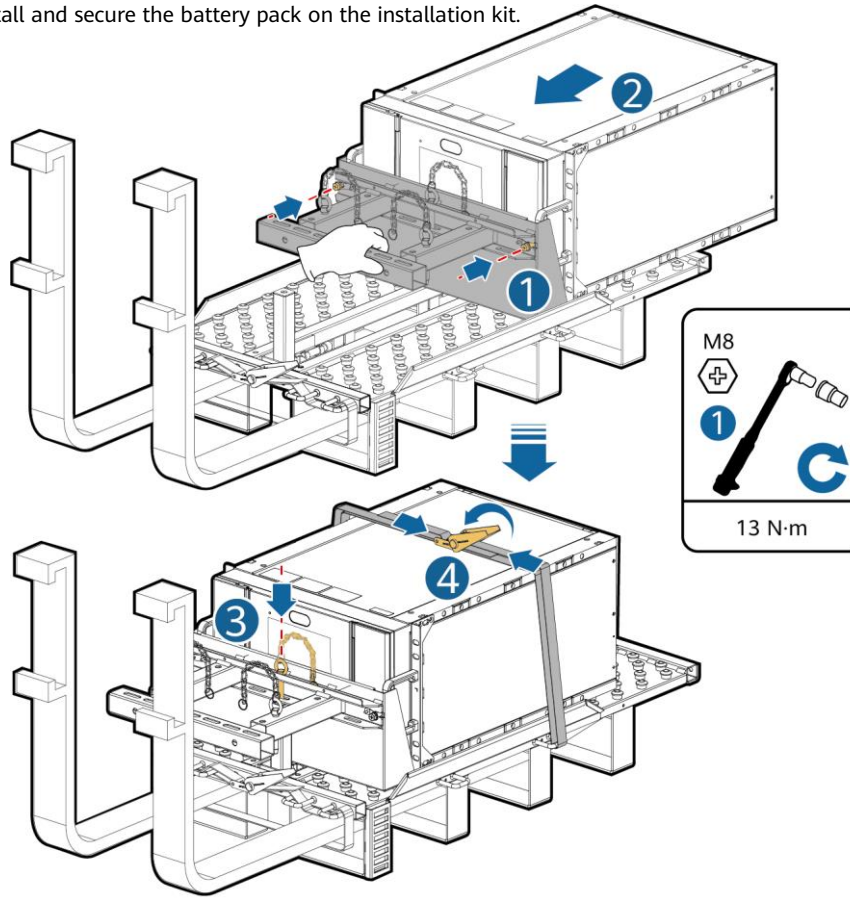
5. Take out the battery pack.

NOTE

- At least four persons are required to move a battery pack.
- When using the lifting handles, hold the handle end closer to the device.

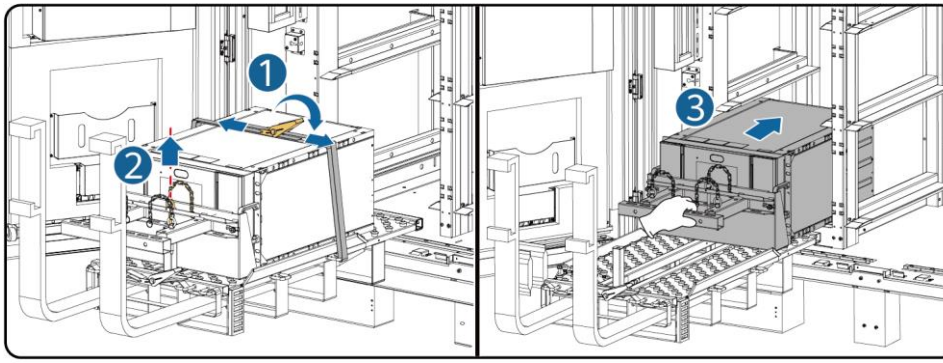


6. Install and secure the battery pack on the installation kit.



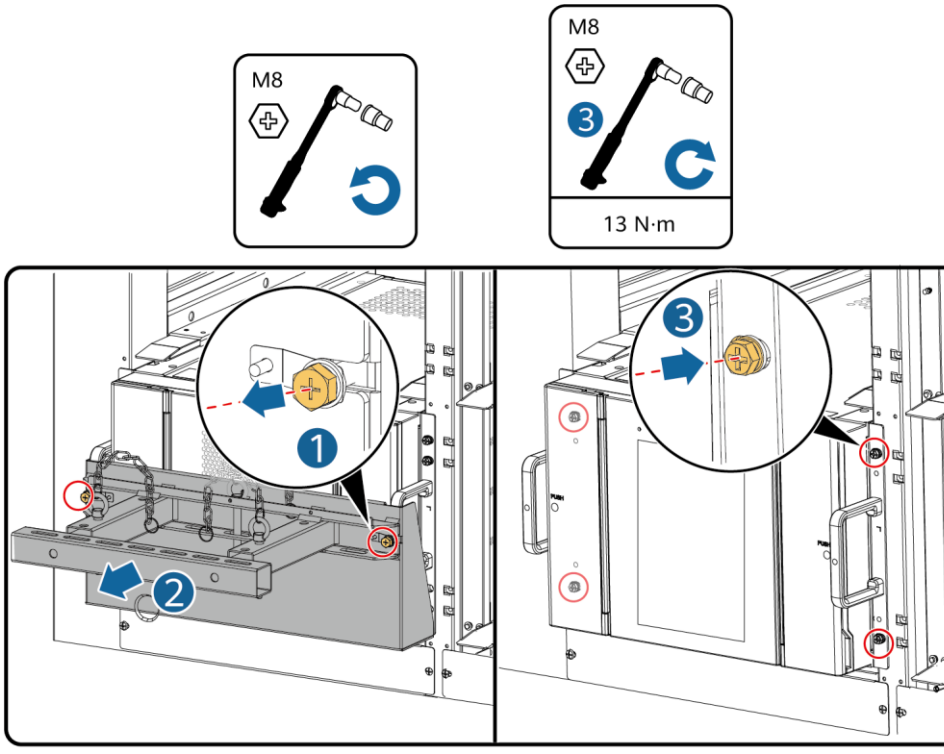
IB03H00023

7. Install the battery pack in the ESS.

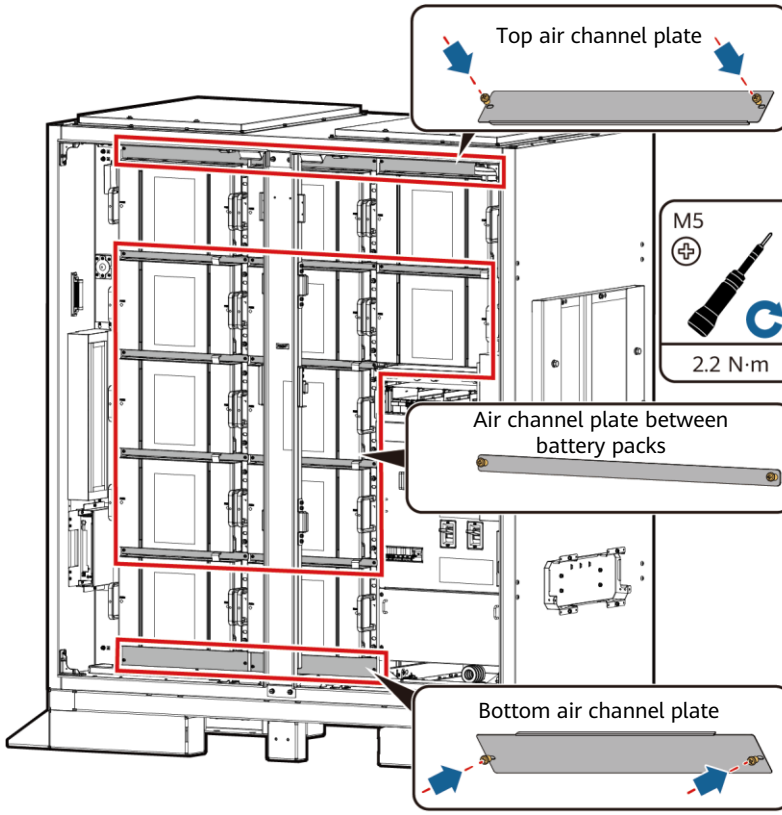


IB03H00025

8. Secure the battery pack using the delivered screws.

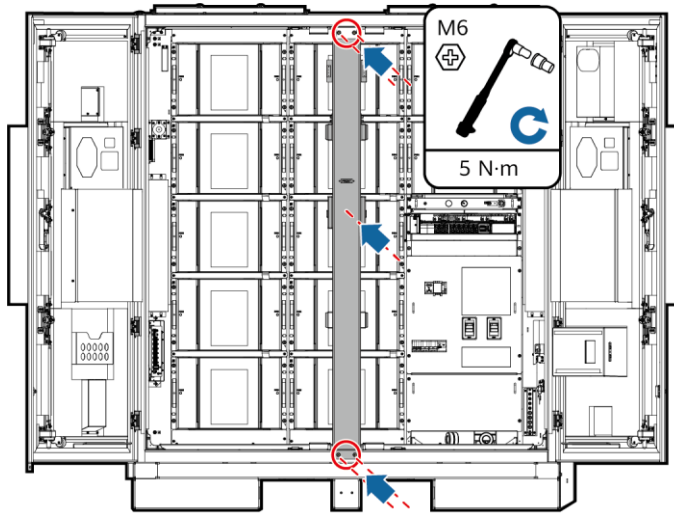


9. Install air channel plates between battery packs based on the labels on the air channel plates. The air channel plates are delivered with the product.



IB03H00041

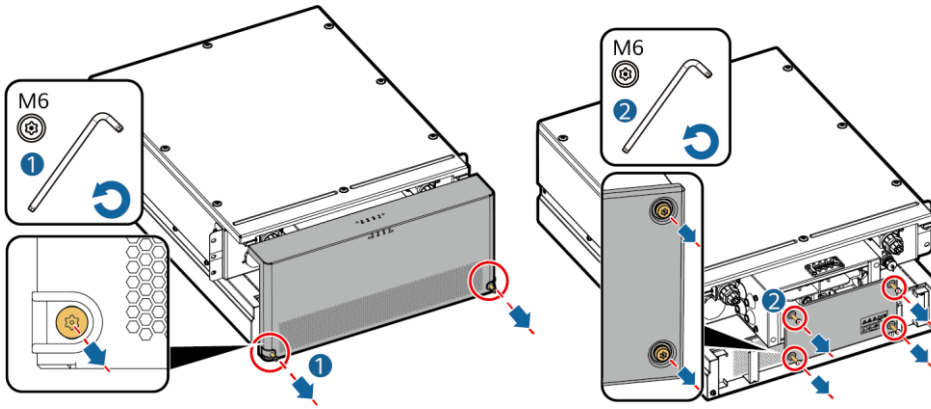
10. Install the column to the ESS.



IB03H00037

4.4 Installing the Rack Controller

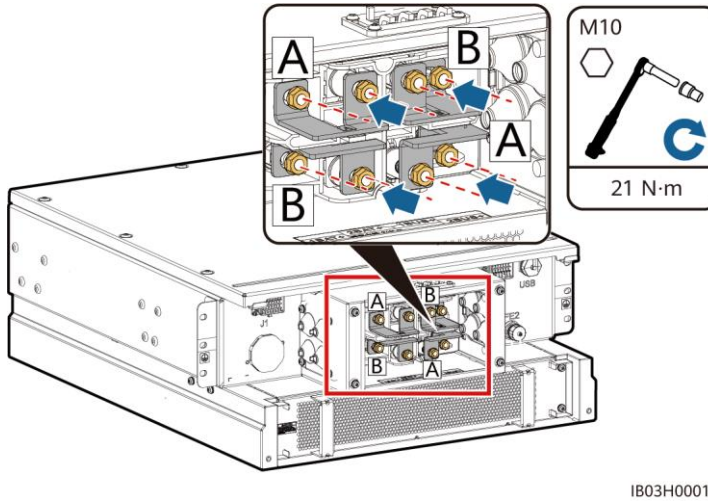
1. Remove the decorative cover and maintenance compartment cover from the rack controller using the delivered security Torx wrench.



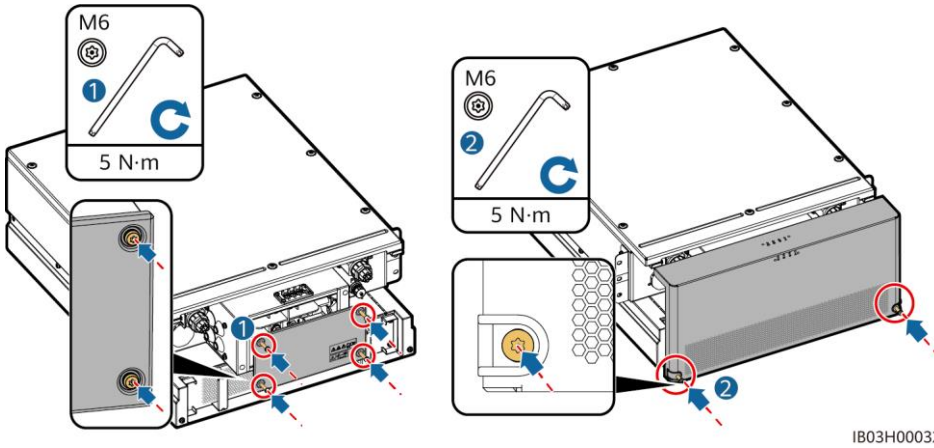
2. Install short-circuiting copper bars that are delivered with the product.

NOTE

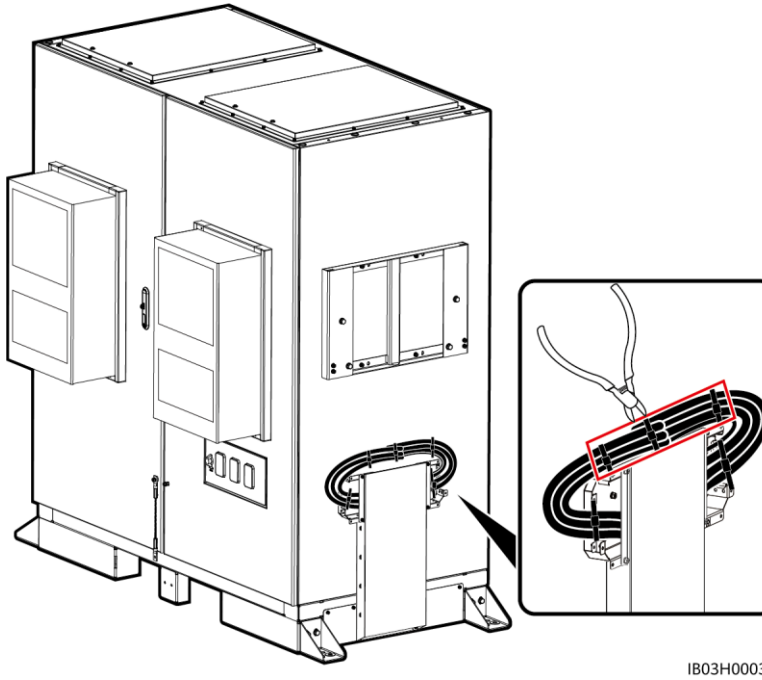
Secure the copper bars using a 16 mm socket.



3. Install the decorative cover and maintenance compartment cover to the rack controller.



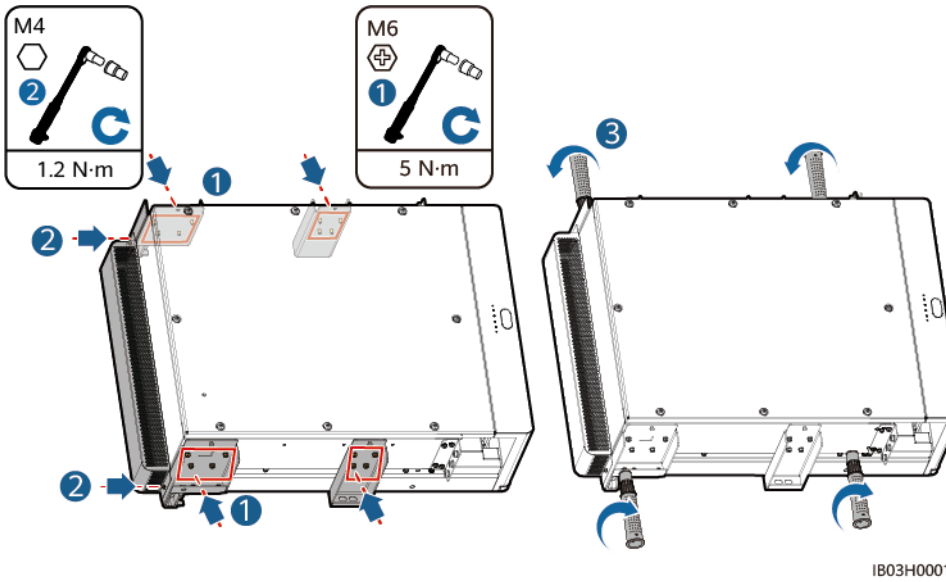
4. Remove cables bound on the outside of the ESS.



5. Install the upper bracket, lower bracket, rainproof canopy, and lifting handles to the rack controller.

NOTE

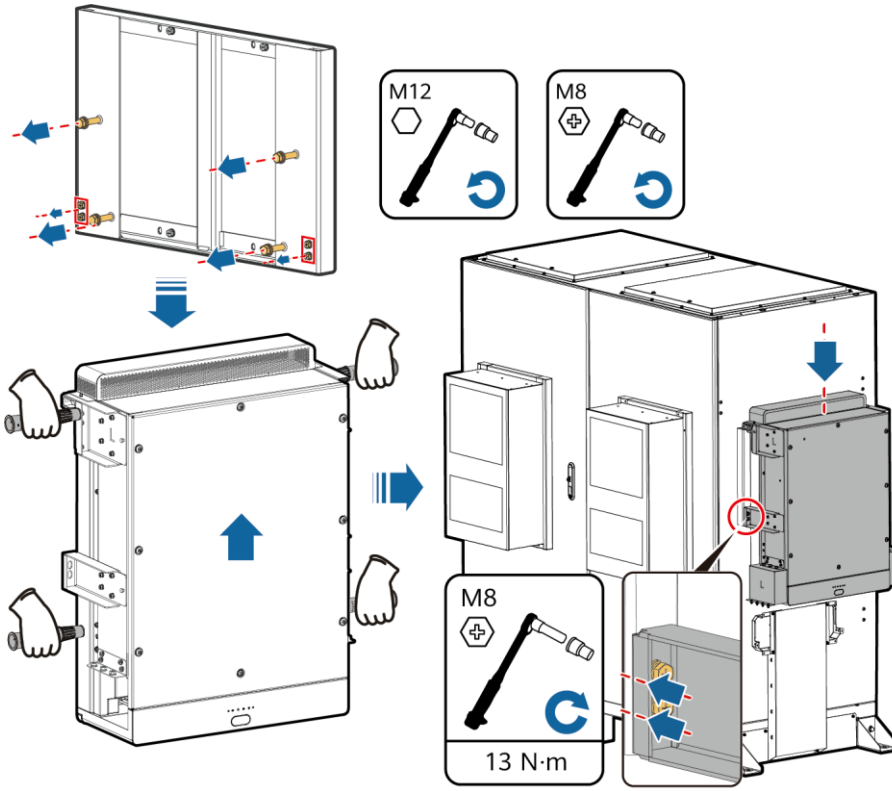
- The upper bracket, lower bracket, rainproof canopy, and lifting handles are delivered with the product.
- The screws for securing the upper and lower brackets are preinstalled on the rack controller. Remove the screws before installing the upper and lower brackets.
- The screws for securing the rainproof canopy are preinstalled on the upper bracket. Remove the screws before installing the rainproof canopy.
- When using the lifting handles, hold the handle end closer to the device.



6. Install the rack controller to the mounting bracket on the ESS.

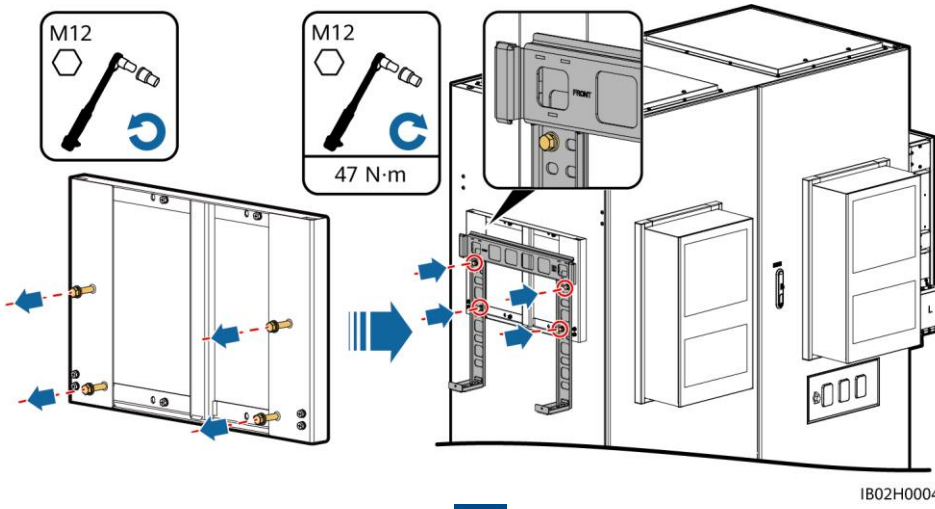
NOTE

- The M8 screws are used to secure the rack controller. Keep them properly after removing them.
- At least three persons are required to install the rack controller.



4.5 Installing the Smart PCS

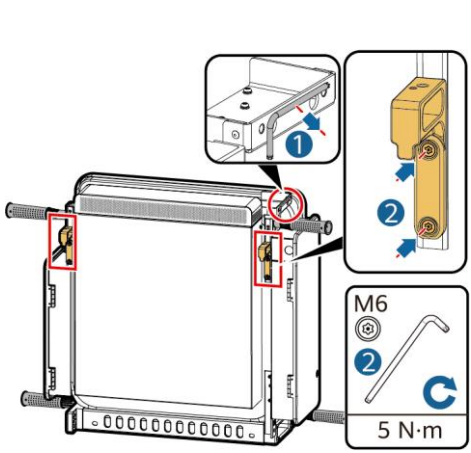
1. Install the mounting bracket.



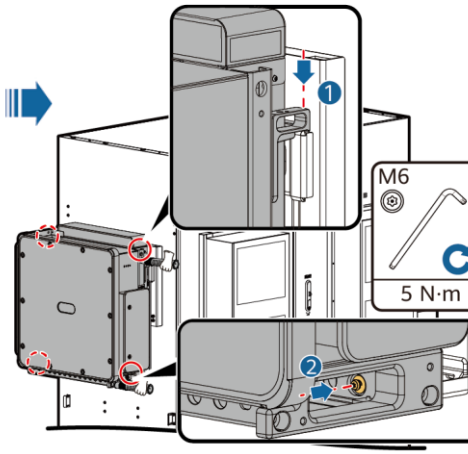
2. Install mounting ears and lifting handles, and then secure the Smart PCS. The mounting ears are delivered with the Smart PCS, and the lifting handles are delivered with the ESS.

NOTE

- At least four persons are required to install the Smart PCS.
- When using the lifting handles, hold the handle end closer to the device.



IB02H00025



IB02H00028

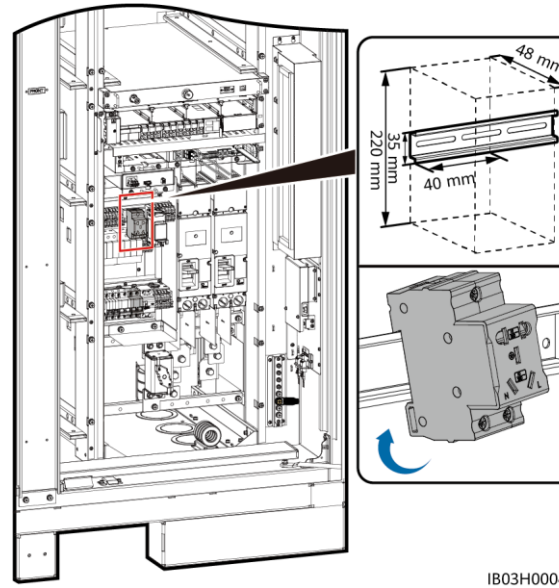
4.6 (Optional) Installing the Maintenance Socket

NOTE

The 220 V socket is prepared by the customer. The actual socket appearance may vary. This guide describes only the installation method.

1. Remove the baffle plate in front of the power distribution area.

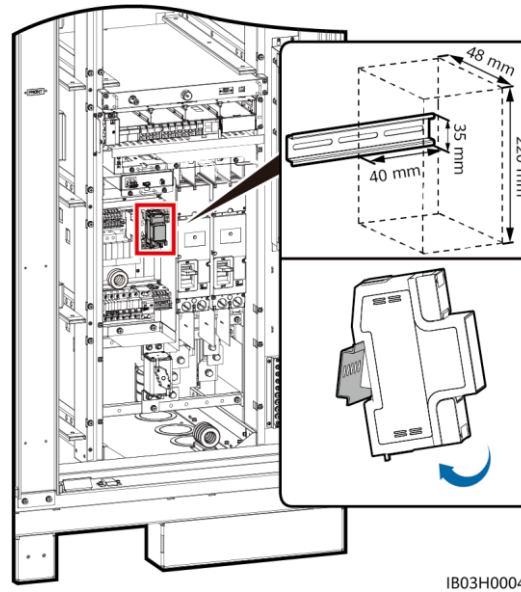
2. Install the maintenance socket.



IB03H00048

4.7 (Optional) Installing the Smart Power Sensor (DDSU666-H)

1. Remove the baffle plate in front of the power distribution area.
2. Install the DDSU666-H.



5 Installing Cables

5.1 Preparing Cables

NOTE

The cable diameter must comply with local cable standards. The key factors include the rated current, cable type, routing method, maximum expected line loss, rated temperature, ambient temperature, thermal resistance, acidity, sedimentation, and environmental protection requirements.

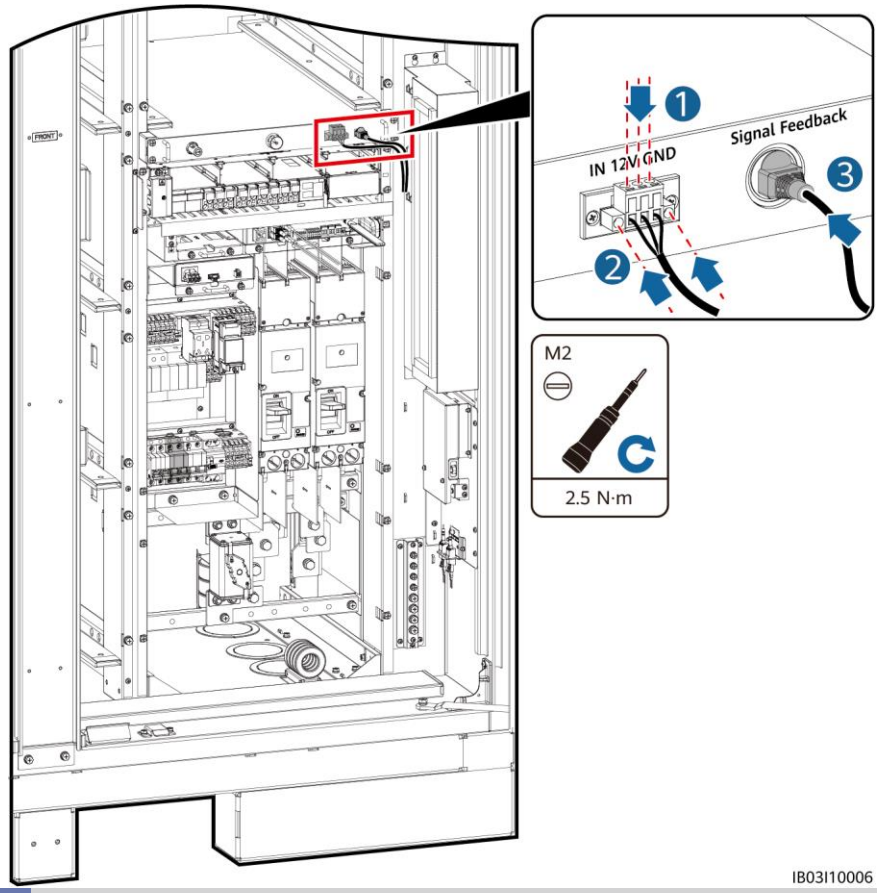
Name	Type	Conductor Cross-Sectional Area	Outer Diameter	Terminal	Source
Ground cable for the rack controller	Single-core outdoor copper cable	≥ 25 mm^2	-	M6 OT/DT terminal	Prepared by the customer
DC power cable	Prefabricated DC power cable (with a corrugated pipe)	-	-	-	Delivered with the product
Auxiliary AC power cable (with external grid power supply)	Two-core (L, N)/Three-core (L, N, PE) outdoor copper/copper-clad aluminum/aluminum alloy cable	6–25 mm^2	12.7–27 mm	Cord end terminal with an insertion depth of 12 mm, M8 OT/DT terminal	Prepared by the customer
Single-phase AC input power cable (without external grid power supply)	Two-core/Three-core outdoor copper/copper-clad aluminum/aluminum alloy cable	6–25 mm^2	12.7–27 mm	Pin cord end terminal with an insertion depth of 12 mm	Prepared by the customer
Network cable	CAT 5E outdoor shielded network cable, internal resistance ≤ 1.5 ohms/10 m	-	≤ 9 mm	Shielded RJ45 connector	Prepared by the customer
Optical fiber cable	Four-core or eight-core single-mode armored cable with the transmission wavelength of 1310 nm	-	≤ 18 mm	-	Prepared by the customer
(Optional) Cable to the DDSU666-H	RS485 communications cable	-	-	-	Preinstalled before delivery
	Current transformer cable, and power cable	-	-	-	Delivered with the product
(Optional) Cable to the maintenance socket	Power cable and ground cable	-	-	-	Delivered with the product

5.2 Installing Cables for the Rack Mounted Fire Extinguishing System

Take out the reserved cables and install them to the rack mounted fire extinguishing system.

⚠ WARNING

Ensure that the cables are correctly installed. If a fire occurs when cables are not connected or incorrectly connected, the ESS cannot actively extinguish the fire.

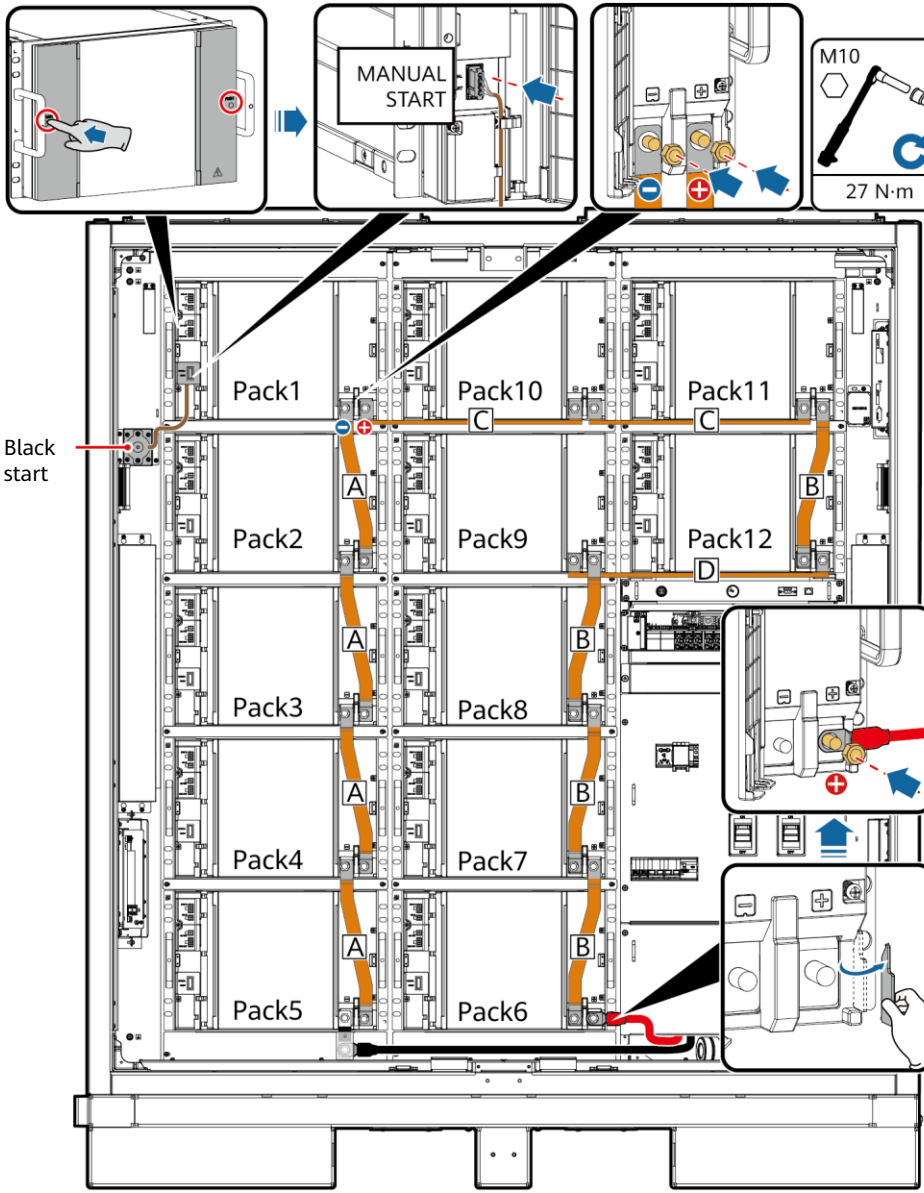


5.3 Installing Battery Pack Cables

1. Install copper bars for battery packs, and connect the battery rack general output power cable and black start cable.

NOTE

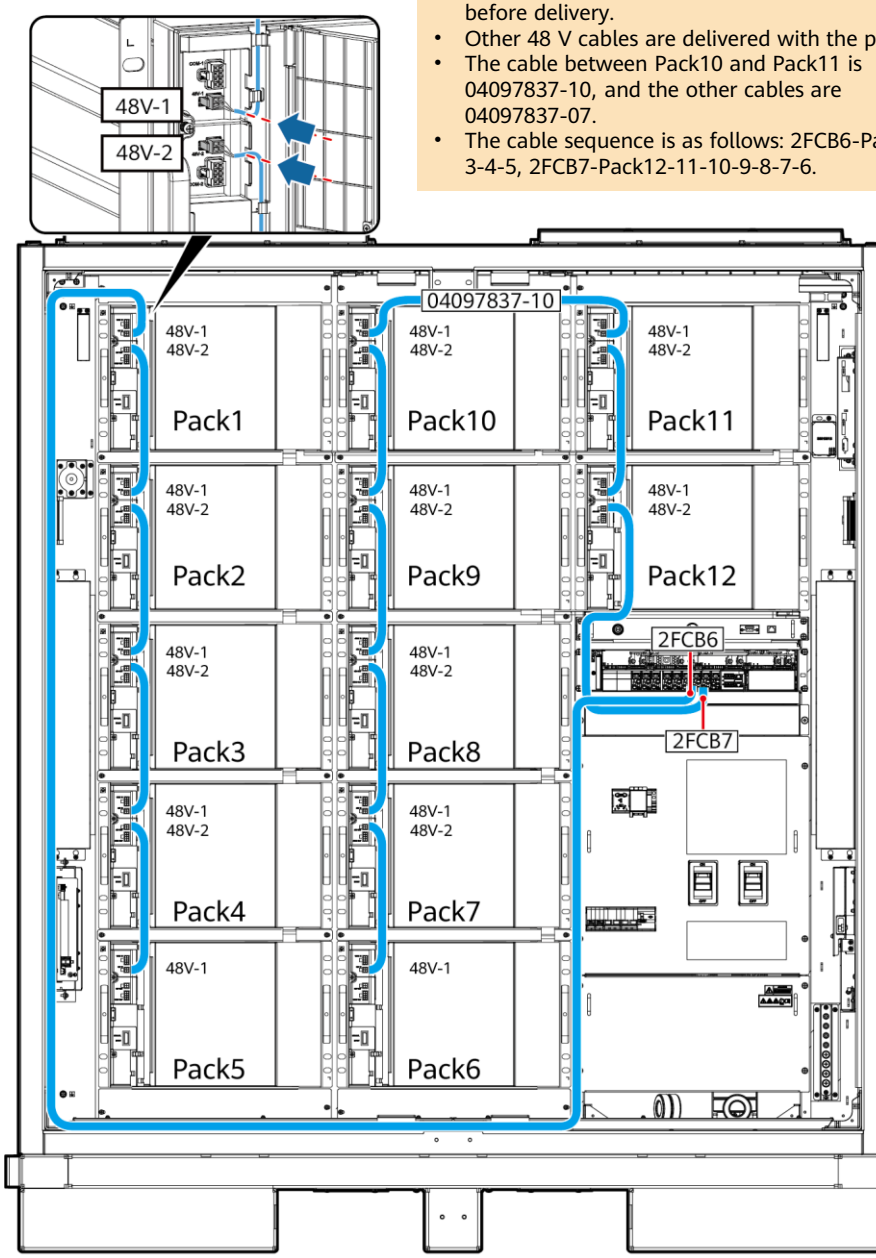
- One end of the battery rack general output power cable and black start cable is preinstalled before delivery.
- There are four types of copper bars delivered with the product: A, B, C, and D.
- Copper bar D must be installed before copper bar B.
- There are two types of M10 nuts for securing copper bars. Select a 15 mm or 16 mm socket based on the site requirements.
- When installing a nut, manually insert the nut into the screw plate, and then use a socket wrench to completely secure the nut in place. This prevents the screw thread from being stuck or stripped due to the deviation of the nut position.


MANUAL START
M10
27 N·m
Black start
Pack1
Pack10
Pack11
Pack2
Pack9
Pack12
Pack3
Pack8
Pack4
Pack7
Pack5
Pack6
A
B
C
D
IB03H00040

2. Install the 48 V cables.

NOTE

- Cables to 2FCB6 and 2FCB7 are preinstalled before delivery.
- Other 48 V cables are delivered with the product.
- The cable between Pack10 and Pack11 is 04097837-10, and the other cables are 04097837-07.
- The cable sequence is as follows: 2FCB6-Pack1-2-3-4-5, 2FCB7-Pack12-11-10-9-8-7-6.

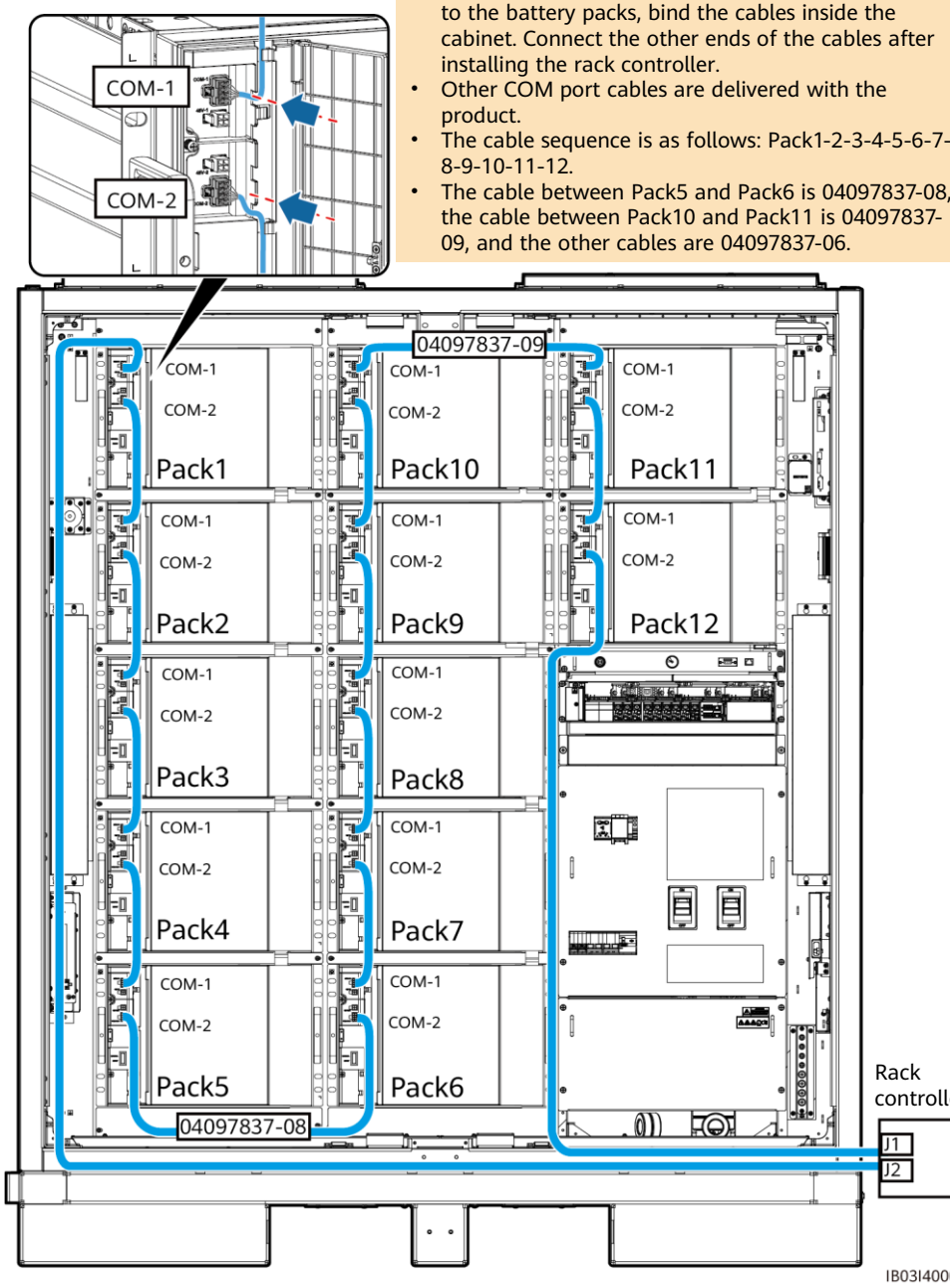


IB03I50007

3. Install cables to the COM ports.

NOTE

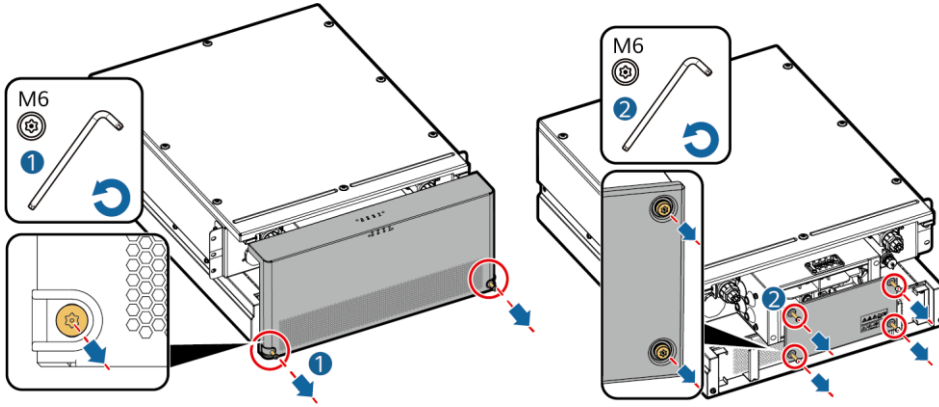
- Cables to COM-1 on Pack1 and COM-2 on Pack12 are reserved before delivery. After connecting the cables to the battery packs, bind the cables inside the cabinet. Connect the other ends of the cables after installing the rack controller.
- Other COM port cables are delivered with the product.
- The cable sequence is as follows: Pack1-2-3-4-5-6-7-8-9-10-11-12.
- The cable between Pack5 and Pack6 is 04097837-08, the cable between Pack10 and Pack11 is 04097837-09, and the other cables are 04097837-06.



4. Close the terminal covers of the battery packs.

5.4 Installing Rack Controller Cables

1. Remove the decorative cover and maintenance compartment cover from the rack controller using the delivered security Torx wrench.



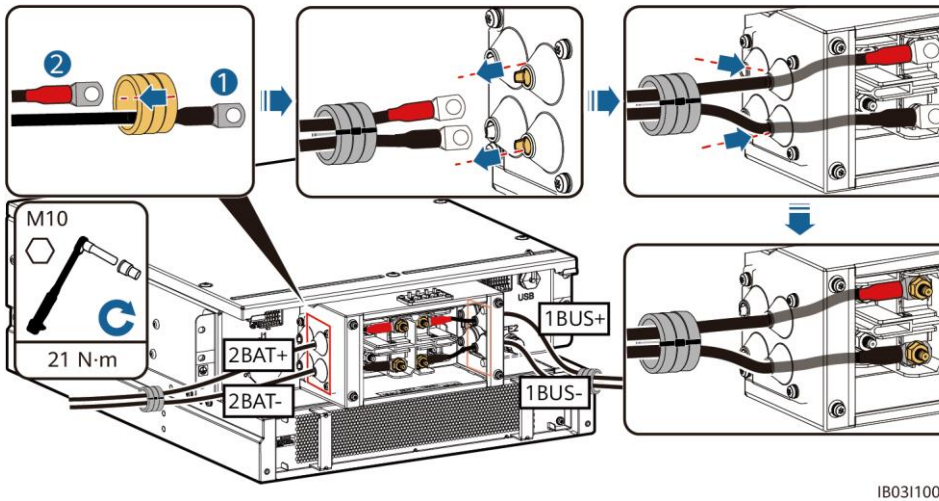
IB03H00016

2. Connect the preinstalled cables to the BAT/BUS ports. Magnetic rings are delivered with the product and need to be bound after being installed.

NOTICE

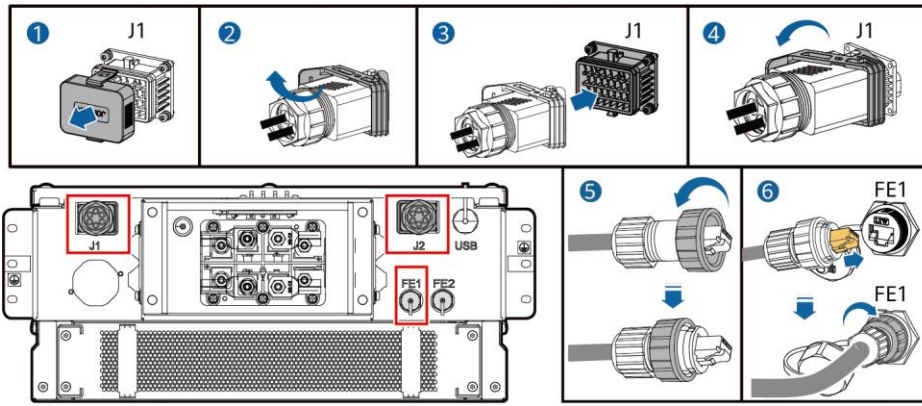
- The black magnetic ring is installed on the left side of the rack controller, and the green magnetic ring is installed on the right side of the rack controller.
- Do not remove the cover from an unused pagoda connector.

Cable Label	Wiring Terminal	Cable Label	Wiring Terminal
107-1F1:2>TA1:2BAT+	2BAT+	108-1Q2:1>TA1:1BUS+	1BUS+
109-1Q1:4>TA1:2BAT-	2BAT-	111-1Q2:3>TA1:1BUS-	1BUS-



IB03I10002

3. Connect the preinstalled cables to J1 (left), J2 (right), and FE1.

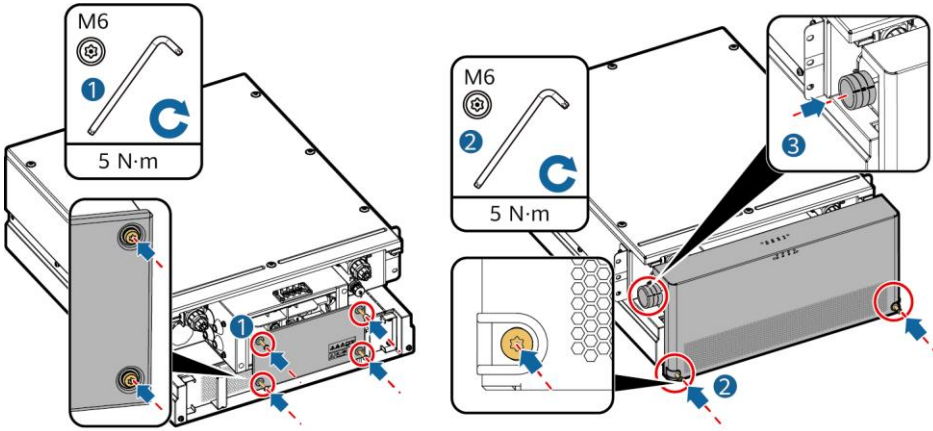


IB03I40001

NOTE

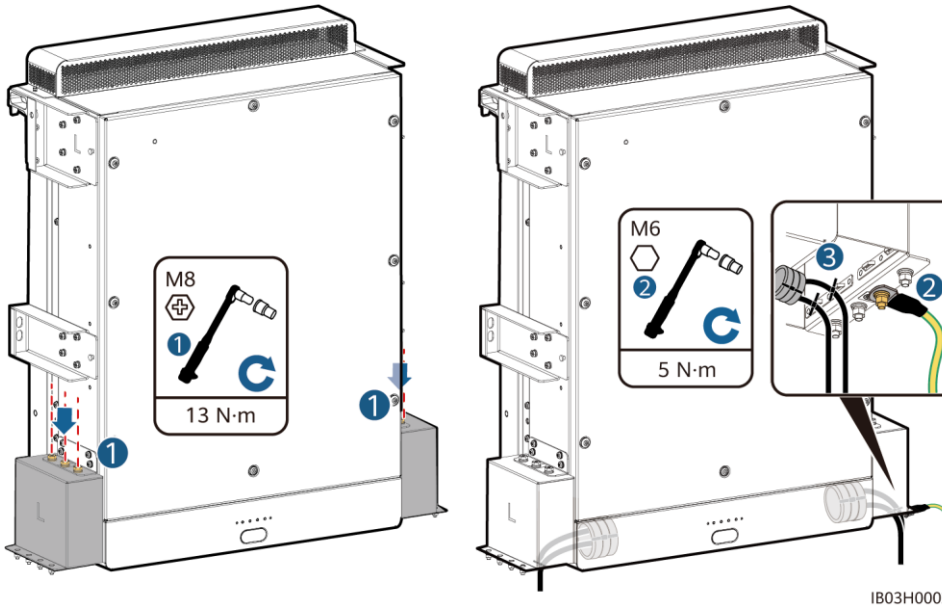
- When securing the network cable (as shown by ⑥ in the figure), hold the cable and align it with the FE network port. After the network cable is properly installed, do not release it. Use the other hand to tighten the nut of the RJ45 connector.
- After the network cable is installed, gently pull it down to check that it is properly installed.

4. Install the maintenance compartment cover and decorative cover of the rack controller, and place the magnetic rings.



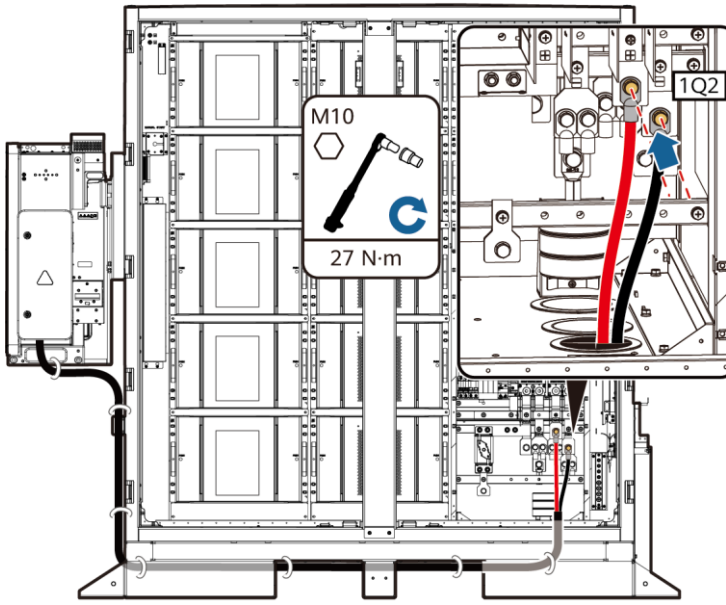
IB03H00020

5. Install the protective cover delivered with the product, connect a ground cable to the protective cover on the left or right side, and bind the cable.



IB03H00022

5.5 Installing DC Power Cables

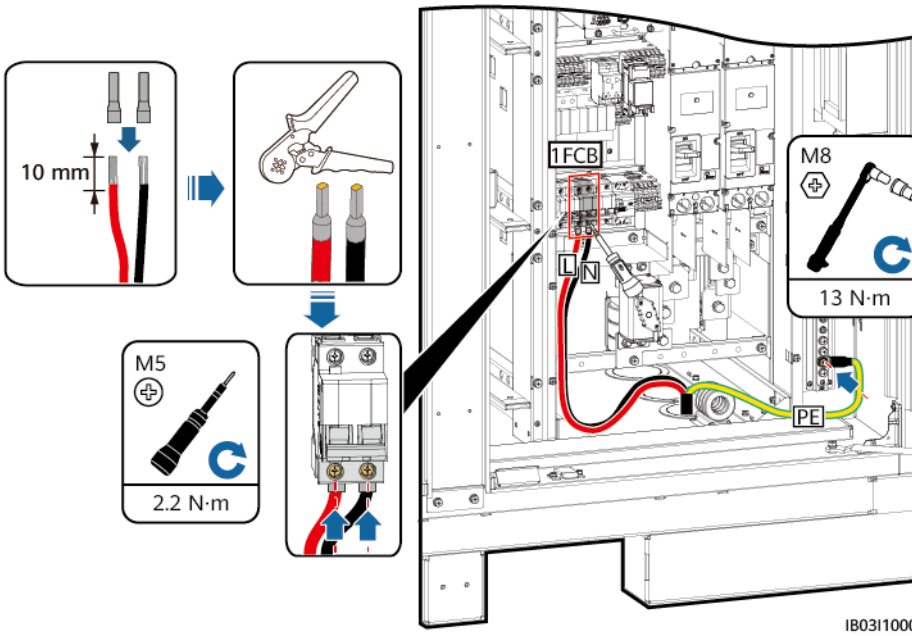


IB03I30002

NOTE

- Secure cables on the 1Q2 side using a 16 mm socket.
- For details about how to install other cables for the Smart PCS, see the corresponding quick guide.

5.6 Installing Auxiliary AC Power Cables (with External Grid Power Supply)

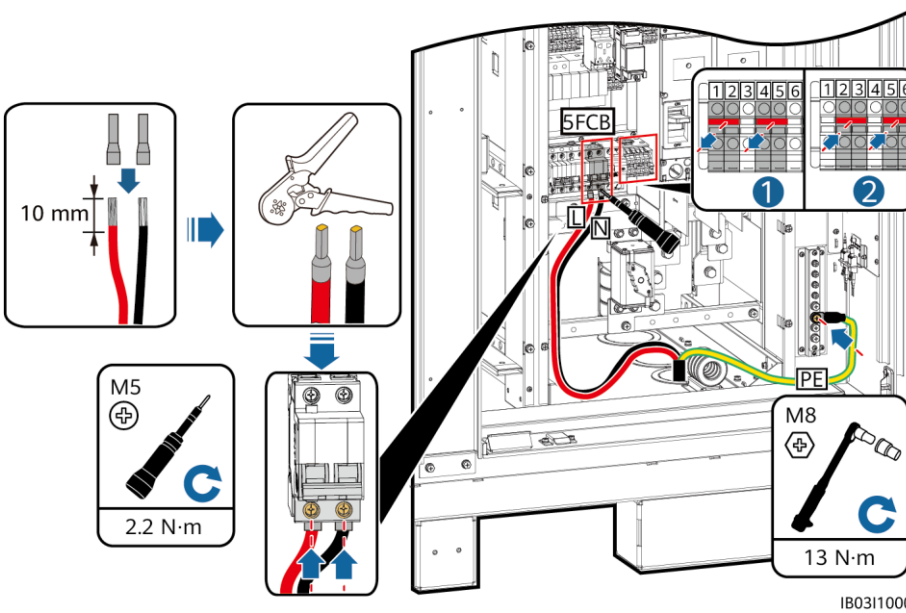


5.7 Installing Single-Phase AC Input Power Cables (Without External Grid Power Supply)

NOTE

- If a UPS or other reliable backup power supply is used, perform the following steps to connect single-phase AC input power cables.
- Recommended UPS input switch specifications: 230/400 V AC 32 A/2P.

1. Remove the short-circuiting bar from 1–2 and insert it to 2–3 on the XU terminal block.
2. Remove the short-circuiting bar from 4–5 and insert it to 5–6 on the XU terminal block.
3. Connect the cables.



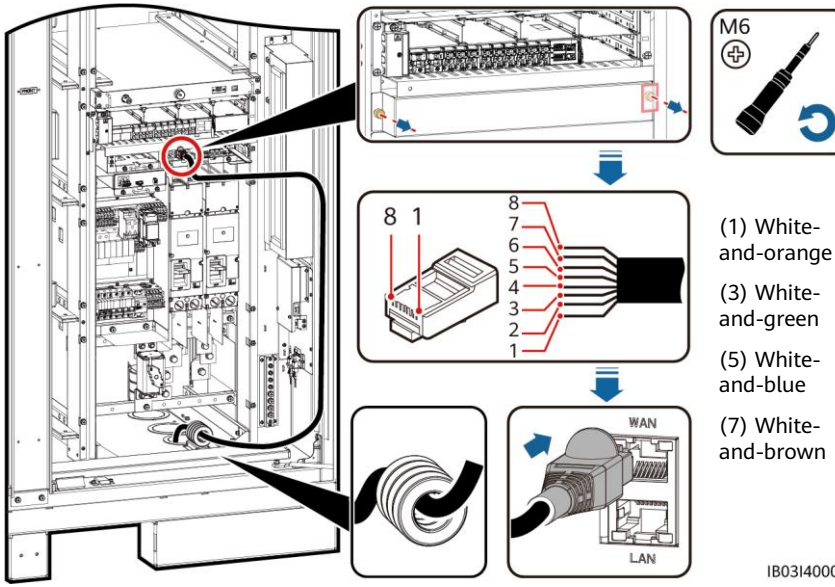
5.8 Installing Communications Cables

Installing an FE Communications Cable

Connect the FE communications cable to the WAN port on the CMU.

NOTICE

The communications cable needs to be routed through the magnetic ring at the cable hole at the bottom.



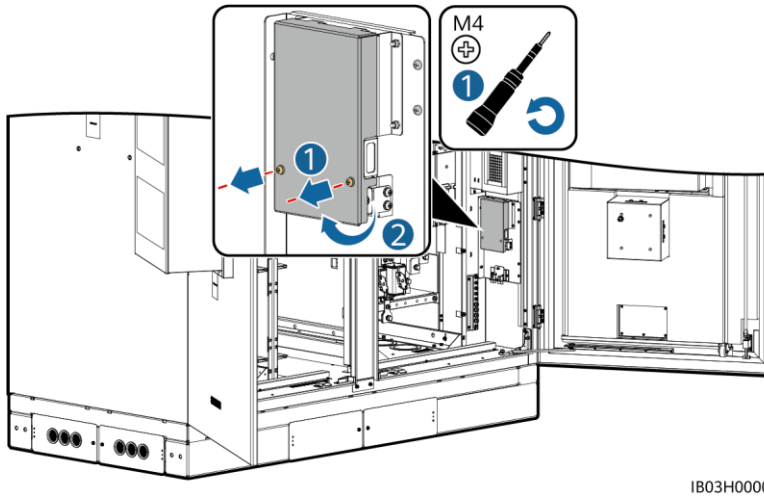
(1) White-and-orange (2) Orange
(3) White-and-green (4) Blue
(5) White-and-blue (6) Green
(7) White-and-brown (8) Brown

Installing Fiber Ring Network Communications Cables

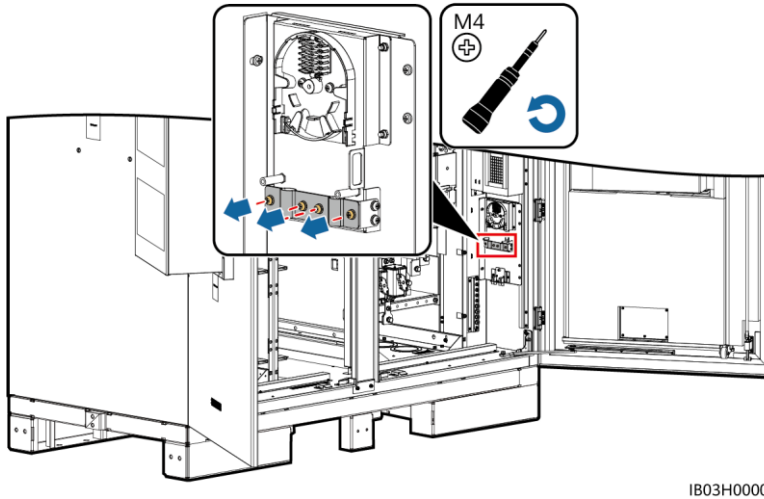
NOTICE

- Only professionals are allowed to connect and splice optical fiber cables.
- In the optical fiber ring topology, two optical fiber cables are required.

1. Remove the external mechanical parts from the access terminal box (ATB).

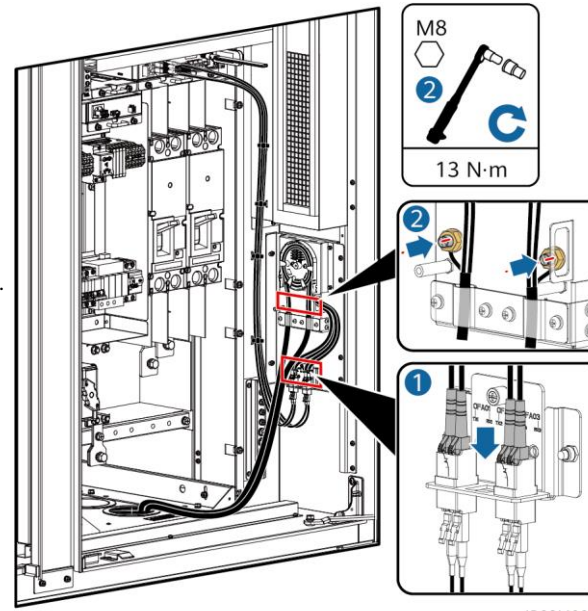


2. Remove the optical fiber cable fastener.



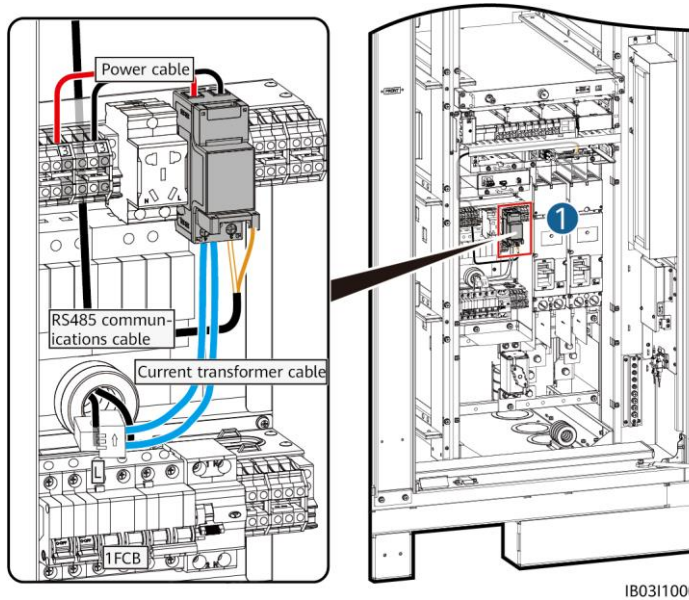
3. Connect one end of the optical jumper to the fiber adapter.
4. Route the other end of the optical jumper through the cable hole on the side of the ATB, and connect the cable to the ATB.

5. Connect the peripheral optical fiber cable to the ATB, splice the optical fiber cable and the optical jumper, and then wind the spliced cable around the fiber spool on the ATB.
6. Check that the cables are connected correctly and securely. Then reinstall the optical fiber cable fastener and external mechanical parts.



IB03I40002

5.9 (Optional) Installing DDSU666-H Cables



IB03I10003

NOTE

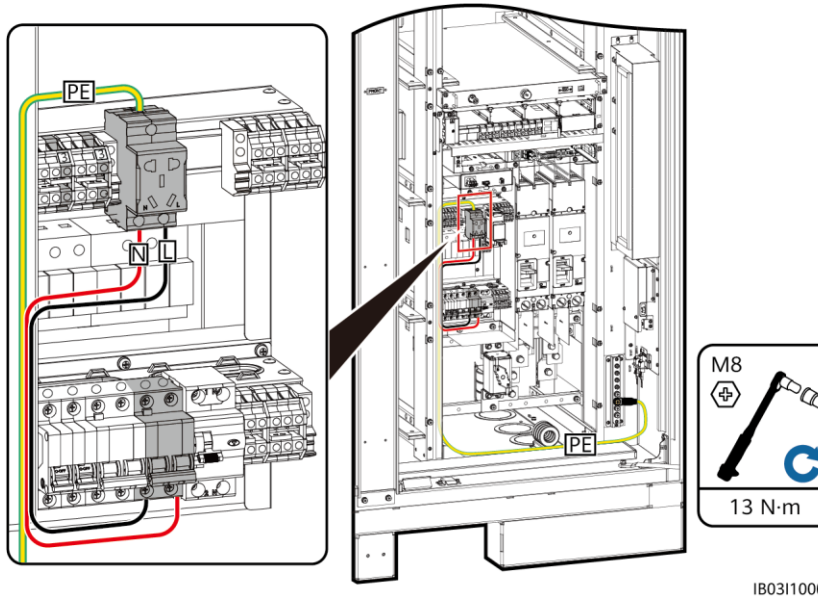
If the ESS is connected to an external UPS, the connection method is the same. However, in this scenario, the DDSU666-H cannot measure the power consumption of the 12 V adapter and there is a maximum error of 0.024 kWh per hour.

Name	DDSU666-H Side	ESS Side
RS485 communications cable	458A	K1-COM1:+>1PGH1:485A (preinstalled before delivery)
	485B	K1-COM1:->1PGH1:485B (preinstalled before delivery)
Current transformer cable	CT:5 I* (white) CT:6 I (blue)	XT1:1:2>1FCB:1
Power cable	L	XT1:3:1>1PGH1:L
	N	XT2:3:1>1PGH1:N

5.10 (Optional) Installing Maintenance Socket Cables

NOTE

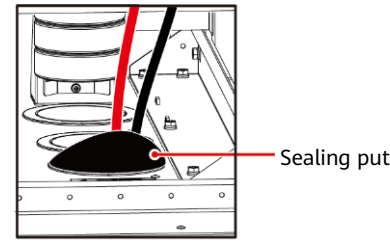
The actual appearance of the maintenance socket may vary. The figure shows only the installation method.



IB03I10007

5.11 Sealing Cable Holes

After cables are installed, seal the cable holes using the delivered sealing putty.



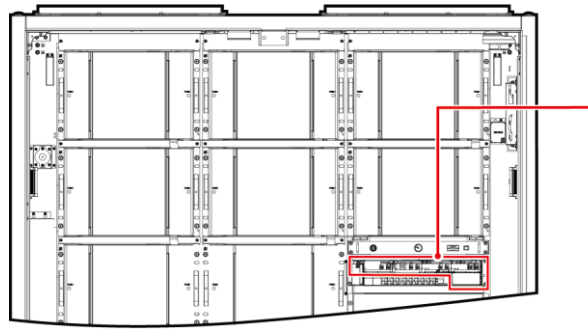
IB03W00018

6 Check Before Power-On

No.	Check Item	Expected Result
1	Equipment appearance	• The equipment is intact and free from rust or paint flake-off. If the paint flakes off, repair the damaged paint. • The labels on the equipment are clear. Damaged labels must be replaced.
2	Cable appearance	• Cable sheathings are properly wrapped and not damaged. • Cable hoses are intact.
3	Cable connection	• Cables are connected in the designed positions. • Terminals are prepared as required and securely connected. • Labels on both ends of each cable are clear and specific, and attached in the same direction.
4	Cable routing	• Electrical and ELV cables are routed separately. • Cables are neat and tidy. • Cable tie joints are evenly cut without burrs. • Cables are placed properly and with slack at bending points to avoid stress. • Cables are routed neatly without twists or crossovers in the cabinet.
5	Battery pack copper bar	The copper bar is not deformed, and the plastic dip coating is not damaged.
6	Switch	• The DC LV Panel switch is set to OFF. • The battery rack switch is set to OFF.

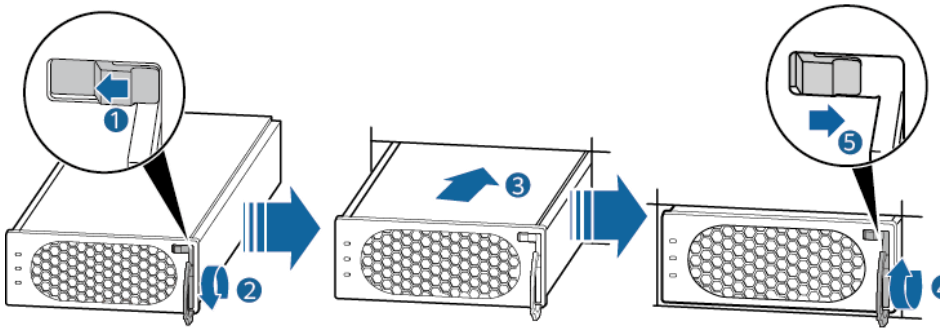
7 System Power-On

7.1 Installing the PSU



IB03W00025

1. Push the locking latch leftwards.
2. Pull out the handle.
3. Gently push the PSU into its slot along the guide rails.
4. Push the handle upward.
5. Push the locking latch rightwards to lock the handle.

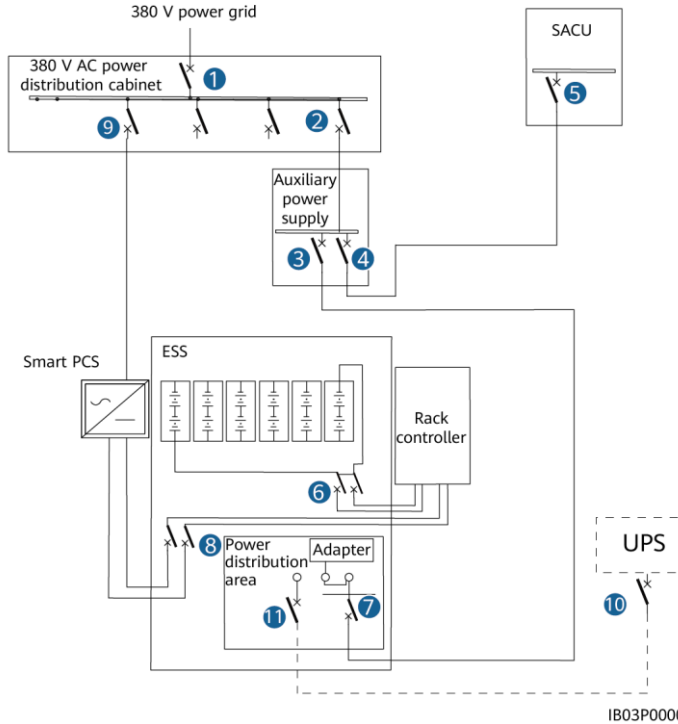


PO01HC0014

7.2 Power-On Process

NOTICE

- Check all equipment before power-on. For details, see the corresponding user manuals.
- Incorrect cable connections may damage the Smart PCS. Check that cables are correctly connected before the first power-on. If any exception occurs during the power-on process, stop the operation. You can proceed with the operation only after the exception has been handled.



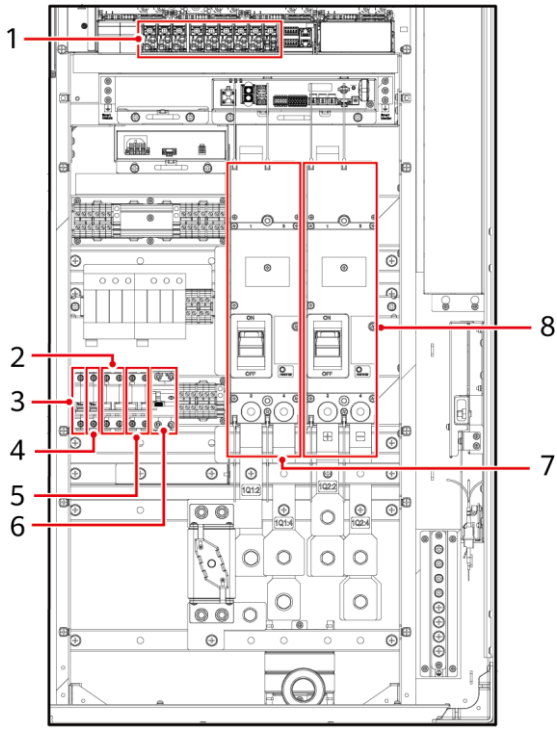
IB03P00005

Step	Item		Remarks
1	Powering on the AC power distribution cabinet connected to the grid		Corresponding to number 1 in the power-on diagram
2	Powering on the auxiliary power supply	(Optional) Powering on the UPS	Corresponding to numbers 10 and 11 in the power-on diagram
		Powering on the 220 V AC auxiliary power supply	Corresponding to numbers 2, 3, and 4 in the power-on diagram
3	Powering on the SACU		Corresponding to number 5 in the power-on diagram
4	Powering on the ESS	Powering on the DC circuit breakers of battery racks	Corresponding to number 6 in the power-on diagram
5		Powering on the auxiliary power supply (turning on the AC switches and then the DC switches)[a]	Corresponding to number 7 in the power-on diagram
6		Powering on the output DC circuit breakers	Corresponding to number 8 in the power-on diagram
7	Powering on the AC side of the Smart PCS	Powering on the battery side of the AC power distribution cabinet	Corresponding to number 9 in the power-on diagram
Note a: Before turning on the internal switches of the ESS auxiliary power supply, check that the AC auxiliary power supply voltage is within the normal range (220 V ± 10%).			

7.3 Powering On the ESS

NOTICE

If the ESS has not been used for six months or longer after being installed, it must be checked and tested by professionals before operation.



IB03W00045

1. Turn on the DC circuit breaker 1Q1 (as shown by 7 in the figure).
2. Check that the AC voltage is within the allowed range (220 V ± 10%) using a multimeter (as shown by 2 in the figure).
3. (Optional) Turn on the UPS cable inlet switch 5FCB (as shown by 5 in the figure).
4. Turn on the AC power distribution switch 1FCB (as shown by 2 in the figure).
5. Turn on all switches in the power distribution system of the ESS.
   a. Turn on the 12 V adapter switch 1FCB1 (as shown by 3 in the figure).
   b. Turn on the PSU switch 1FCB2 (as shown by 4 in the figure).
   c. (Optional) Turn on the maintenance socket switch 1FB1 (as shown by 6 in the figure).
   d. On the embedded power subrack (SK1), turn on the DC/DC switch 2FCB1, light switch 2FCB2, TCUE switch 2FCB3, fan 1 switch 2FCB6, fan 2 switch 2FCB7, left air conditioner switch 2FCB8, and right air conditioner switch 2FCB9 in sequence (as shown by 1 in the figure).

NOTE

Use a multimeter to check that the output voltage at position 1 in the figure is 53 V ± 5 V.

6. Turn on the DC circuit breaker 1Q2 (as shown by 8 in the figure).

8 Commissioning (SmartLogger WebUI)

NOTE

- The operating system of Windows 7 or later is supported.
- The web software version corresponding to the WebUI screenshots in this guide is FusionSolar V800R021C10SPC110. The screenshots are for reference only.

8.1 Preparations and WebUI Login

1. Connect the network cable between the PC network port and the SmartLogger.
2. Set the IP address of the PC. Ensure that the IP address is in the same subnet as that of the SmartLogger.

Connected Port	IP Setting	Default Value on SmartLogger	Example PC Setting
SmartLogger WAN port	IP address	192.168.0.10	192.168.0.11
	Subnet mask	255.255.255.0	255.255.255.0
	Default gateway	192.168.0.1	192.168.0.1
SmartLogger LAN port	IP address	192.168.8.10	192.168.8.11
	Subnet mask	255.255.255.0	255.255.255.0
	Default gateway	192.168.8.1	192.168.8.1

NOTE

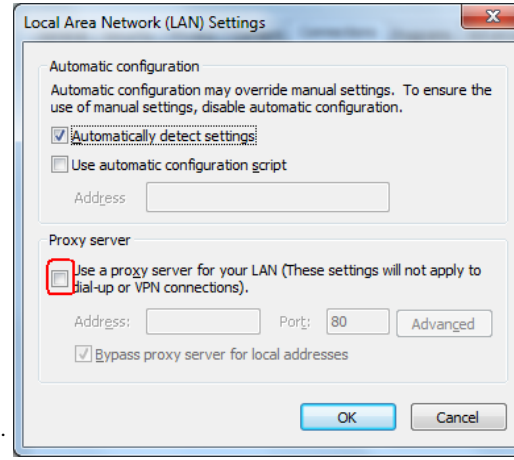
- When the IP address of the WAN port is in the network segment from 192.168.8.1 to 192.168.8.255, set the default gateway to 192.168.8.1 and the IP address of the LAN port to 192.168.3.10. If the connected port is a LAN port, you need to adjust the network configuration of the PC.
- It is recommended that the PC be connected to the LAN port of the SmartLogger or the GE port of the SmartModule. When the PC is connected to the GE port of the SmartModule, adjust the network configuration of the PC in the same way as when the PC is connected to the LAN port of the SmartLogger.

3. Set LAN parameters.

NOTICE

- If the SmartLogger is connected to a LAN and a proxy server has been configured, you need to disable the proxy service.
- If the SmartLogger is connected to the Internet and the PC is connected to the LAN, do not disable the proxy service.

a. Open Internet Explorer.
b. Choose **Tools** > **Internet Options**.
c. Click the **Connections** tab and click **LAN Settings**.
d. Clear **Use a proxy server for your LAN**.
e. Click **OK**.



4. Enter **https://*XX.XX.XX.XX*** (IP address of the SmartLogger) in the address box of your browser. If you log in to the WebUI for the first time, a security risk warning is displayed. Click **Continue to this website**.

5. Log in to the WebUI.

Scenario 1: Initial Login When the User Name Is Displayed as Admin

NOTE

In this scenario, you need to update the SmartLogger to V800R021C10SPC020 or later.

Parameter	Description
Language	Select a desired language.
User Name	The default value is **admin**.
Password	• The initial password is **Changeme**. • Use the initial password upon the first power-on and change it immediately after login. Then, use the new password to log in again.

NOTE

For SmartLogger V800R021C10SPC020 or later versions:

- Method 1: Enter **admin** in **User Name** and log in using your new password.
- Method 2: Select **installer** from the drop-down box of **User Name** and log in using your app login password (the initial password is **00000a**).

Scenario 2: Initial Login When the User Name Is Empty

NOTE

In this scenario, the SmartLogger software version is V800R021C10SPC020 or later.

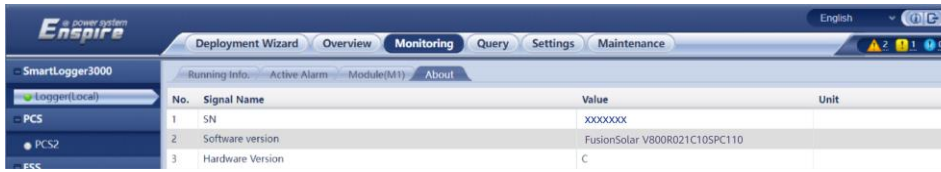
Parameter	Description
Language	Select a desired language.
User Name	Select **installer**.
Password	Set the login password as prompted.

NOTE

- Protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. If you lose the password, the device must be restored to its factory settings. In these cases, the Company shall not be liable for any loss caused to the plant.
- You will be locked out for 10 minutes after five failed password attempts in 5 minutes.
- A dialog box with recent login information is displayed after login. Click **OK**.

8.2 Checking the SmartLogger Software Version

Choose **Monitoring** > **Logger(Local)** > **About** and check that the software version is FusionSolar V800R021C10SPC110 or later.

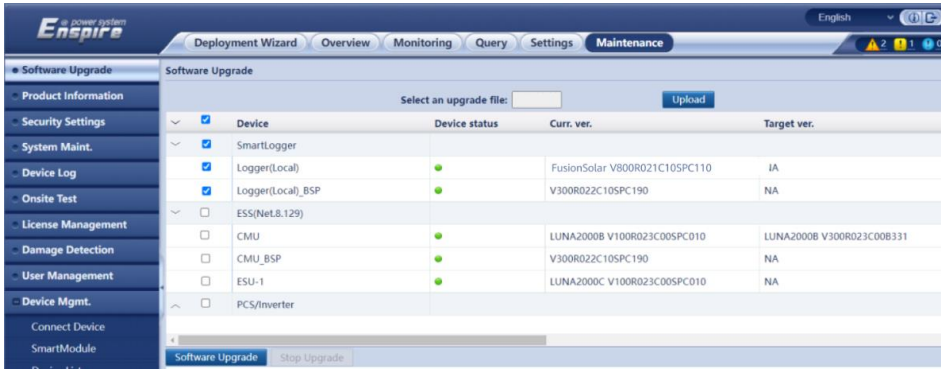


8.3 Upgrading the SmartLogger

NOTE

- If the SmartLogger software version is not FusionSolar V800R021C10SPC110 or later, upgrade the SmartLogger.
- Obtain the SmartLogger upgrade package from the Company.

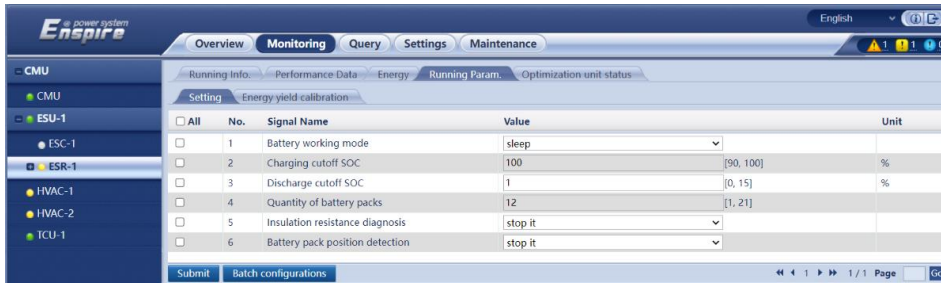
1. Choose **Maintenance** > **Software Upgrade**, upload the SmartLogger upgrade package, select the target device, and upgrade the SmartLogger.



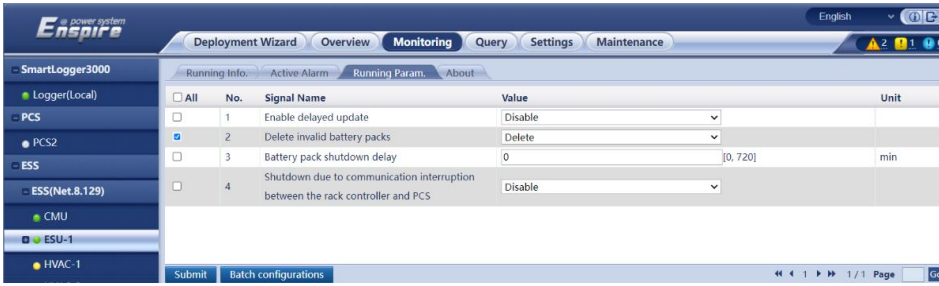
2. After the software upgrade is complete, the SmartLogger automatically restarts. Log in to the SmartLogger WebUI again 2 minutes later.

8.4 Setting Battery Packs

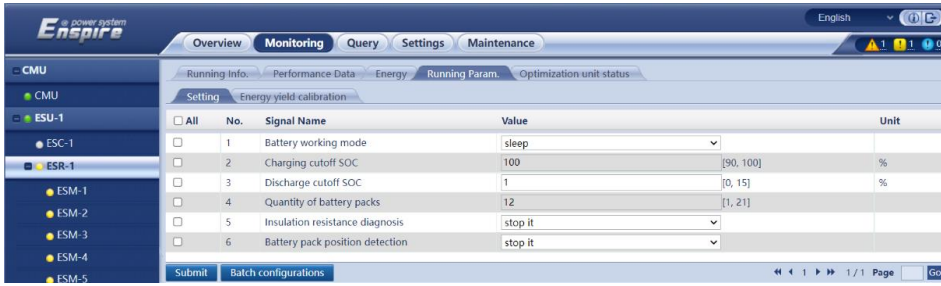
1. Choose **Monitoring** > **ESR** > **Running Param.** > **Setting**, and set **Quantity of battery packs** to **12**.



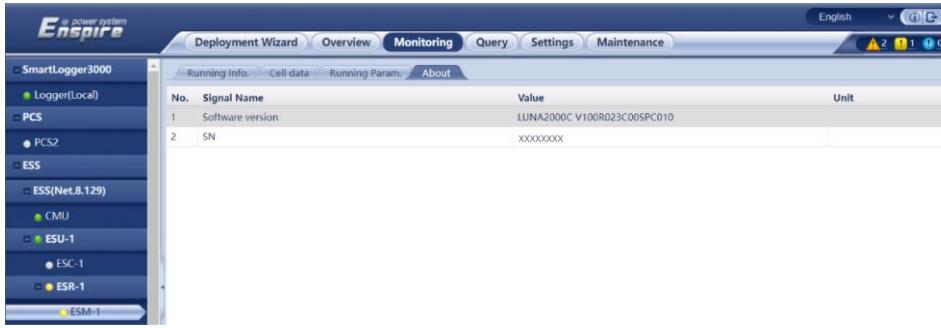
2. Choose **Monitoring** > **ESU** > **Running Param.**, select **Delete invalid battery packs**, and submit the settings.



3. Choose **Monitoring** > **ESU** > **Running Info.**, and click in the upper right corner, and wait for 2 minutes.
4. Choose **Monitoring** > **ESR**, click **+**, and verify that the ESM-1 to ESM-12 status indicators under the ESR are all green or yellow.



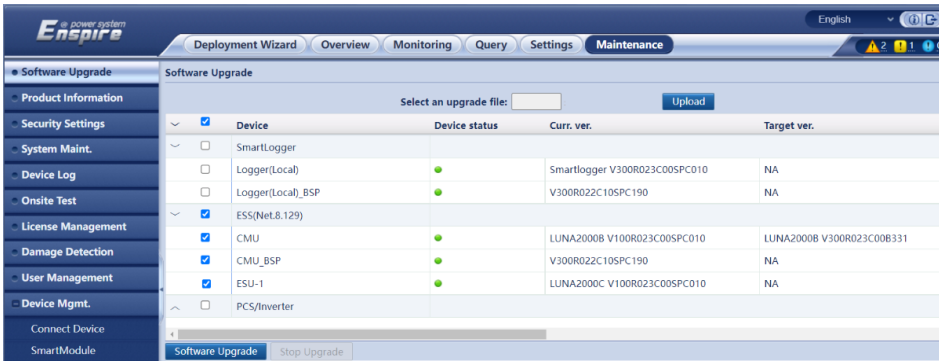
5. Choose **Monitoring** > **ESM** > **About** and check the software versions of ESM-1 to ESM-12.



NOTE

- If the software version of ESM-1 to ESM-12 is not FusionSolar V800R021C10SPC110 or later, upgrade the ESU.
- Obtain the upgrade package from the Company.

6. (Optional) Choose **Maintenance** > **Software Upgrade**, upload the upgrade package, select the device, and upgrade the ESU.



7. Choose **Monitoring** > **ESU** > **Running Info.**, and click in the upper right corner, and wait for 2 minutes.
8. Choose **Monitoring** > **ESM** and check in the upper right corner to ensure that no major alarm is generated.

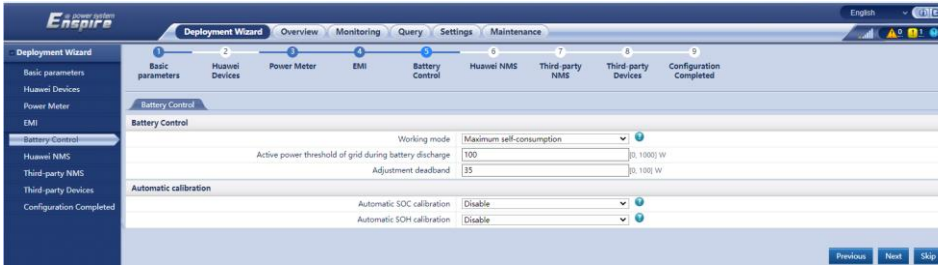
8.5 Deployment Wizard

Click **Deployment Wizard** and set parameters as prompted. Click **Skip** for unused devices.

- Set basic parameters.
- After devices are connected, click **Search for Device**. After the search is complete, click to check the search result.
- Connect to a power meter, and set **Meter usage** to **Export+import meter**.
- Connect to EMIs.
- Set the battery working mode to **Maximum self-consumption** or **TOU**.

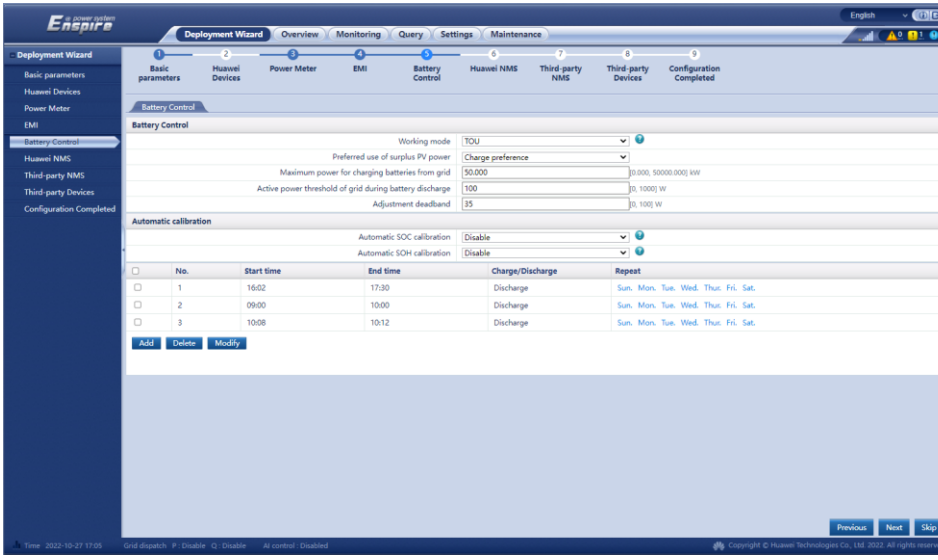
Parameter	Description
Maximum self-consumption	It is applicable to the PV+ESS system to increase the self-consumption rate of PV power. If the PV power is greater than the load power, the excess PV power is stored in the ESS. If the PV power is less than the load power, the ESS is discharged.
TOU	It is applicable to the PV+ESS system and ESS-only system where peak to valley electricity prices are different. The ESS can be charged during valley or shoulder hours and discharged based on loads during peak hours.

a. Set the battery working mode to **Maximum self-consumption**.



Parameter	Description
Active power threshold of grid during battery discharge	Control the maximum target grid power when the grid-connection point has zero power.
Adjustment deadband	Allowed fluctuation of the target grid power for the grid-connection point
Automatic SOC calibration	• **Enable**: Automatic SOC calibration is enabled. If the total charge and discharge energy reaches the threshold or the calibration function has not been triggered for 30 days, the SOC automatic calibration is performed in battery racks. During calibration, the cut-off SOC settings will be ineffective and the response of the charge/discharge power may be impacted temporarily. • **Disable**: Automatic SOC calibration is disabled.

b. Set the battery working mode to **TOU**.



Parameter	Description
Preferred use of surplus PV power	**Charge preference**: When the generated PV energy is greater than the loads, excess PV energy is used to charge the batteries. After the maximum charge power is reached or the batteries are fully charged, the excess PV energy is fed to the grid. **Fed to grid**: When the generated PV energy is greater than the loads, the excess PV energy is preferentially fed to the grid. When the maximum output power of the inverter is reached, the excess energy is used to charge the batteries. This setting is applicable to the scenario where the feed-in tariff (FIT) is higher than the electricity price. The ESS is used only for backup power.
Active power threshold of grid during battery discharge	Control the maximum target grid power when the grid-connection point has zero power.
Maximum power for charging batteries from grid	Set the maximum power of the grid during battery charging.
Adjustment deadband	Allowed fluctuation of the target grid power for the grid-connection point
Automatic SOC calibration	• **Enable**: Automatic SOC calibration is enabled. If the total charge and discharge energy reaches the threshold or the calibration function has not been triggered for 30 days, the SOC automatic calibration is performed in battery racks. During calibration, the cut-off SOC settings will be ineffective and the response of the charge/discharge power may be impacted temporarily. • **Disable**: Automatic SOC calibration is disabled.
Start time	Set the charge/discharge time. A maximum of 14 time segments can be set. You can set a cycle by week by clicking the buttons corresponding to Mon. through Sun. in the Repeat box. The buttons are blue by default, indicating being selected. After you click it, the button turns gray.
End time	
Charge/Discharge	
Repeated	

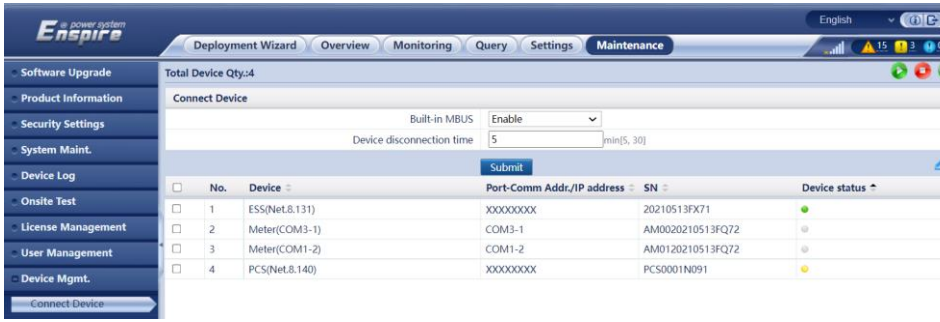
- Connect to a Huawei network management system (NMS). (If the ESS is connected to the FusionSolar Smart PV Management System, the port number is 27250 by default or 16101.)
- Connect to a third-party NMS.
- Connect to third-party devices.
- Complete the configuration.

8.6 System Startup

NOTE

Start up the system when needed.

1. On the SmartLogger WebUI, choose **Maintenance** > **Device Mgmt.** > **Connect Device**.
2. Click in the upper right corner to start devices in batches.



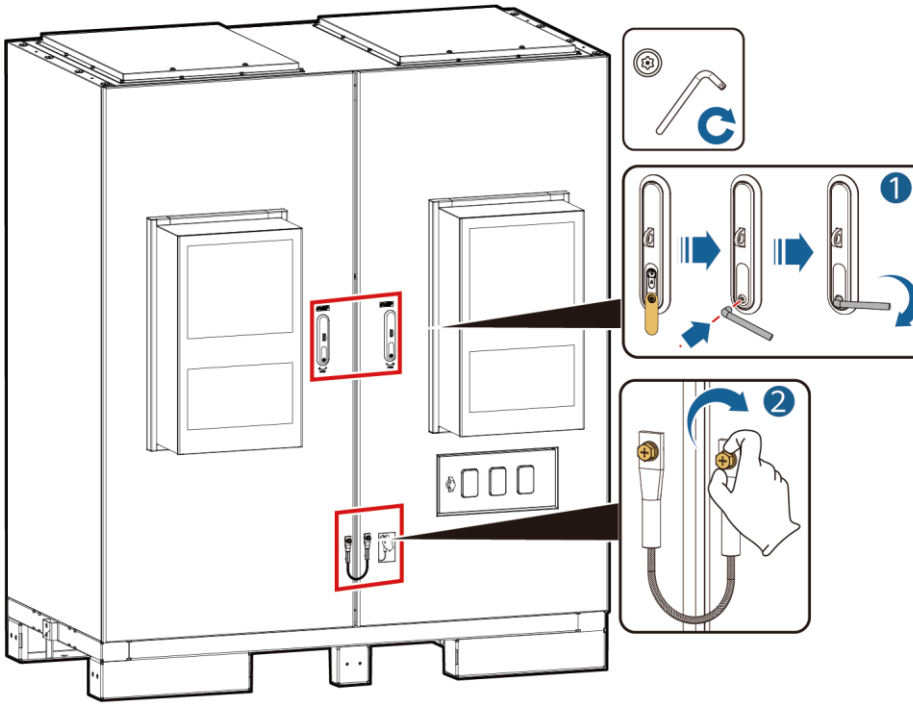
8.7 Setting Capacity Limit

Choose **Settings** > **Battery Control** > **Capacity Limit** to set the capacity limit.

Parameter	Description
No control	If this parameter is set, the capacity of the grid-connection point is not limited. The inverter and Smart PCS run according to the preset control policy.
Active capacity limit	If this parameter is set, the active power of the grid-connection point for purchasing or feeding power cannot exceed the preset capacity limit.
Apparent capacity limit	If this parameter is set, the apparent power of the grid-connection point for purchasing or feeding power cannot exceed the preset capacity limit.

9 Closing the Cabinet Door

After the deployment commissioning is complete, close the cabinet door and secure the safety rope.



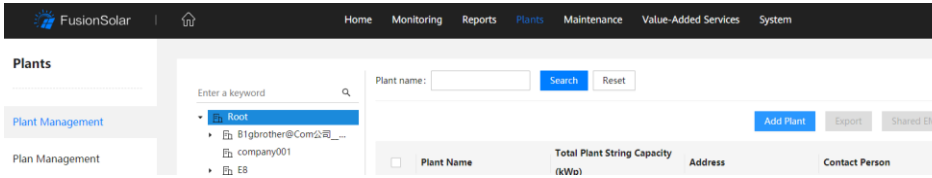
10 FAQ

How Do I Connect the ESS to the FusionSolar Smart PV Management System?

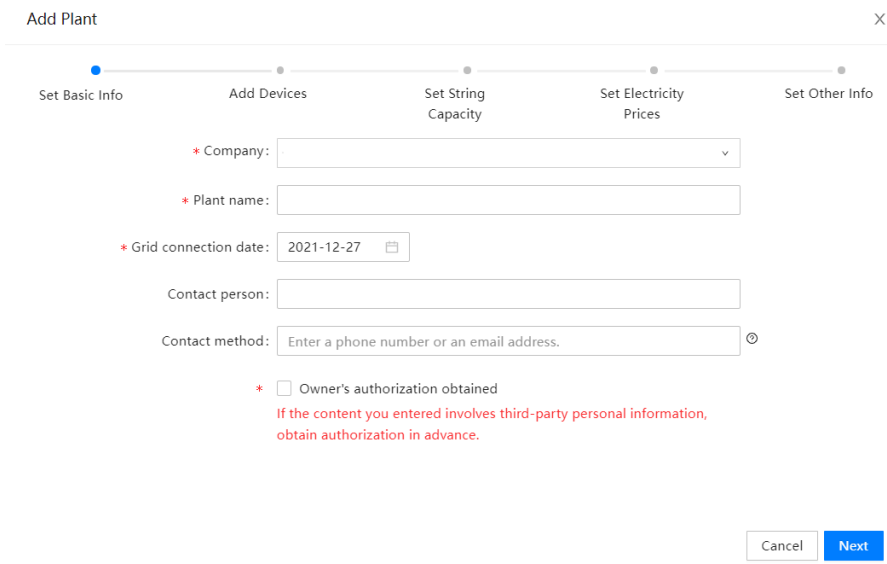
1. Enter https://management system IP address: 31943 in the address box of a browser, and press **Enter**. The login page is displayed.
2. Enter the username or email address and password, and click **Log In**.

How Do I Create a Plant?

1. Choose **Plants** > **Plant Management** from the main menu.
2. On the **Plant Management** page, click **Add Plant**.



3. Perform the steps as prompted.



11 Customer Service Contact Information

Country	Email	Tel
China	solarservice@huawei.com	400-822-9999
Japan	Japan_ESC@ms.huawei.com	0120258367
Romania	eu_inverter_support@huawei.com	800400897/+40312291238

Huawei Digital Power Technologies Co., Ltd.
Huawei Digital Power Antuoshan Headquarters
Futian, Shenzhen 518043
People's Republic of China
solar.huawei.com