

LUNA2000-2.0MWH Series Smart String ESS

Quick Guide

Issue: 11

Part Number: 31500HFV

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HUAWEI TECHNOLOGIES CO., LTD.



NOTICE

- Before installing the equipment, read the user manual carefully to familiarize yourself with the product information and safety precautions. Device 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 document slot of the control unit cabin to view the user manual and safety precautions.
- The information in this document is subject to change. Every effort has been made in the preparation of this document to ensure accuracy of the contents. All statements, information, and recommendations in this document do not constitute a warranty of any kind.
- The Danger, Warning, Caution, and Notice statements described in this document do not cover all the safety precautions. You also need to comply with relevant international, national, or regional standards and industry practices.
- Only qualified professionals or trained personnel are allowed to perform operations on the equipment. Operation personnel shall understand the system, its working principles, and relevant national/regional standards.
- During operations, use dedicated insulated tools and wear personal protective equipment, such as protective clothing, insulated shoes, goggles, safety helmets, and insulated gloves.

1 Overview

| Model ^[1] | Description |
|---|--|
| <ul style="list-style-type: none">• LUNA2000-2.0MWH-1HX^[2]• LUNA2000-2.0MWH-2HX^[2]• LUNA2000-2.0MWH-HE2HX^[2]• LUNA2000-2.0MWH-HE1HX^[2] | <ul style="list-style-type: none">• LUNA2000: Smart String Energy Storage System (also referred to as ESS).• 2.0MWH: The nominal capacity^[3].• HE: high-altitude area.• 1HX: Applies to scenarios where the backup duration is greater than or equal to 1 hour.• 2HX: Applies to scenarios where the backup duration is greater than or equal to 2 hours. |
| Note [1]: You can view the product model on the nameplate on the side of the container. | |
| Note [2]: The number corresponding to X is on the nameplate. | |
| Note [3]: The practical nominal capacity is on the nameplate. | |

2 Installing the ESS

2.1 Hoisting the ESS

NOTE

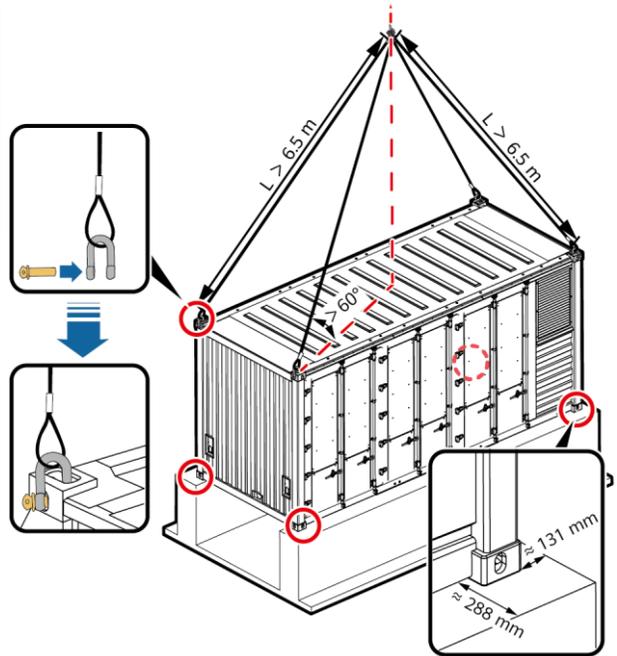
- You are advised to level concrete platforms before hoisting the ESS.
- The horizontal error of concrete platforms cannot exceed 5 mm.

NOTE

- Ensure that the crane can hoist a load greater than 50 t, and the working radius is not less than 10 m.
- Prepare and install the lifting eyes and steel ropes.
- During the hoisting, adjust the ESS to the installation direction.
- After the hoisting is complete, remove the protective cover from the ESS.
- If paint flakes off after the hoisting is complete, repaint the affected area. For details, see the user manual.

NOTE

The requirements of distances between the corner of the ESS and the edge of the foundation are the same for the four corners of the ESS. The figure uses one of the corners as an example.



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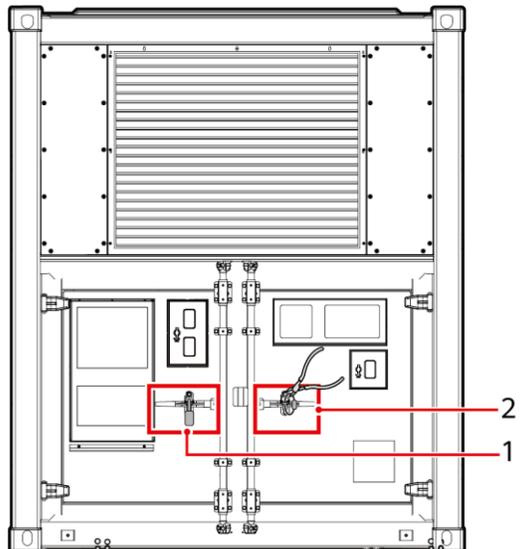
2.2 Opening the Doors of the ESS

CAUTION

- Take protection measures when opening the ESS doors.
- Do not open the container doors in weather conditions such as rain, snow, lightning, dust storm, or fog.

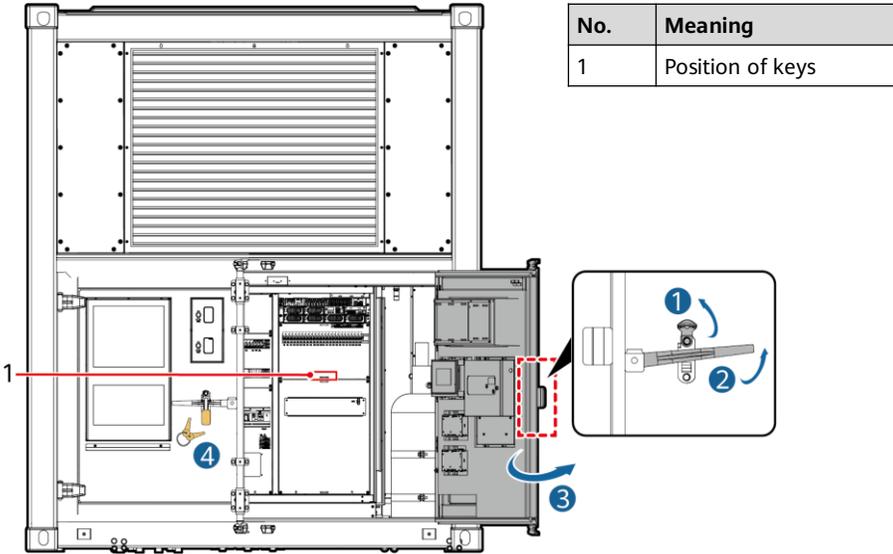
1. Use a cable cutter to cut off the TSA approved lock on the door of the control unit cabin.

| No. | Meaning |
|-----|-------------------|
| 1 | Safety lock |
| 2 | TSA approved lock |



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2. Open the door, take the keys from the control unit cabin, and use the keys to open the safety lock.

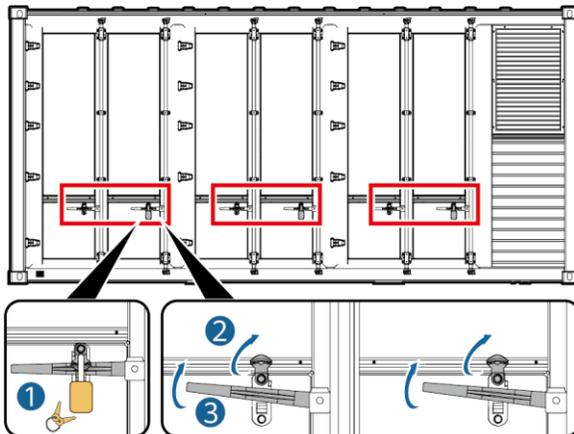


IB04H00012

3. Use the keys to open the safety locks on the right handles of the battery cabins, and then open the doors of the battery cabins.

NOTE

- At least two persons are required to open the doors.
- After a door is opened, secure it using a door strut to prevent the door from moving.



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4. Obtain the packing list and the quick guide. Check the materials against the packing list.

NOTE

- Lock the doors promptly and store the keys properly under the management of dedicated personnel.
- If any materials are missing, contact technical support.
- If doors cannot be opened or closed, refer to FAQs.

3 Connecting the Ground Cable for the ESS

| Name | Type | Conductor Cross-Sectional Area Range | Outer Diameter | Terminal | Source |
|--------------|----------------------------------|--------------------------------------|----------------|--------------------|--------------------------|
| Ground cable | Single-core outdoor copper cable | 16-95 mm ² | 10-32 mm | M10 OT/DT terminal | Prepared by the customer |

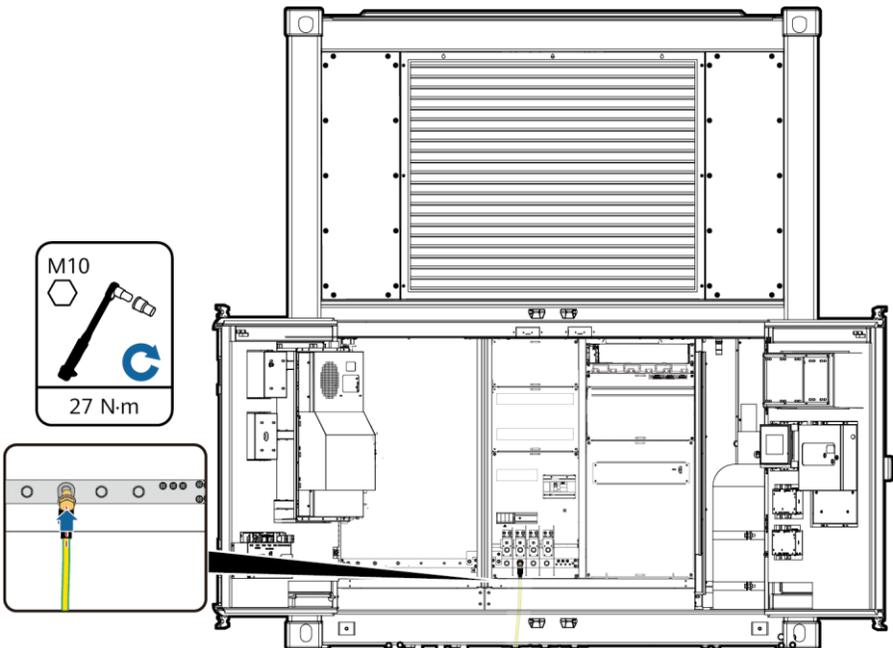
The specifications of the ground cable are subject to this table or calculated according to IEC 60364-5-54.

NOTICE

After connecting the ground cable of the main ground bar in the control unit cabin, close the cabin door in time.

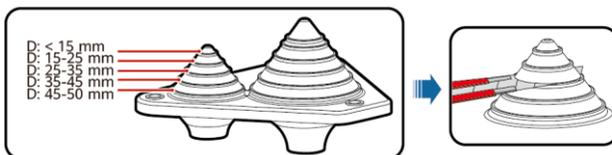
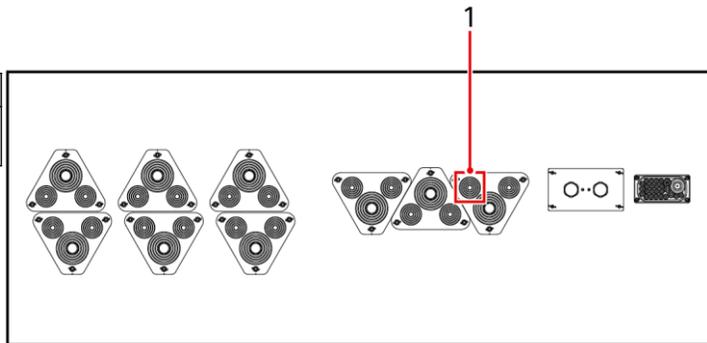
NOTE

Please connect the ground cable to the main ground bar of the control unit cabin.



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| No. | Cable Hole |
|-----|-------------------|
| 1 | Ground cable hole |



IB04W00110

NOTE

The position for cutting the pagoda connector is for reference only. The actual cable usage may vary.

4 Installing Components

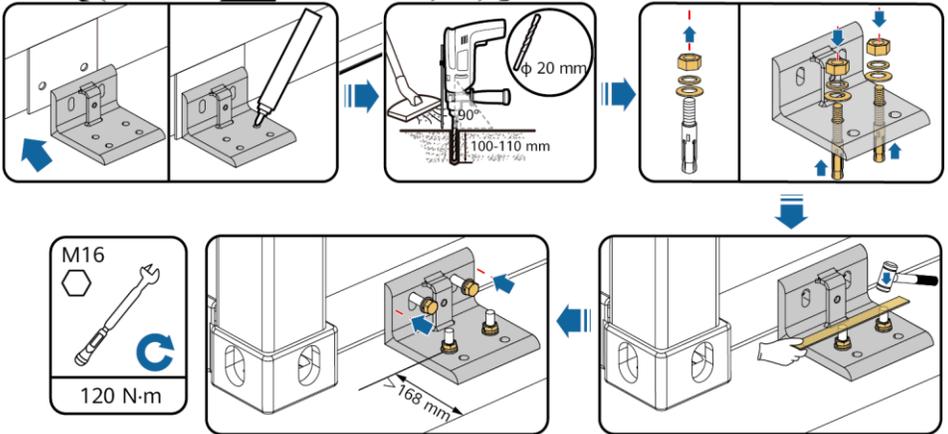
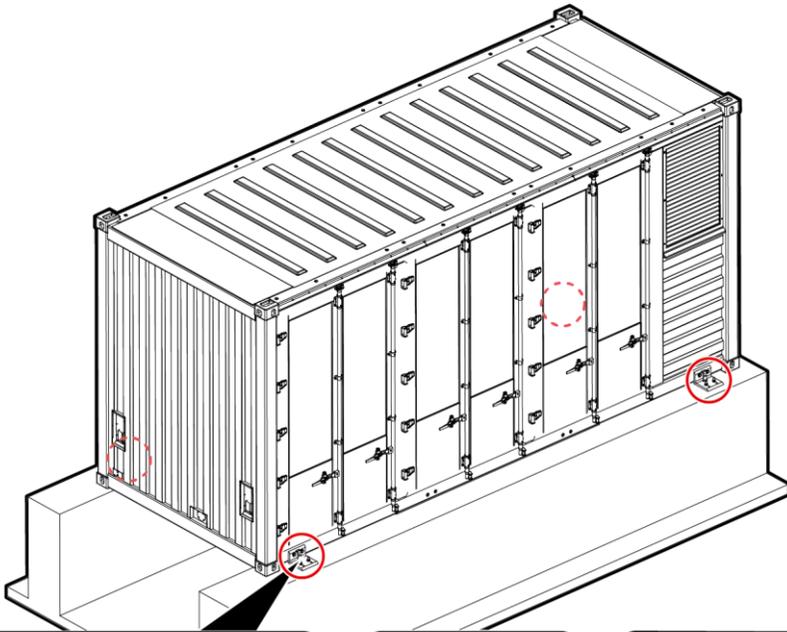
CAUTION

- The ESS is not powered on.
- The installation personnel have taken safety protection measures, for example, wearing insulated gloves and shoes.

4.1 Securing the ESS

NOTE

Each angle steel bracket must be secured by two mounting holes. It is recommended that the outer two mounting holes be used. If steel bars in a concrete base block the drill bit or when the position deviation occurs during the first drilling, use the inner mounting holes.



IB04H00009

CAUTION

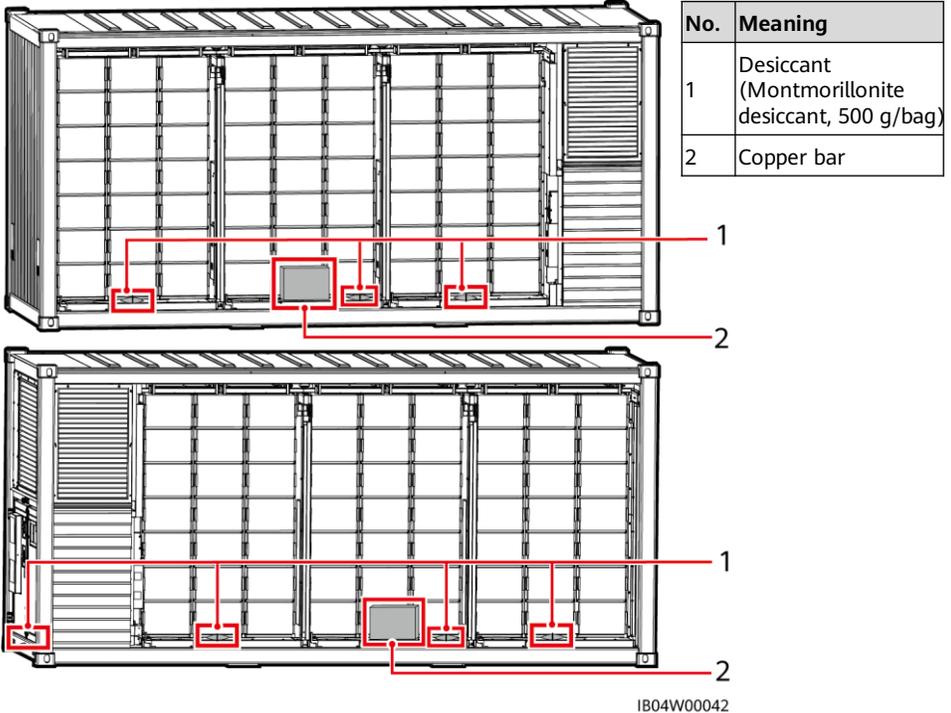
Place a wooden block on the top of an expansion bolt, and then knock at the wooden block using a claw hammer to avoid damaging the expansion bolt.

4.2 Installing Copper Bars Between Battery Packs

NOTE

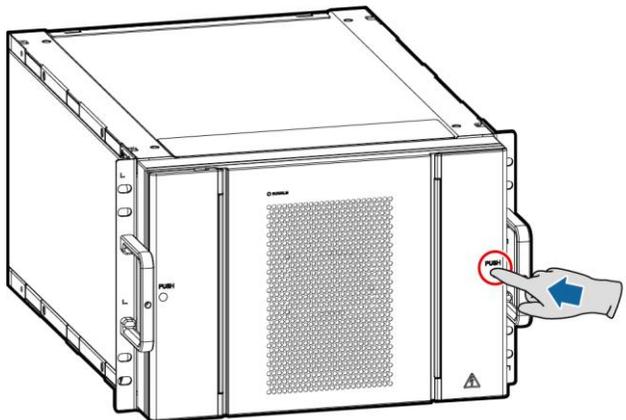
- There are 25 desiccant bags, four bags for each battery rack in the battery cabin and one bag for the control unit cabin.
- After cables are connected, do not remove the desiccants before power-on.
- If the ESS has been stored for more than six months, replace the desiccants with new ones (Montmorillonite desiccant, 500 g/bag).

1. Take out the copper bars from the battery cabin.



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2. Press the battery pack cover on the right side.



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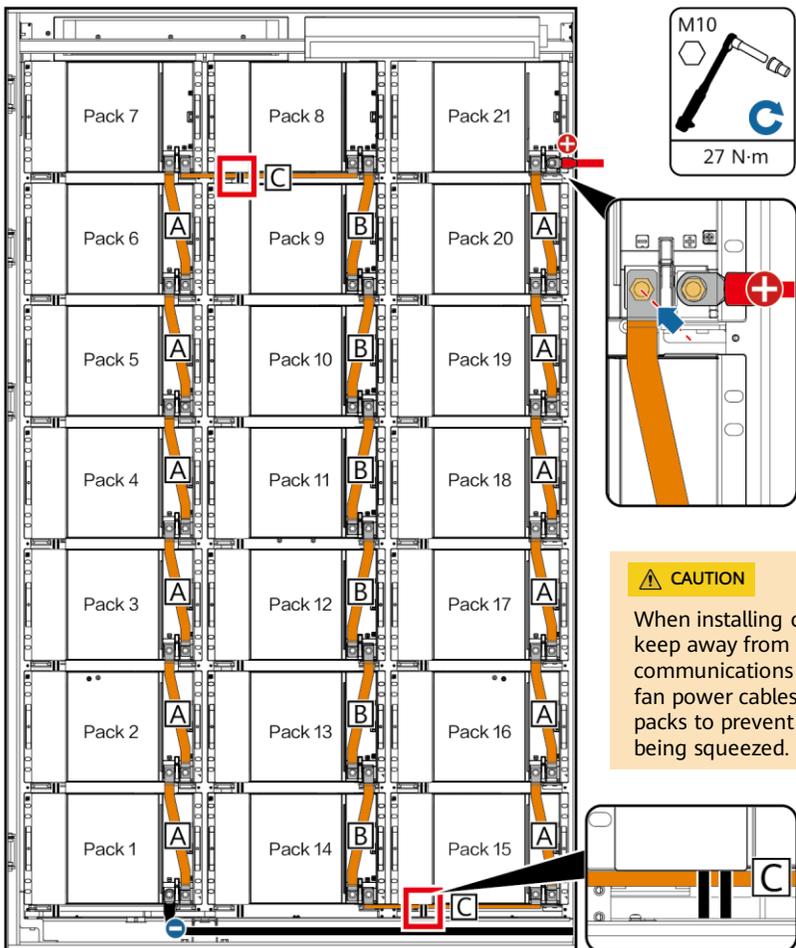
3. Wear insulation gloves and install copper bars between battery packs.

NOTICE

- Use the copper bars delivered with the ESS. Do not use copper bars from ESSs of different models.
- 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.
- Pre-install nuts according to the recommended torque of 27 N·m.
- Verify that the torque of the installed nuts is 27 N·m using a torque wrench.
- Mark the nuts whose torque has been verified using a marker.
- Use an extension rod for the torque wrench.

NOTE

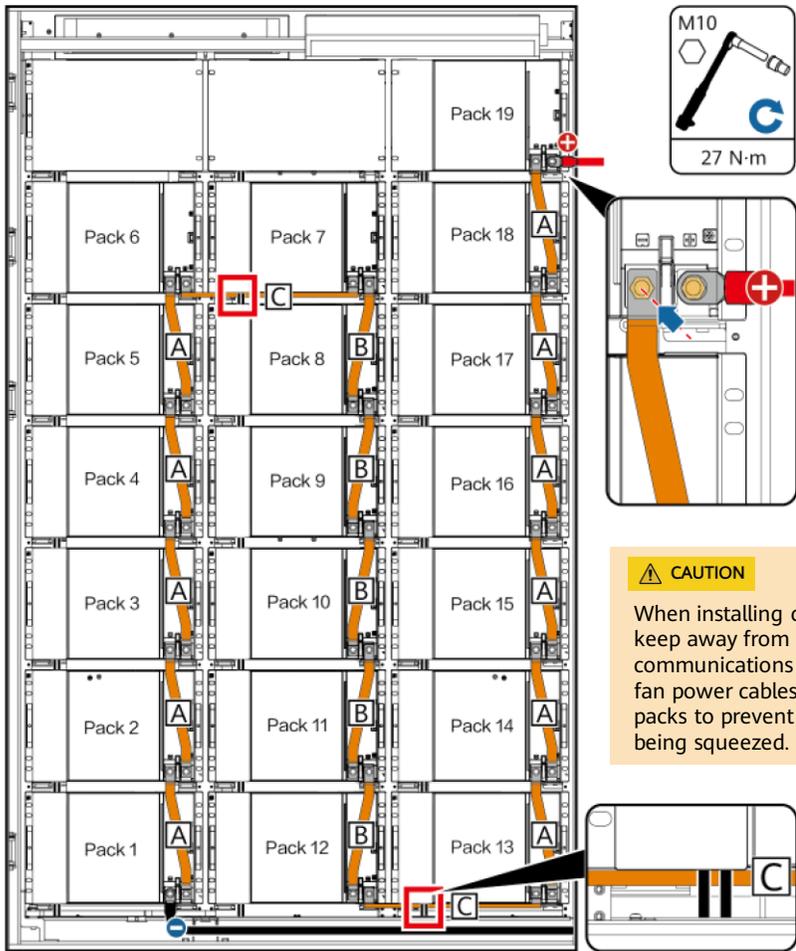
Three types of copper bars are included with the equipment and are identified by the silkscreens A, B, and C printed on the front.



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 NOTE

For some models, each battery rack contains only 19 battery packs. Install copper bars by referring to the following figure.



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4. After installing the copper bars, close the battery pack cover.
5. Close the battery cabin door.

4.3 (Optional) Filling the Fire Cylinder with Extinguishant

⚠ CAUTION

Protect the fire cylinder from collision during transportation and installation.

📖 NOTE

This procedure applies only to empty fire cylinders.

1. Remove the hose active connector from the ESS piping using a torque wrench.
2. (Optional) Remove the extinguishant release hose from the high-pressure elbow using a torque wrench.
3. (Optional) Remove the high-pressure elbow from the changeable-diameter joint using a torque wrench.

📖 NOTE

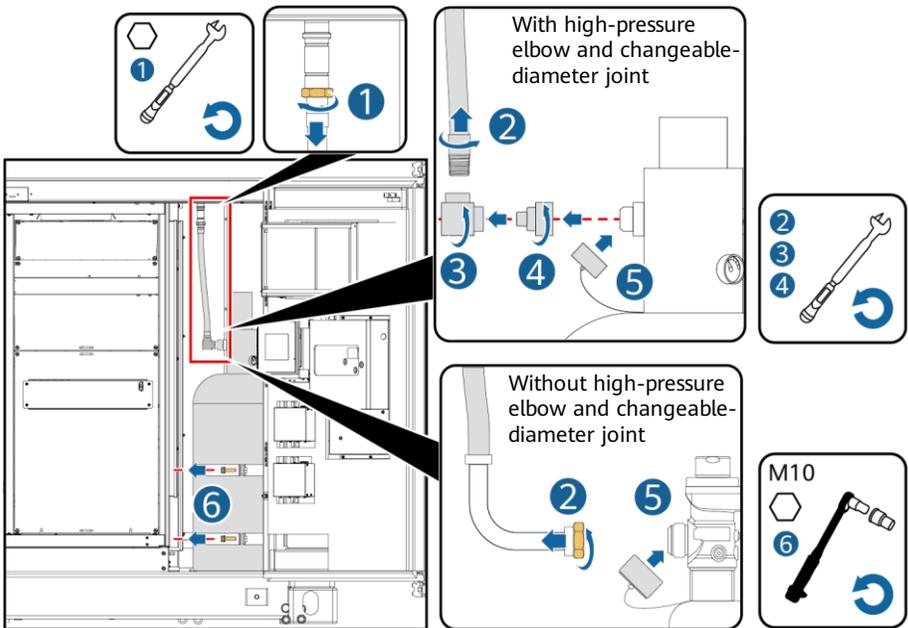
- If there is no changeable-diameter joint, remove the high-pressure elbow directly from the fire cylinder.
- If there is no changeable-diameter joint and high-pressure elbow, remove the extinguishant release hose directly from the fire cylinder.

4. (Optional) Remove the changeable-diameter joint from the release vent using a torque wrench.

📖 NOTE

If there is no changeable-diameter joint on the fire cylinder, skip this step.

5. Install the safety cap of the release vent.
6. Remove the fire cylinder from the bracket.



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7. Fill the fire cylinder with extinguishant.

📖 NOTE

This document does not provide details about how to fill the fire cylinder with extinguishant. Perform this operation in a dedicated station.

| Technical Specifications | Value | |
|--------------------------|--|----------|
| Extinguishant | HFC-227ea | FK5112 |
| Extinguishant weight | 26–27 kg | 31–32 kg |
| Purity requirement | ≥ 99.9% | ≥ 99.9% |
| Fire cylinder pressure | 2.5 MPa at 20°C (verified by filling nitrogen) | |

8. Install the fire cylinder.

9. Remove the safety cap of the release vent.

10. (Optional) Install the changeable-diameter joint to the release vent using a torque wrench.

NOTE

If there is no changeable-diameter joint on the fire cylinder, skip this step.

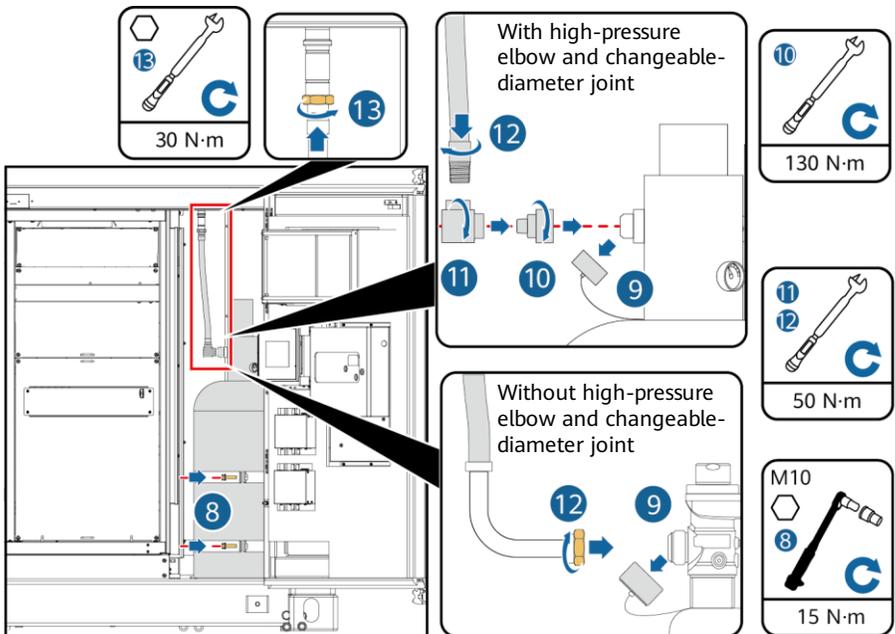
11. (Optional) Wrap eight turns of sealing tape around the external threads of the changeable-diameter joint, and install the high-pressure elbow to the changeable-diameter joint using a torque wrench.

12. (Optional) Wrap eight turns of sealing tape around the external thread connector of the extinguishant release hose and install the extinguishant release hose to the high-pressure elbow using a torque wrench.

NOTE

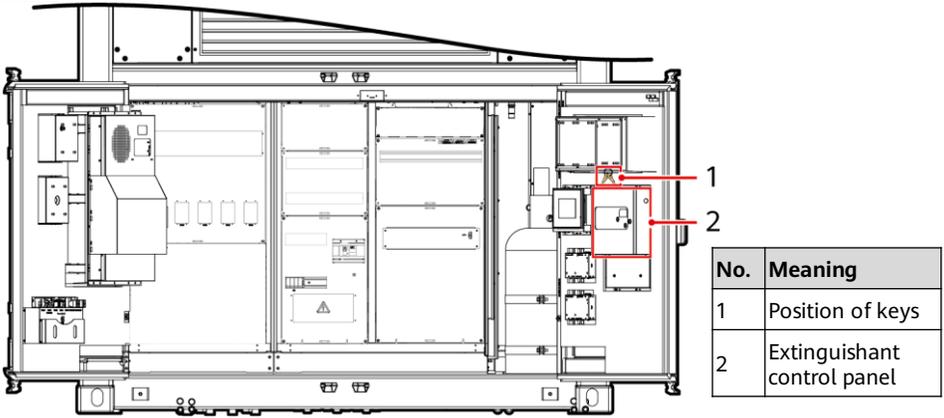
- Remove any old sealing tape from the threads.
- If there is no changeable-diameter joint, install the high-pressure elbow directly to the fire cylinder.
- If there is no changeable-diameter joint and high-pressure elbow, install the extinguishant release hose to the fire cylinder.

13. Install the hose active connector to the ESS piping using a torque wrench.



IB04H00140

4.4 Installing the Batteries in the Extinguishant Control Panel



IB04W00038

CAUTION

Do not damage components in the extinguishant control panel during the installation.

NOTICE

- The extinguishant control panel has been configured and commissioned before delivery. Non-professional personnel are prohibited from configuring the extinguishant control panel without permission.
- Non-professional personnel are prohibited from operating the Write Enabler button.

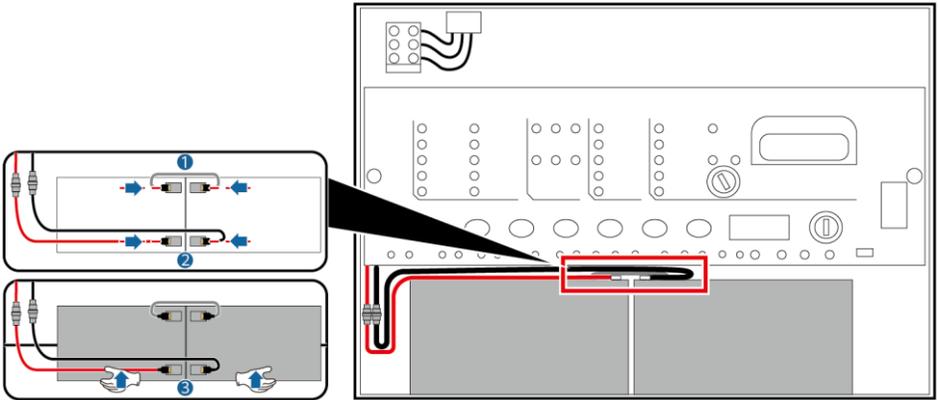
NOTE

- Batteries are delivered with the ESS (in the control unit cabin).
- After installation, take out the key and hand it over to the responsible personnel for safekeeping.

Model: K11031M2

⚠ CAUTION

If the extinguishant control panel has been powered off for more than 24 hours, cables between the extinguishant control panel and the battery must be disconnected.

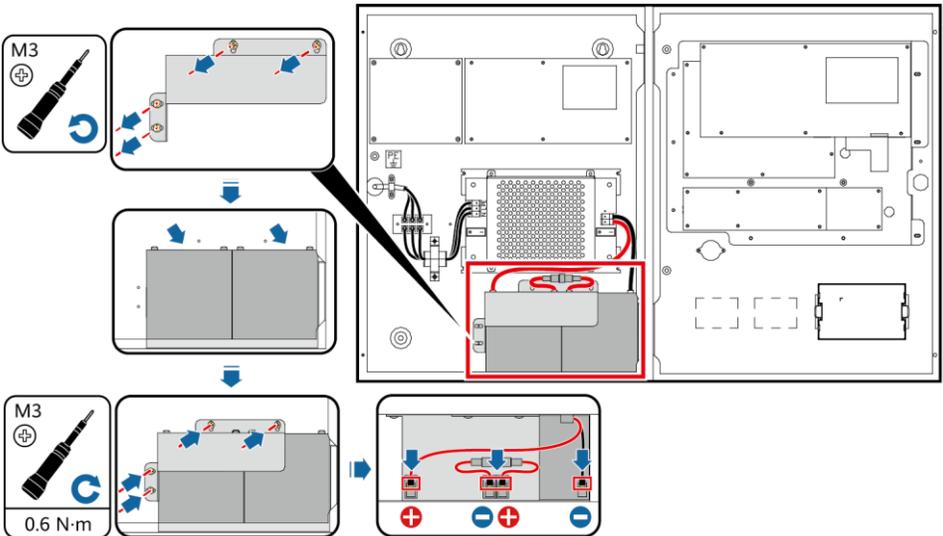


IB04H00158

Model: JB-QBL-QM210

⚠ CAUTION

If the extinguishant control panel has been powered off for more than 24 hours, the backup power switch must be turned off.



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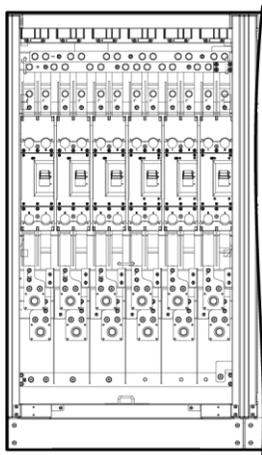
5 Installing Cables

5.1 Preparing Cables

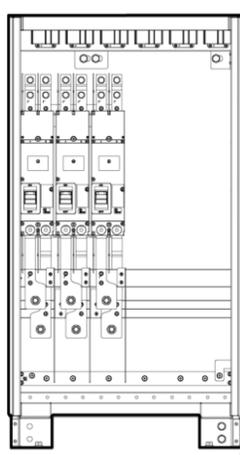
⚠ CAUTION

The cable specifications must comply with local cable standards, especially the electrical specifications and application environment. 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.

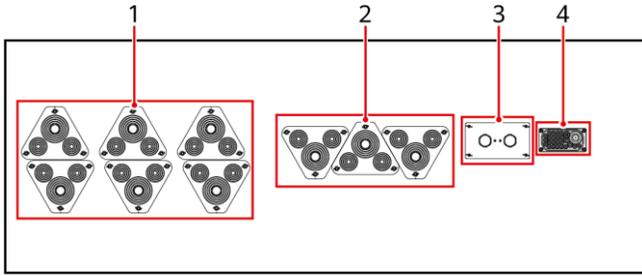
**LUNA2000-2.0MWH-2HX
LUNA2000-2.0MWH-HE2HX
6 DC circuit breakers**



**LUNA2000-2.0MWH-2HX
3 DC circuit breakers**



| Name | Type | Conductor Cross-Sectional Area Range | Outer Diameter | Terminal | Source |
|--|--|--|----------------|--|--------------------------|
| DC power cable | Two-core outdoor copper/copper-clad aluminum/aluminum alloy cable | LUNA2000-2.0MWH-1HX/LUNA2000-2.0MWH-HE1HX: 240–400 mm ² | 25–68 mm | M12 OT/DT terminal | Prepared by the customer |
| | | LUNA2000-2.0MWH-2HX/LUNA2000-2.0MWH-HE2HX • 6 DC circuit breakers: 70–185 mm ² • 3 DC circuit breakers: 240–400 mm ² | | | |
| | Single-core outdoor copper/copper-clad aluminum/aluminum alloy cable | LUNA2000-2.0MWH-1HX/LUNA2000-2.0MWH-HE1HX: 185–400 mm ² | 25–47 mm | | |
| | | LUNA2000-2.0MWH-2HX/LUNA2000-2.0MWH-HE2HX • 6 DC circuit breakers: 50–185 mm ² • 3 DC circuit breakers: 185–400 mm ² | | | |
| AC input power cable | Four-core/Five-core outdoor copper/copper-clad aluminum/aluminum alloy cable | LUNA2000-2.0MWH-1HX/LUNA2000-2.0MWH-HE1HX: 35–185 mm ² | 24.6–72 mm | M10 OT/DT terminal | Prepared by the customer |
| | | LUNA2000-2.0MWH-2HX/LUNA2000-2.0MWH-HE2HX • 6 DC circuit breakers: 10–185 mm ² • 3 DC circuit breakers: 35–185 mm ² | | | |
| Single-phase AC input power cable (without external grid power supply) | Two-core/Three-core outdoor copper cable | 1.5–10 mm ² | 5–32 mm | Pin cord end terminal with an insertion depth of 14 mm | Prepared by the customer |
| FE communications cable | CAT 5E outdoor shielded network cable, internal resistance ≤ 1.5 ohms/10 m | - | ≤ 9 mm | Shielded RJ45 connector | Prepared by the customer |
| Optical cable | Four-core or eight-core single-mode armored cable with the transmission wavelength of 1310 nm. | - | ≤ 18 mm | - | Prepared by the customer |



IB04W00002

NOTE

- Before installing cables, remove the cover from the control unit cabin.
- After cables are installed, reinstall the cover to the control unit cabin and seal the cable holes at the bottom with sealing mud.

| No. | Cable Hole |
|-----|---|
| 1 | DC power cable hole |
| 2 | AC input power cable or ground cable hole |
| 3 | Optical cable or FE communications cable hole |
| 4 | UPS or RS485 cable hole (reserved) |

5.2 (Optional) Connecting Socket Cables

NOTE

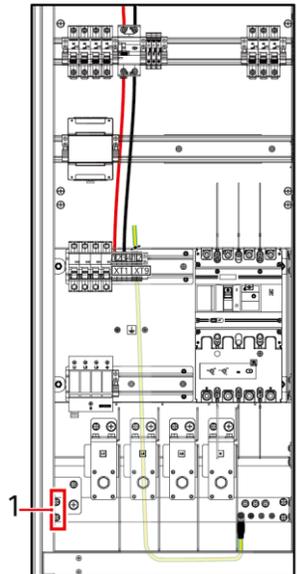
This procedure applies only to the models listed in the table below.

| Model | Air Conditioner Position in the Battery Cabin |
|--|---|
| LUNA2000-2.0MWH-1HX LUNA2000-2.0MWH-HE1HX | 1/3/5/7/9/11 |
| LUNA2000-2.0MWH-2HX LUNA2000-2.0MWH-HE2HX | 1/4/7/10 |

NOTE

- Cables 1733, 1735, 1734, and 1736 are pre-installed. Cables 1751, 1752, 1757, 1760, 2055, 2056, 1761, and 1762 need to be installed.
- The cables to be installed can be obtained from the cable binding position shown in the figure.

| No. | Meaning |
|-----|------------------------|
| 1 | Cable binding position |



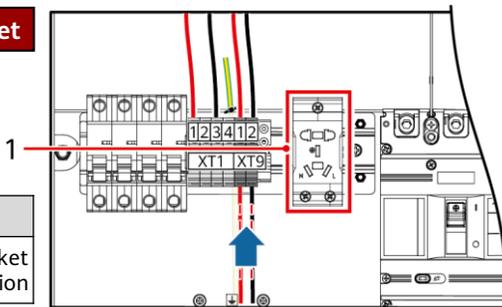
IB04H000161

1. Select a 110 V or 220 V socket as required.
2. Connect the live wire and neutral wire.

Scenario 1: Installing a 110 V Socket

1. Connect the live wire and neutral wire from the mains to positions 1 and 2 of the XT9 terminal block.

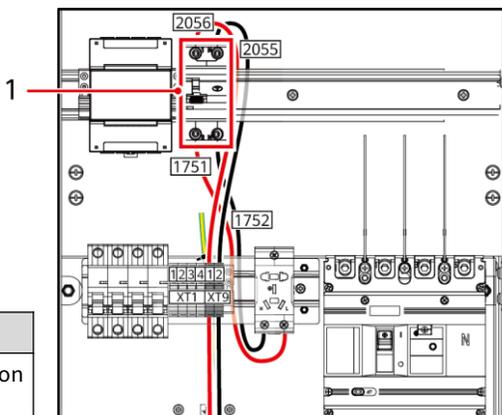
| No. | Meaning |
|-----|--|
| 1 | 110 V/220 V socket installation position |



IB04H000162

2. Install the 110 V switch.
3. Connect the live wire (corresponding to cable 2056) and neutral wire (corresponding to cable 2055) from the upper end of the switch to positions 1 and 2 of the XT9 terminal block. Connect the live wire (corresponding to cable 1751) and neutral wire (corresponding to cable 1752) from the lower end of the switch to the socket.

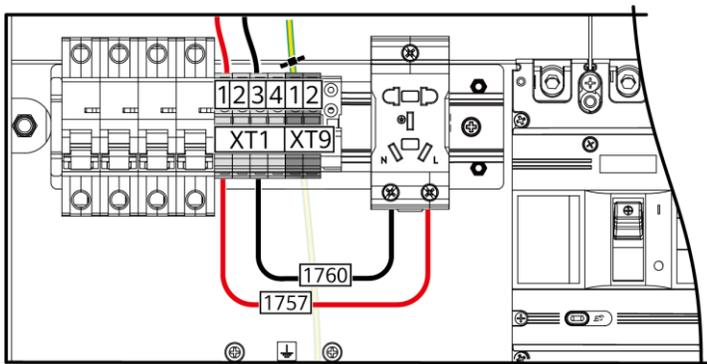
| No. | Meaning |
|-----|------------------------------------|
| 1 | 110 V switch installation position |



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Scenario 2: Installing a 220 V Socket

Connect the live wire (corresponding to cables 1757) and neutral wire (corresponding to cables 1760) from the lower end of the terminal block to the socket.



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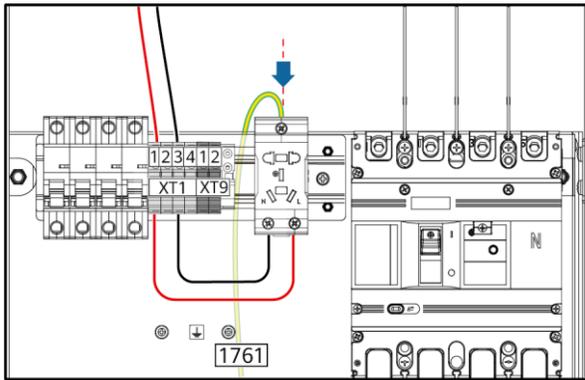
3. Connect the ground cable: Determine whether the socket ground cable is routed in from the top or bottom.

 NOTE

Step 3 applies to the scenarios where a 220 V or 110 V socket is installed. The following figures use a 220 V socket as an example.

Scenario 1: Ground Cable Routed in from the Top of the Socket

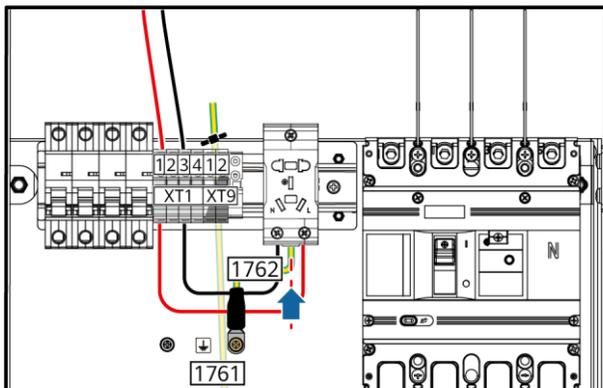
One end of the cable (1761) has been connected to the ground. Remove the other end of the cable from the rear panel and connect it to the ground point of the socket.



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Scenario 2: Ground Cable Routed in from the Bottom of the Socket

Connect one end of the cable (1762) to the ground point of the socket and the other end to the reserved ground point on the rear panel.



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5.3 (Optional) Connecting Socket Cables

NOTE

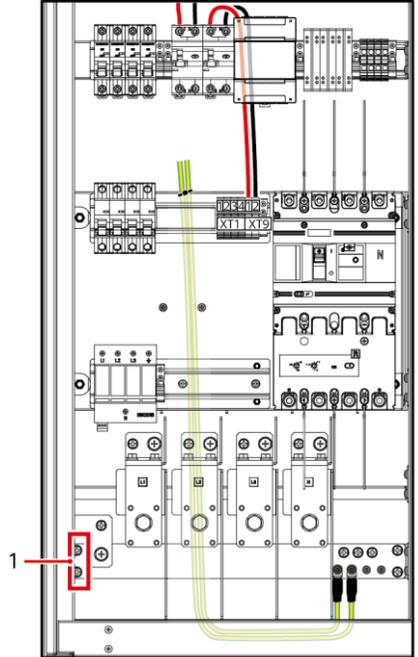
This procedure applies only to the models listed in the table below.

| Model | Air Conditioner Position in the Battery Cabin |
|---------------------|---|
| LUNA2000-2.0MWH-1HX | 1/2/4/5/7/8/10/11 |
| LUNA2000-2.0MWH-2HX | 1/3/5/7/9/11 |
| LUNA2000-2.0MWH-2HX | 2/4/6/8/10/12 |

NOTE

- Cables 1755, 1758, 2066, 2065, 1761, and 1766 are pre-installed. Cables 1756, 1751, 1759, 1752, 1757, 1763, 1760, 1765, 1762, and 1764 need to be installed.
- The cables to be installed can be obtained from the cable binding position shown in the figure.

| No. | Meaning |
|-----|------------------------|
| 1 | Cable binding position |

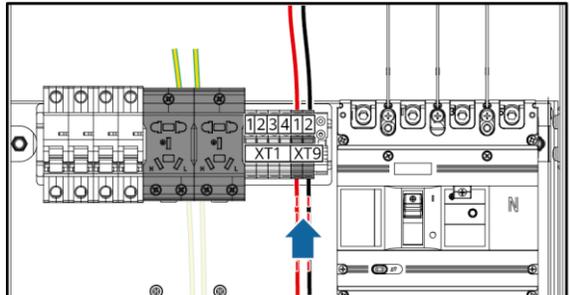


IB04H000144

1. Select a 110 V or 220 V socket as required.
2. Connect the live and neutral wires.

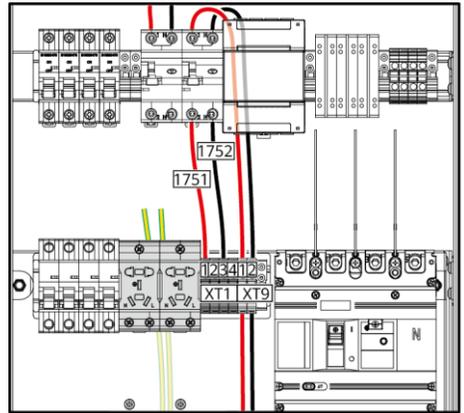
Scenario 1: Installing a 110 V Socket

1. Connect the live wire and neutral wire from the mains to positions 1 and 2 of the XT9 terminal block.



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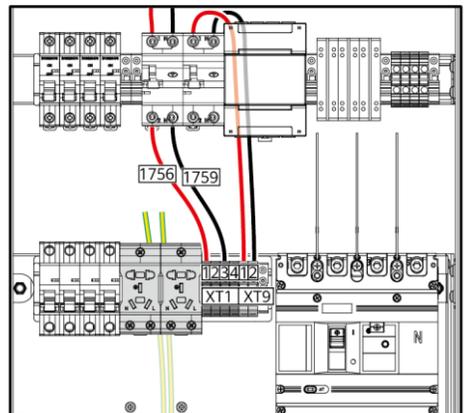
2. Connect the live wire (corresponding to cable 1751) and neutral wire (corresponding to cable 1752) from the lower end of the switch to positions 1 and 3 of the XT1 terminal block.



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Scenario 2: Installing a 220 V Socket

Connect the live wire (corresponding to cable 1756) and neutral wire (corresponding to cable 1759) from the lower end of the switch to positions 1 and 3 of the XT1 terminal block.

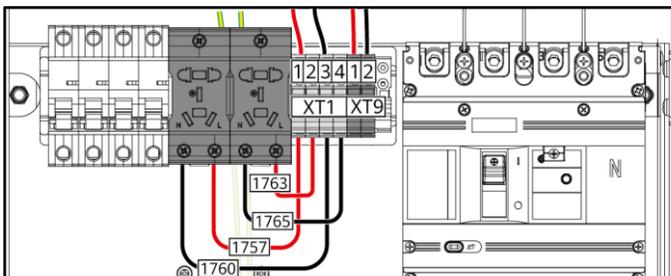


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NOTE

Steps 3 and 4 apply to the scenarios where a 220 V or 110 V socket is installed. The following figures use a 220 V socket as an example.

3. Connect the live wires (corresponding to cables 1763 and 1763) and neutral wires (corresponding to cables 1760 and 1765) from the lower end of the terminal block to the socket.

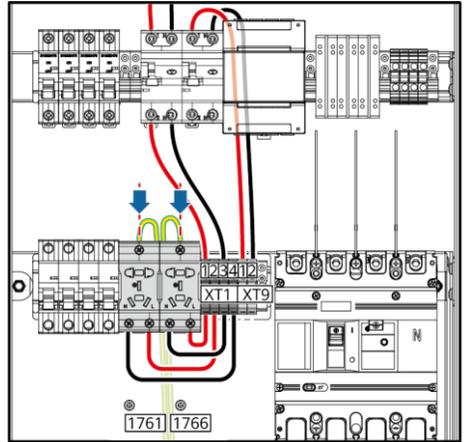


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4. Connect ground cables: Determine whether the socket ground cables are routed in from the top or bottom.

Scenario 1: Ground Cables Routed in from the Top of the Socket

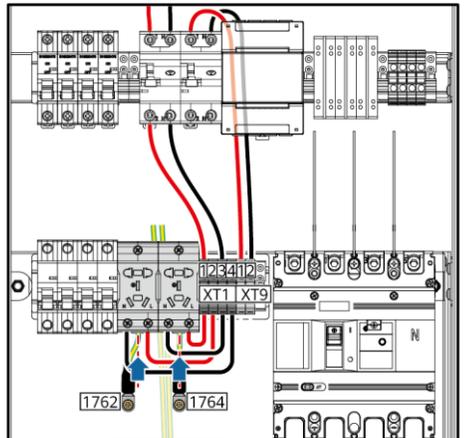
One ends of the cables (1761 and 1766) have been connected to the ground. Remove the other ends of the cables from the rear panel and connect them to the ground points of the socket.



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Scenario 2: Ground Cables Routed in from the Bottom of the Socket

Connect one ends of the cables (1762 and 1764) to the ground points of the socket and the other ends to the reserved ground points on the rear panel.



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5.4 Installing DC Power Cables

NOTE

The figures in the procedure for installing DC power cables use one of the LUNA2000-2.0MWH-1HX models as an example.

NOTICE

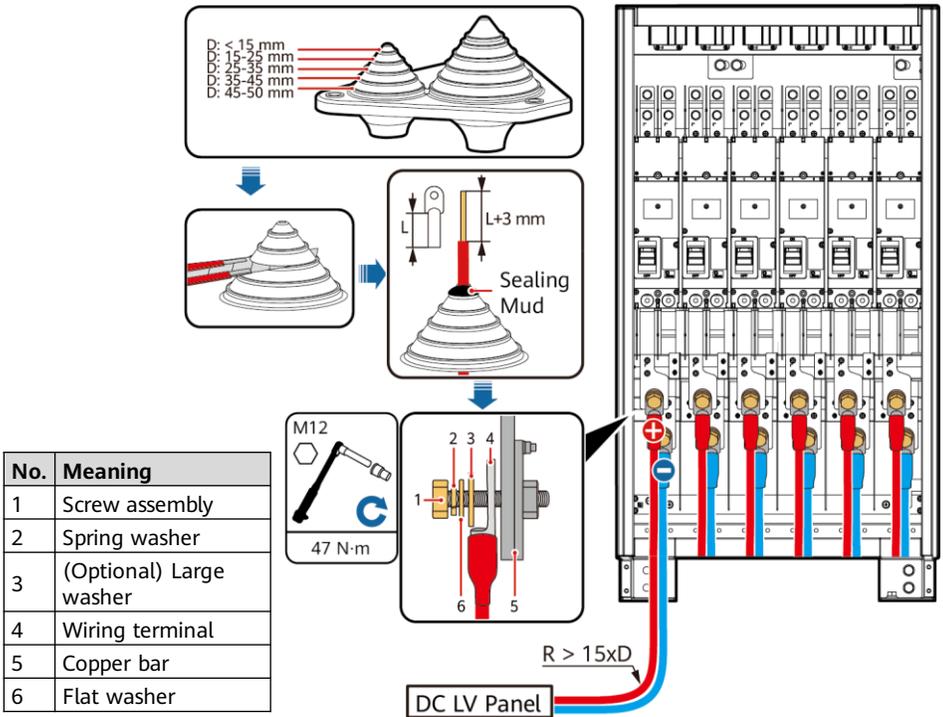
- Tighten the nuts using the socket wrench with an extension rod. The length of the extension rod is greater than 30 cm. Secure the screw assembly using an adjustable wrench.
- After connecting the DC power cables, ensure that the OT terminals are properly attached to and aligned with the copper bar, and that the DC power cables point vertically downwards.
- Verify the torque promptly after connecting the negative DC power cables, and then connect the positive DC power cables.
- Pre-install bolts according to the recommended torque of 47 N·m.
- Verify that the torque of the installed bolts is 47 N·m using a torque wrench.
- Mark the bolts whose torque has been verified using a marker.

Installing Single-core DC Power Cables

Cut the corresponding pagoda connectors using a utility knife, route the DC power cables through the cable holes at the bottom, and connect the cables to the DC circuit breakers.

NOTE

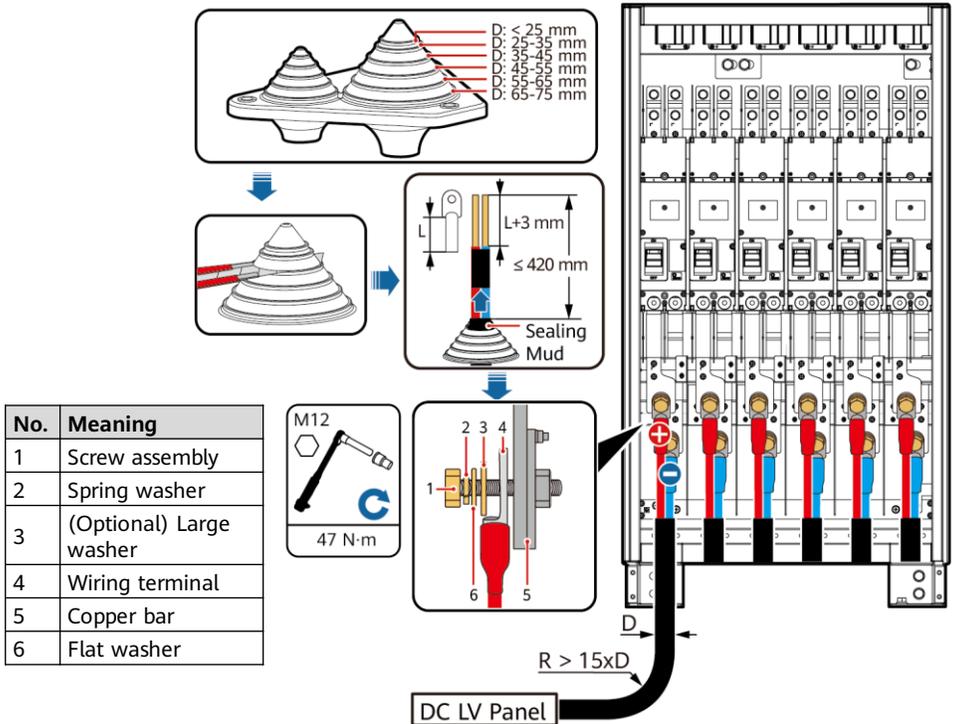
When armored cables are used, it is recommended that the armored layers be connected to ground points in other cabinets.



1B04130001

Installing Two-core DC Power Cables

Cut the corresponding pagoda connectors using a utility knife, route the DC power cables through the cable holes at the bottom, and connect the cables to the DC circuit breakers.



IB04I30002

5.5 Installing AC Input Power Cables

CAUTION

When connecting AC input power cables, ensure that the cables are not damaged. Ensure that the neutral wire is securely connected. Otherwise, AC power devices in the system may be damaged.

NOTICE

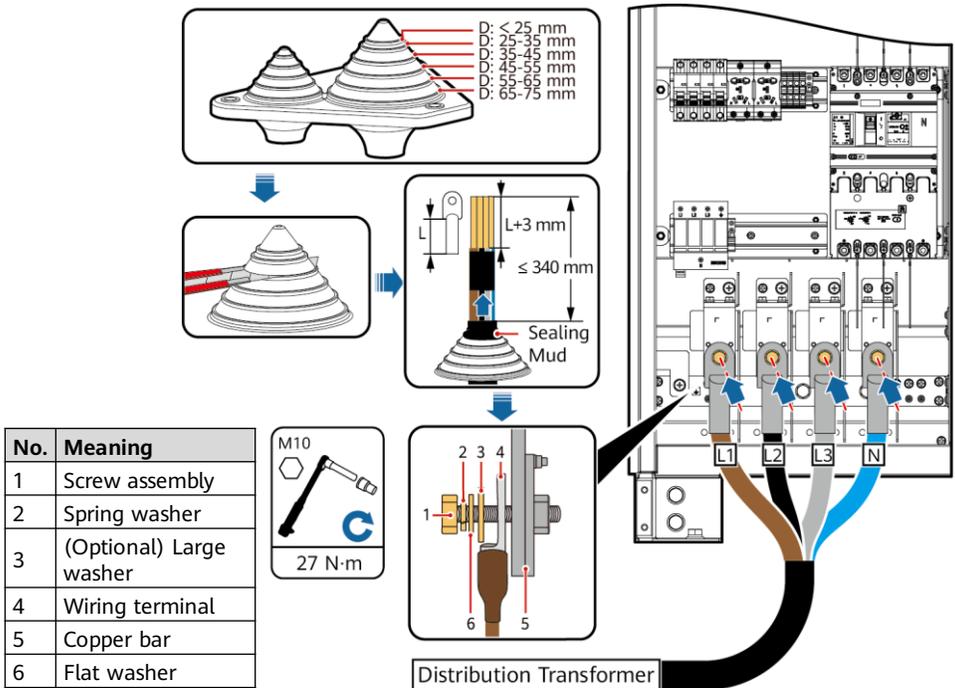
1. Pre-install bolts according to the recommended torque of 27 N·m.
2. Verify that the torque of the installed bolts is 27 N·m using a torque wrench.
3. Mark the bolts whose torque has been verified using a marker.

NOTE

The figures in the procedure for installing AC power cables use one of the LUNA2000-2.0MWH-1HX models as an example.

Installing the Four-core AC Input Power Cable

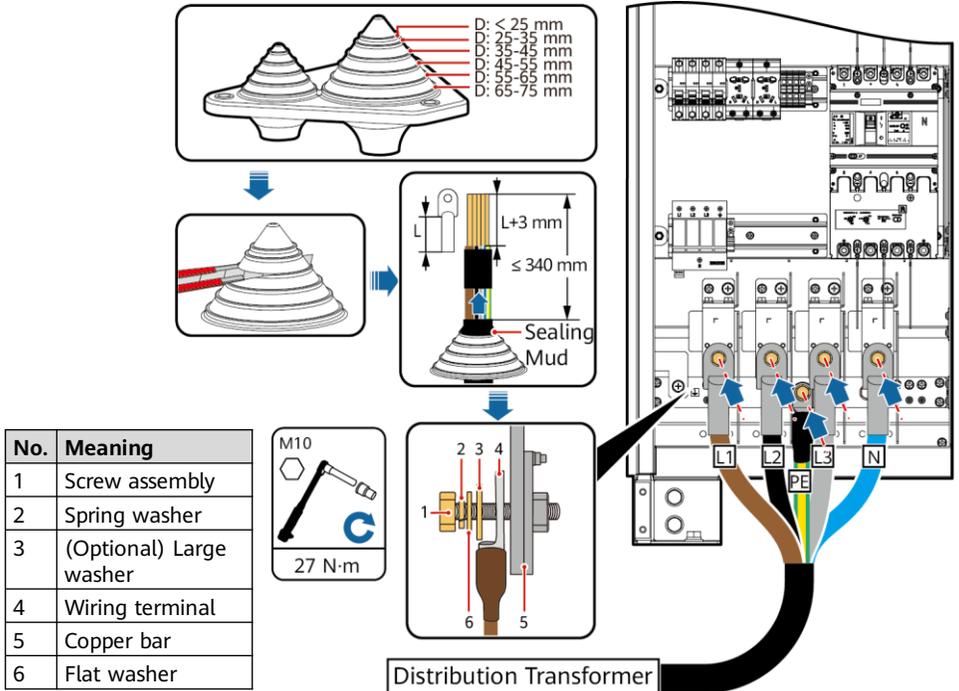
Cut the corresponding pagoda connector using a utility knife, route the AC input power cable through the cable hole at the bottom, and connect the cable to the AC circuit breakers.



IB04I20002

Installing the Five-core AC Input Power Cable

Cut the corresponding pagoda connector using a utility knife, route the AC input power cable through the cable hole at the bottom, and connect the cable to the AC circuit breakers.



IB04120001

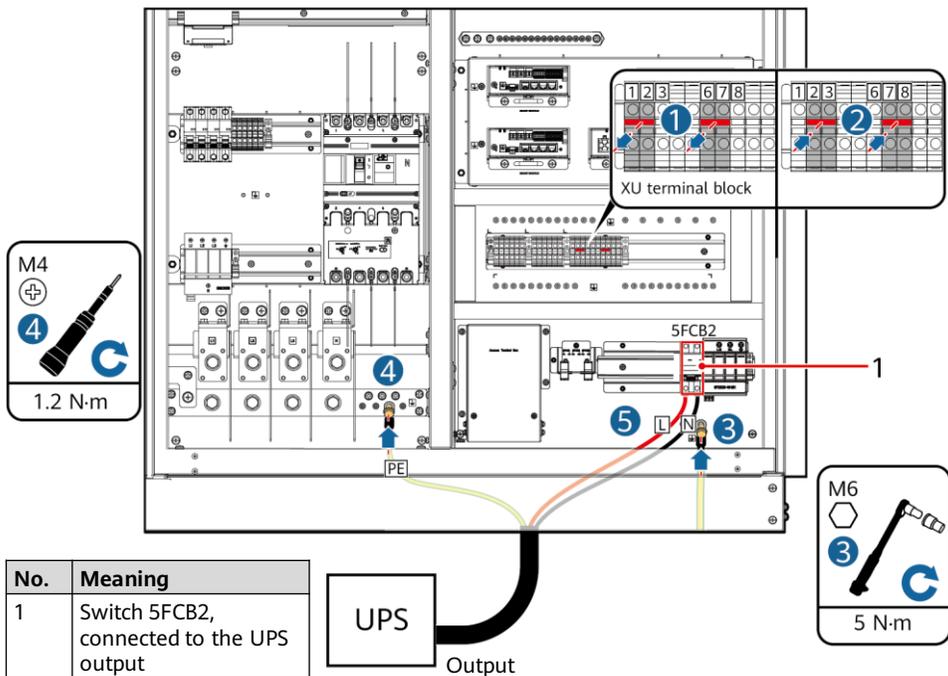
5.6 (Optional) Connecting Single-phase AC Input Power Cables

NOTE

- This procedure applies only to some models. The figure is for reference only.
- If a UPS (provided by the customer) or other reliable backup power supplies (provided by the customer) is used to supply power, perform the following steps to change the connection mode of the single-phase AC input power cables.
- Recommended single-phase AC switch (5FCB, provided by the customer): 220/230 V AC; 10 A/2P.

Scenario 1: The UPS Obtains Power from an External Power Source (Not from the ESS)

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 6-7 and insert it to 7-8 on the XU terminal block.
3. Connect the armored cable to the ground point on the rear panel of the control unit cabin.
4. Connect the PE cable (provided by the customer) to the ground bar of the control unit cabin, and connect the L and N wires (provided by the customer) to switch 5FCB2.



IB04H00159

Scenario 2: The UPS Obtains Power from the ESS

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 6-7 and insert it to 7-8 on the XU terminal block.
3. Connect the two armored cables to the ground points on the rear panel of the control unit cabin.
4. UPS output: Connect the PE cable (provided by the customer) to the ground bar of the control unit cabin, and connect the L and N wires (provided by the customer) to switch 5FCB2.
5. Install a UPS switch 5FCB (provided by the customer).
6. Connect the live wire 1775 and neutral wire 1777 (obtained from position 3 in the figure).
7. UPS input: Connect the PE cable (provided by the customer) to the ground bar of the control unit cabin, and connect the L and N wires (provided by the customer) to switch 5FCB.

| No. | Meaning |
|-----|---|
| 1 | Switch 5FCB2, connected to the UPS output |
| 2 | Switch 5FCB, connected to the UPS input |
| 3 | Binding positions of live wire 1775 and neutral wire 1777 |

5.8 Installing Signal Cables (Optical Fiber Communication)

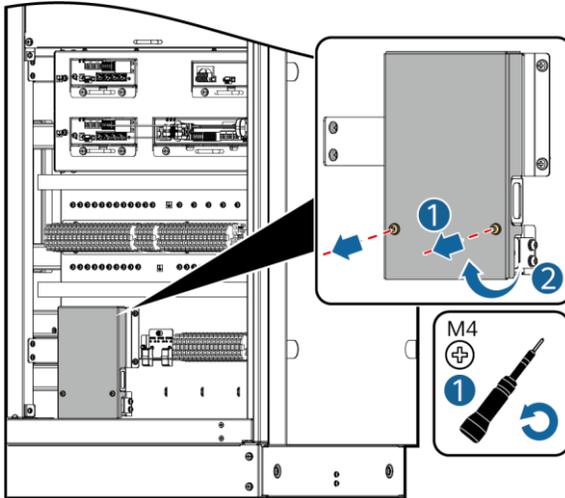
NOTICE

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

1. Remove the external mechanical parts from the Access Terminal Box (ATB).

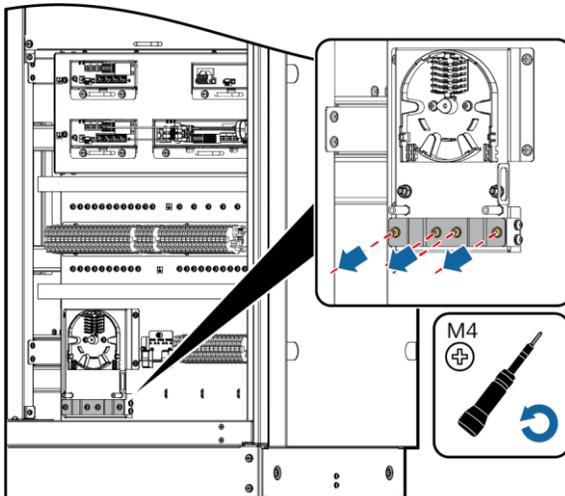
NOTE

Some models do not have the external mechanical parts of the ATB.



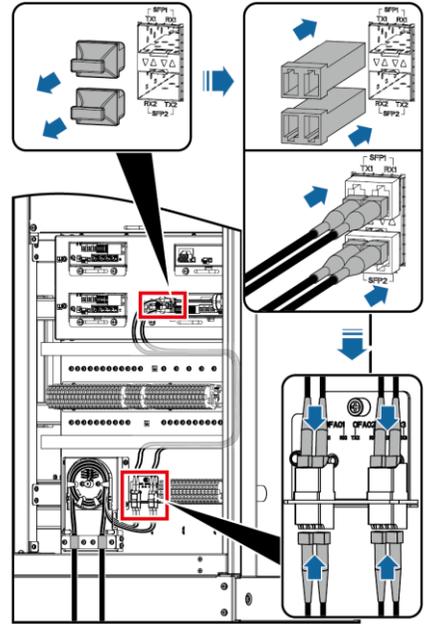
IB04H00003

2. Remove the optical cable fastener.



IB04H00004

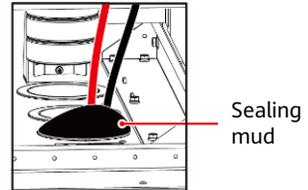
3. Connect one end of the optical jumper to the fiber adapter and the other end to the ATB through the cable hole on the side.
4. Connect the peripheral optical cable to the ATB, splice the optical cable and the optical jumper, and wind the spliced cable around the fiber spool on the ATB.
5. Install an optical module on the CMU panel, and connect one end of the optical jumper to the optical module and the other end to the optical adapter.
6. Check that the cables are connected correctly and securely. Then reinstall the optical cable fastener and external mechanical parts.



IB04140001

5.9 Sealing the Cable Holes

After the cables are installed, seal the cable holes using the sealing mud delivered with the equipment.



6 Checking Before Power-On

| No. | Check Item | Acceptance Criteria |
|-----|-------------------------|---|
| 1 | ESS | <ul style="list-style-type: none"> • The ESS is intact and free from rust or paint flake-off. If paint flakes off, repaint the equipment. There are no foreign objects inside the ESS. • The labels on the ESS are clear. Damaged labels must be replaced. |
| 2 | Cable appearance | <ul style="list-style-type: none"> • Cable sheathings are properly wrapped and not damaged. • Cable hoses are intact. |
| 3 | Cable connection | <ul style="list-style-type: none"> • 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 layout | <ul style="list-style-type: none"> • Electrical and ELV cables are routed separately. • Cables are neat and tidy. • Cable tie joints are evenly cut without burrs. • Cables are placed properly with slacks at bending points. • Cables are routed neatly without twists or crossovers in the cabinet. |
| 5 | Battery pack copper bar | The copper bar is not deformed and its protection layer is intact. |
| 6 | Switch | <ul style="list-style-type: none"> • The DC LV Panel switch is set to OFF. • The battery rack switch is set to OFF. |

7 Powering On the System

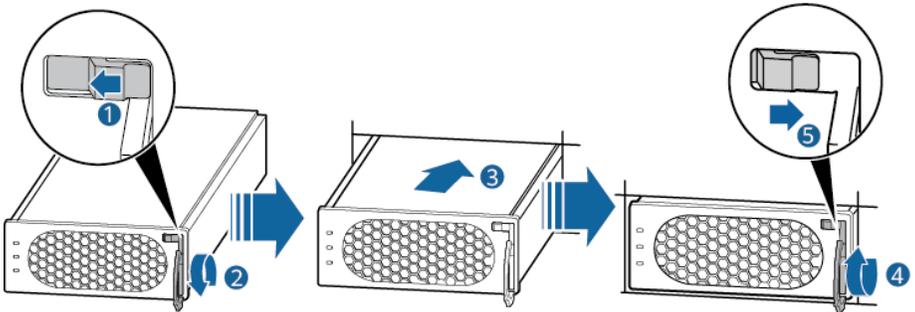
7.1 Installing the PSU

⚠ CAUTION

Power on the PSU within 24 hours after unpacking. Otherwise, place it in a dry indoor environment without corrosive gas.

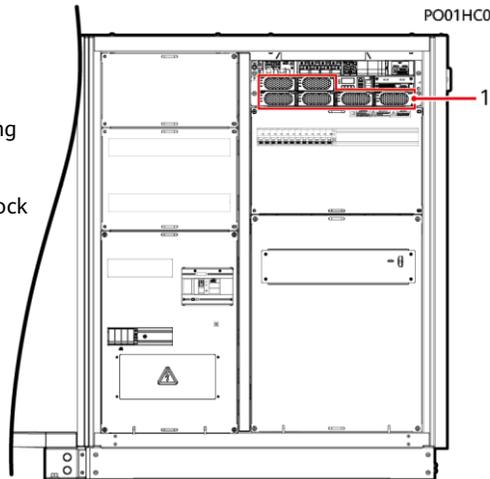
📖 NOTE

The subrack varies with the ESS models. The figure uses one type of the subrack as an example.



1. Push the locking latch leftward.
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 rightward to lock the handle.

| No. | Product |
|-----|---------|
| 1 | PSU |



IB04W00037

7.2 Installing the Solenoid Valve

⚠ WARNING

For non-emergency manual operations, do not remove the safety pull ring.

⚠ CAUTION

- If a solenoid valve is configured with a reset device, ensure that the solenoid valve is not activated before installing it on the fire cylinder. For details, see "FAQ".
- Before installing the solenoid valve, ensure that the fire suppression system has been tested and passed the acceptance inspection (Auxiliary power-on is required for the test and acceptance of the fire suppression system.).

NOTE

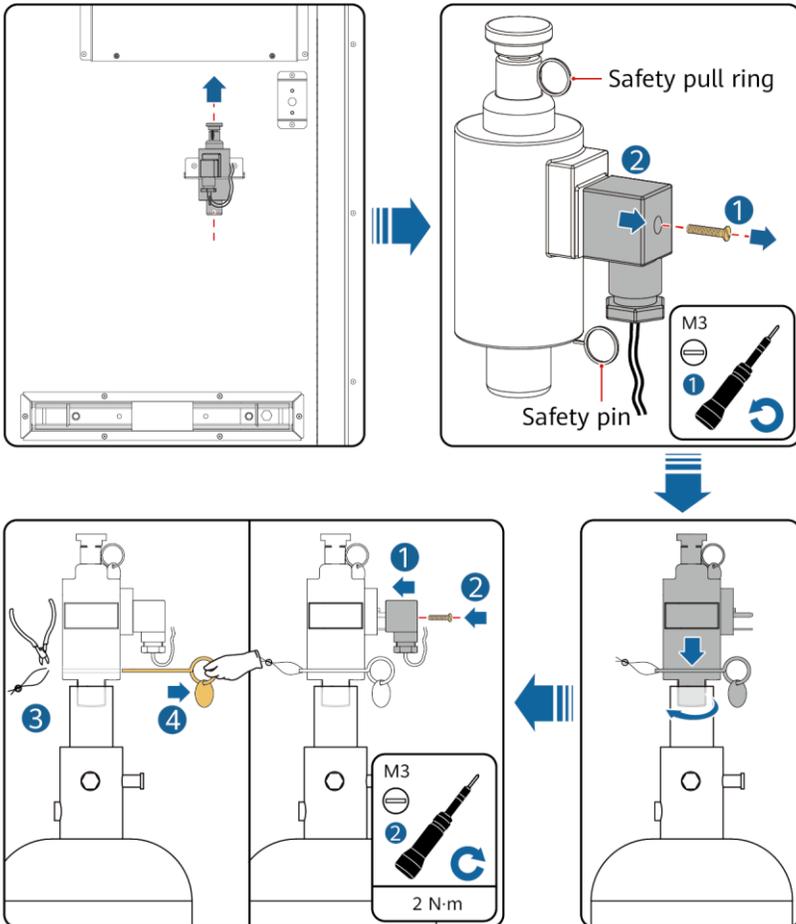
- The appearance of the solenoid valve is for reference only, and that of the actual product may vary.
- The model of the solenoid valve may vary. For details about the applicable installation procedure, see the model of the fire cylinder.

Scenario 1

NOTE

Scenario 1 is applicable to a 40 L cabinet-type fire cylinder.

1. Remove the solenoid valve from the bracket.
2. Remove the screws using a screwdriver and remove the electric control plug from the solenoid valve.
3. Tighten the solenoid valve clockwise to the top of the fire cylinder.
4. Insert the electric control plug and tighten the screws using a screwdriver.
5. Remove the safety pin.



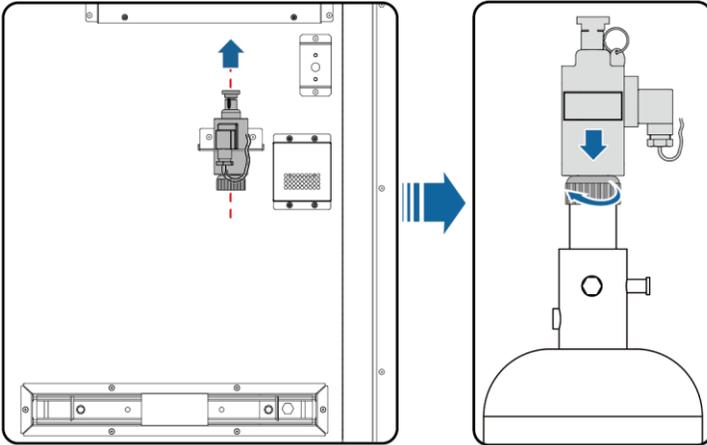
IB04H00014

Scenario 2

NOTE

Scenario 2 is applicable to fire cylinder models NCM38UF AA, 227M38UF AA, and SPS020-MS-032B-EN.

1. Remove the solenoid valve from the bracket.
2. Remove the reset device at the bottom of the solenoid valve.
3. Tighten the solenoid valve clockwise to the top of the fire cylinder.



IB04H00015

Scenario 3

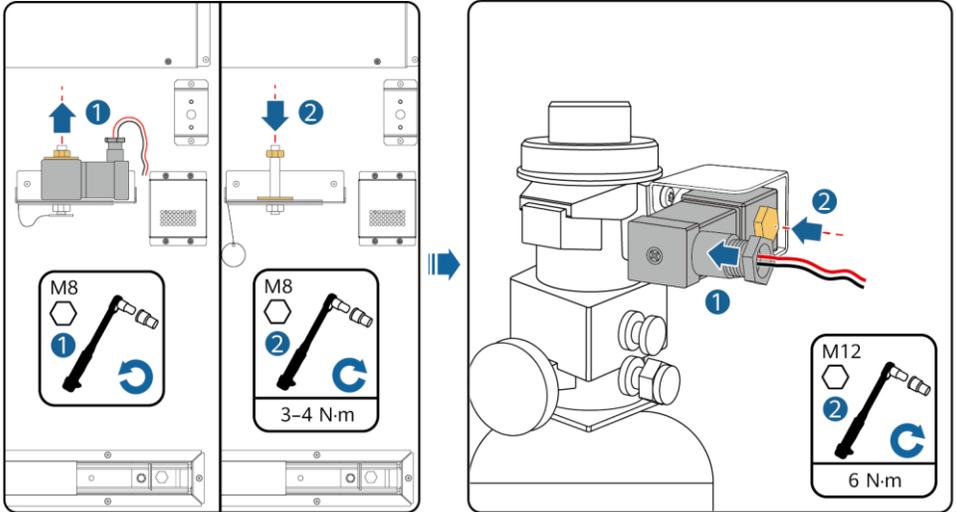
NOTE

Scenario 3 is applicable to fire cylinder model P0009438.

1. Remove the solenoid valve from the bracket and reinstall the nut and washer.
2. Install the solenoid valve on the corresponding stud on the fire cylinder.

NOTE

Nut specifications: outer hexagon HEX17. Nuts are customized and cannot be replaced with common nuts.



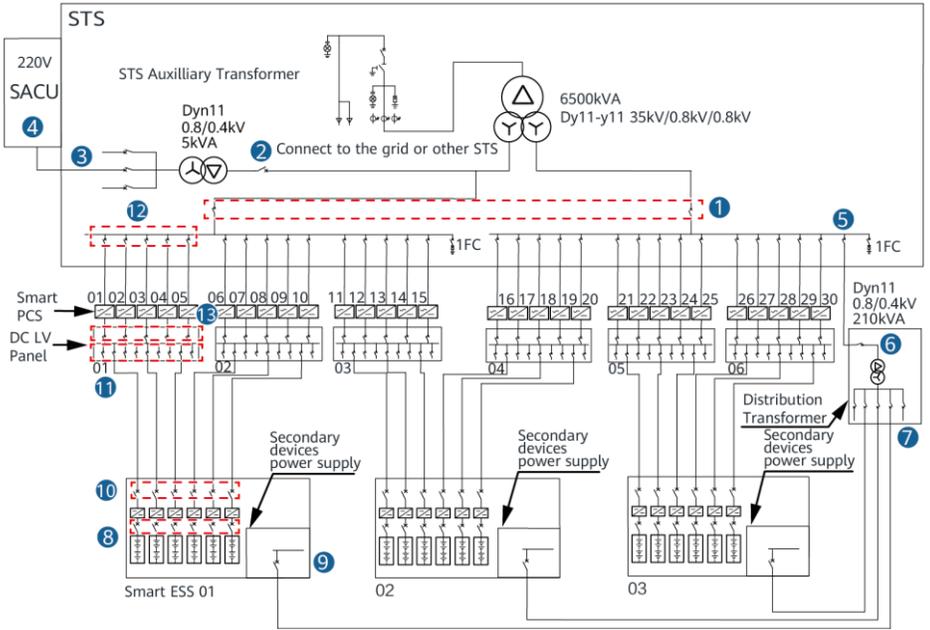
IB04H00177

7.3 Power-On Process

NOTICE

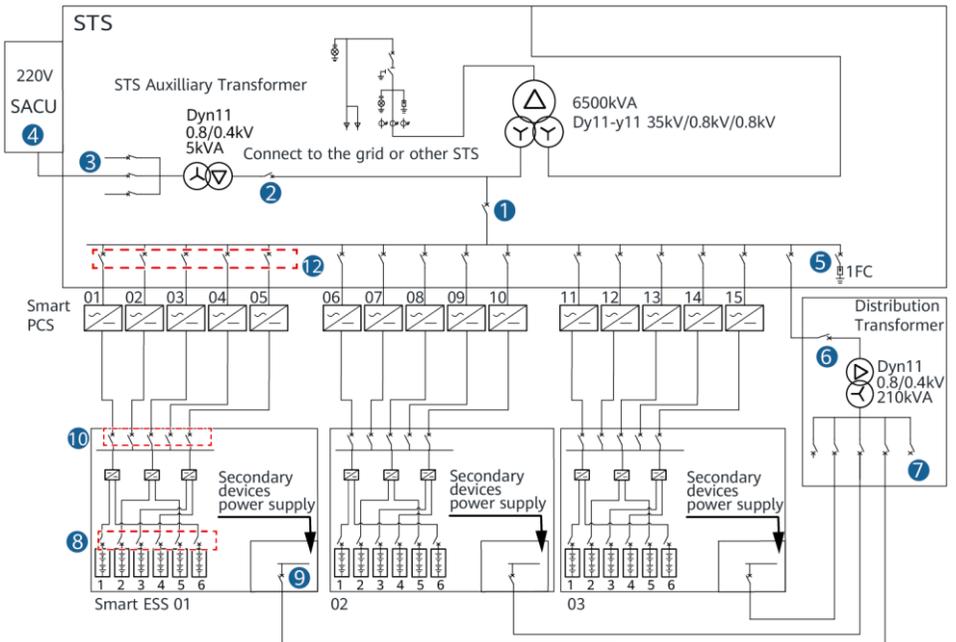
- The following figure is used only to guide the power-on sequence of the system. Do not use it for onsite cable connections.
- Check all equipment before power-on. For details, see the corresponding user manuals.
- Before the first power-on, check that cables are correctly connected.
- Incorrect cable connections may cause damage to the Smart Transformer Station (STS) or the Smart PCS. Verify the cable connections between the STS and the Smart PCS. 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.

LUNA2000-2.0MWH-1HX /LUNA2000-2.0MWH-HE1HX



IB04P0008

LUNA2000-2.0MWH-2HX/LUNA2000-2.0MWH-HE2HX



IB04P0002

| Procedure | Item | Remarks | |
|-----------|---|---|--|
| 1 | Powering on the STS (including the STS Auxiliary Transformer) | Corresponding to number 1, number 2, and number 3 in the power-on flowchart | |
| 2 | Powering on the SmartACU2000D Smart Array Controller (SACU) | Corresponding to number 4 in the power-on flowchart | |
| 3 | Powering on the Distribution Transformer | Corresponding to number 5, number 6, and number 7 in the power-on flowchart | |
| 4 | Powering on the Smart String ESS | Switching on the DC circuit breakers of the rack in the battery cabin | Corresponding to number 8 in the power-on flowchart |
| 5 | | Powering on the secondary devices (turning on the AC switches and then the DC switches) | Corresponding to number 9 in the power-on flowchart |
| 6 | | Switching on the DC circuit breakers in the control unit cabin | Corresponding to number 10 in the power-on flowchart |
| 7 | (Optional) Turning on the switches at the battery side of the DC LV Panel | Turning on the switches at the battery side of the DC LV Panel | Corresponding to number 11 in the power-on flowchart |
| 8 | Powering on the Smart PCS | Turning on the switches at the AC side of the Smart PCS | Corresponding to number 12 in the power-on flowchart |
| 9 | | (Optional) Turning on the switches at the DC side of the Smart PCS | Corresponding to number 13 in the power-on flowchart |

NOTE

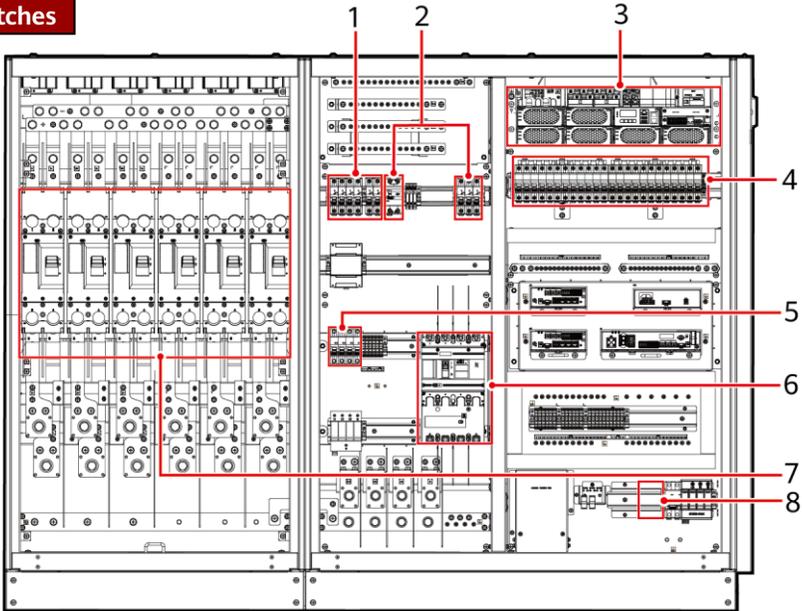
After the system is powered on, you are advised to use a thermal imager to check whether the DC power cables and AC input power cables in the control unit cabin of the ESS are in good contact.

7.4 Powering On the Smart String ESS

NOTICE

- Before turning on the switches for the secondary device power supply in the ESS, check that the AC voltage of the secondary device power supply is within the normal ranges.
- 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.
- Perform power-on within two weeks after cables are connected. Otherwise, replace the desiccants with new ones (Montmorillonite desiccant, 500 g/bag).
- Before power-on, remove the desiccants from the cabins and dispose of them according to the applicable local waste disposal act.
- Before power-on, remove the blue protective films with the label .
- Do not open the battery cabin doors after power-on. Otherwise, the system will shut down.

Switches



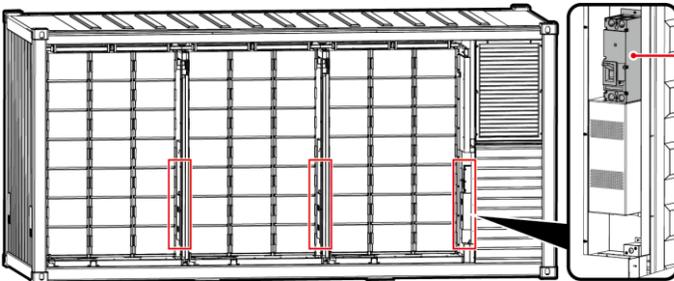
IB04W00115

| No. | Meaning |
|-----|--|
| 1 | AC power switch of the air conditioner |
| 2 | Extinguishant control panel switch, lighting/socket switch, adapter switch, and PSU AC input switch |
| 3 | DC input switch, exhaust fan controller switch, and air conditioner switch in the control unit cabin |
| 4 | Battery pack fan switch and Smart Rack Controller switch |
| 5 | SPD switch |
| 6 | AC main input switch of the ESS |
| 7 | DC circuit breaker in the control unit cabin |
| 8 | Position for the UPS switch (reserved) |

NOTE

- The figure of switches uses one of the LUNA2000-2.0MWH-1HX models as an example.
- Switches labeled SPARE are reserved switches.

1. Switch on the DC circuit breakers 1Q1-6Q1 of battery racks in the battery cabins.



IB04W00045

| No. | Meaning |
|-----|---|
| 1 | Positions of the DC circuit breakers of battery racks in the battery cabin. |

2. (Optional) Switch on UPS circuit breaker 5FCB (corresponding to number 8 in the figure).

NOTE

- The UPS switch position is reserved only in some models. If the UPS switch is needed, install it by yourself.
- Perform this operation only in microgrid or off-grid scenarios.

3. Switch on the SPD circuit breaker 2FCB1 (corresponding to number 5 in the figure) and check that the SPD display window is green.

4. Switch on the main switch 1QA for the AC input power cable of the ESS (corresponding to number 6 in the figure).

CAUTION

- After turning on the main switch 1QA, immediately check that the L1, L2, and L3 phase voltages are 220 V AC/230 V AC.
- If the phase voltage displayed on the digital display meter is 400 V or other values, the cables between the L1, L2, L3, and N wires may be incorrectly connected. In this case, check the cables. Do not power on devices before checking cables. Otherwise, devices such as air conditioners may be damaged.

5. Switch on the circuit breakers of the power distribution system in the control unit cabin.

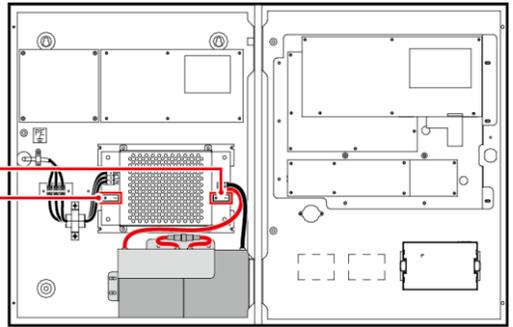
| Model | Air Conditioner Position in the Battery Cabin | Air Conditioner Switch No. | Battery Pack Fan Switch No. | Smart Rack Controller Switch No. |
|---|---|--|-----------------------------|--|
| LUNA2000-2.0MWH-1HX | 1/2/4/5/7/8/10/11 | 3FCB1, 3FCB2, 3FCB4, 3FCB5, 3FCB7, 3FCB8, 3FCB10, 3FCB11 | 7FCB7-7FCB15, 7FCB19-7FCB27 | 7FCB16, 7FCB17, 7FCB18, 7FCB28, 7FCB29, 7FCB30 |
| LUNA2000-2.0MWH-1HX/LUNA2000-2.0MWH-HE1HX | 1/3/5/7/9/11 | 3FCB1, 3FCB3, 3FCB5, 3FCB7, 3FCB9, 3FCB11 | 7FCB7-7FCB15, 7FCB19-7FCB27 | 7FCB16, 7FCB17, 7FCB18, 7FCB28, 7FCB29, 7FCB30 |
| LUNA2000-2.0MWH-2HX | 1/3/5/7/9/11 | 3FCB1, 3FCB3, 3FCB5, 3FCB7, 3FCB9, 3FCB11 | 7FCB7-7FCB15, 7FCB19-7FCB27 | 7FCB16, 7FCB17, 7FCB18 |
| LUNA2000-2.0MWH-2HX | 2/4/6/8/10/12 | 3FCB2, 3FCB4, 3FCB6, 3FCB8, 3FCB10, 3FCB12 | 7FCB7-7FCB15, 7FCB19-7FCB27 | 7FCB16, 7FCB17, 7FCB18 |
| LUNA2000-2.0MWH-2HX/LUNA2000-2.0MWH-HE2HX | 1/4/7/10 | 3FCB1, 3FCB4, 3FCB7, 3FCB10 | 7FCB7-7FCB12 | 7FCB16, 7FCB17, 7FCB18 |

- Switch on the AC power circuit breakers of the air conditioner in sequence (corresponding to number 1 in the figure).
- Switch on the adapter circuit breaker 5FCB1, extinguishant control panel circuit breaker 5FCB3, and lighting system circuit breaker 1FB1 in sequence (corresponding to number 2 in the switch figure).
- (Optional) Switch on 220/230 V socket circuit breaker 1FB2.

NOTE

Only some models are equipped with a separate socket circuit breaker.

- d. Open the extinguishant control panel and turn on the two power switches inside (applicable only to the JB-QBL-QM210 extinguishant control panel). Switch off the extinguishant control panel circuit breaker 5FCB3, ensure that the extinguishant control panel is running properly with the battery power supply, and then switch on the circuit breaker 5FCB3.



| No. | Meaning |
|-----|---|
| 1 | The right power switch in the extinguishant control panel |
| 2 | The left power switch in the extinguishant control panel |

- e. Switch on the PSU AC input circuit breaker 6FCB1.

NOTE

If a 3 U subrack is configured, the PSU switch is in the subrack. If a 2 U subrack is configured, the PSU switch is in (2) in the figure that shows switch positions.

- f. On the embedded power subrack, switch on the DC input circuit breakers 7FCB1 and (optional) 7FCB2, the exhaust fan controller switches 7FCB4 and 7FCB5, and the air conditioner circuit breaker 7FCB6 of the control unit cabin in sequence (corresponding to number 3 in the figure).
- g. Switch on the circuit breakers of the battery pack fans in sequence (corresponding to number 4 in the figure).
- h. Switch on the circuit breakers of the Smart Rack Controller (corresponding to number 4 in the figure).
6. Switch on the DC circuit breakers in the control unit cabin (corresponding to number 7 in the figure).

| Model | Air Conditioner Position in the Battery Cabin | DC Circuit Breaker No. in the Control Unit Cabin |
|--|---|--|
| LUNA2000-2.0MWH-1HX | 1/2/4/5/7/8/10/11 | 1Q2-6Q2 |
| LUNA2000-2.0MWH-1HX LUNA2000-2.0MWH-HE1HX | 1/3/5/7/9/11 | 1Q2-6Q2 |
| LUNA2000-2.0MWH-2HX | 1/3/5/7/9/11 | 1Q2-3Q2 |
| LUNA2000-2.0MWH-2HX | 2/4/6/8/10/12 | 1Q2-3Q2 |
| LUNA2000-2.0MWH-2HX LUNA2000-2.0MWH-HE2HX | 1/4/7/10 | 1Q2-6Q2 |

NOTE

The status of DC switches in the control unit cabin is subject to the actual number of PCSs connected.

8 Commissioning (SmartLogger WebUI)

NOTE

- Only the Windows 7 operating system and later are supported.
- Browser: Chrome 52, Firefox 58, or Internet Explorer 9, or a later version is recommended.
- The WebUI screenshots are for reference only.

8.1 Preparations and WebUI Login

1. Connect the network port on your PC to the WAN or LAN port on the SmartLogger through a network cable.
2. Set the IP address of the PC. Ensure that the IP address is in the same subnet as that of the SmartLogger.

| Port | IP Setting | Default Value on the SmartLogger | Example PC Setting |
|----------|-----------------|----------------------------------|--------------------|
| 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 |
| 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 WAN 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 cancel the proxy server configurations.
- If the SmartLogger is connected to the Internet and the PC is connected to the LAN, do not cancel the proxy server configurations.

- 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 (These settings will not apply to other connections)**.
- e. Click **OK**.



8.2 Commissioning Using Deployment Wizard

NOTICE

The screenshots in this document correspond to FusionSolar V800R021C10SPC010 and are for reference only.

1. Enter **https://XX.XX.XX.XX** (IP address of the SmartLogger) in the address bar 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**.
2. Select a desired language.
3. Select the User Name and enter the Password according to the following table, and then click Log In.

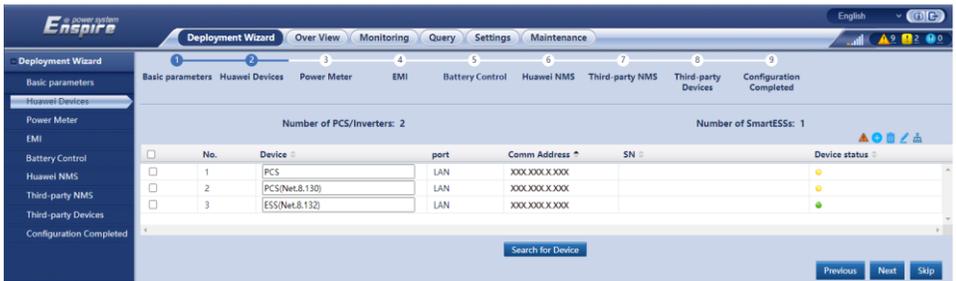
| If... | Then... |
|---|---|
| On the login page, the User Name is admin by default. | <ol style="list-style-type: none">1. Enter the initial password Changeme in the Password and click Log In.2. Change the initial password as prompted and use the admin user name and new password to log in again. |
| On the login page, the User Name is empty by default. | Select installer in the User Name , set the login password as prompted, and click Log In . |

NOTE

- Protect the password by changing it periodically, and keep it secure. If you lose the password, the device must be restored to its factory settings. The Company will not be held liable for any losses resulting from improper password management.
 - 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**.
 - Update the SmartLogger software as required. Contact the Company's engineers to obtain the update package and guide and complete the update accordingly.
4. Click **Deployment Wizard** and set parameters as prompted. Click **Skip** for unused devices.
 - Complete settings on the **Basic parameters** page.
 - After devices are connected, click **Search for Device** to check cable connections, identify the topology, and rectify alarms.
 - (Optional) After searching for devices, set the **Microgrid compatibility**, **Grid connection state**, and **Grid Code** based on the site requirements.

NOTE

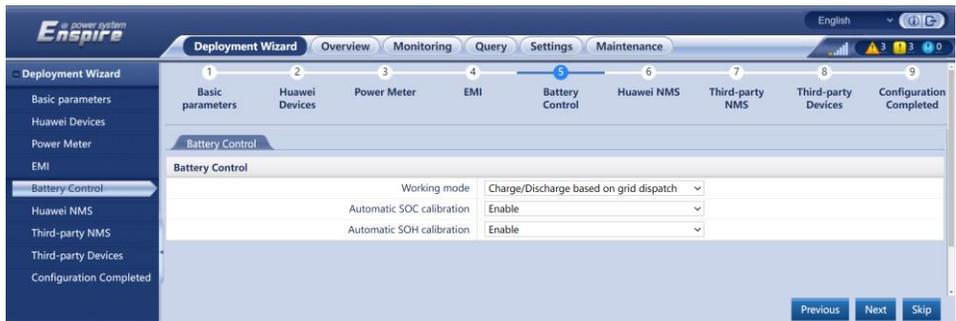
- This procedure applies only to SmartLogger V300R023C00 and later versions.
- In microgrid or off-grid scenarios, you are advised to set **Microgrid compatibility** to **Enable**.
- In grid-tied scenarios, set **Grid connection state** to **On-grid (PQ)**. In off-grid scenarios, set **Grid connection state** to **Off-grid (VSG)**.



NOTE

- During the process of Search for Device, do not perform upgrade operations (such as upgrading through the app, network management system, or WebUI).
- When you click **Search for Device**, cable connections (DC and AC) will be checked before device search (not applicable to third-party devices), and a device address will be automatically allocated.
- After the cable connection check and device search are complete, if a cable connection alarm is generated, you can click the alarm icon  to view the corresponding alarm information.
- After the cable connection check and device search are complete, click the icon  to view the corresponding topology information.

- Connect to the power meter.
- Connect to the EMI.
- Set the battery control parameters. Set the working mode to **Charge/Discharge based on grid dispatch**.



| Parameter | Description |
|---------------------------|---|
| Automatic SOC calibration | <ul style="list-style-type: none"> • If this parameter is set to Disable, automatic SOC calibration is not allowed for battery racks. • If this parameter is set to Enable, automatic charge calibration is allowed for battery racks. During calibration, the cut-off SOC settings will be ineffective and the response of the charge and discharge power may be impacted temporarily. |
| Automatic SOH calibration | <ul style="list-style-type: none"> • If this parameter is set to Disable, automatic SOH calibration is not allowed for battery racks. • If this parameter is set to Enable, the ESS automatically calibrates the SOH precision and fully charges and discharges each battery rack in turn. |

- Connect to Huawei NMS. (The ESS connects to the Smart PV Management System and new PV plants.)
- Connect to a third-party NMS.
- Connect to third-party devices.
- Complete the configuration.

8.3 (Optional) System Startup

 NOTE

Start up the system when needed.

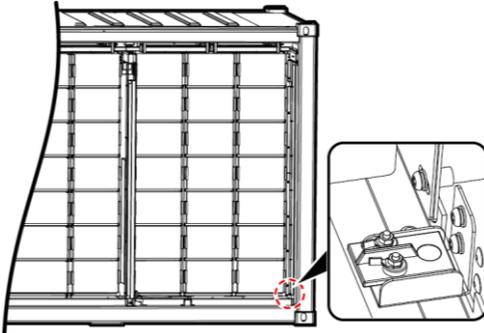
1. On the SmartLogger WebUI, choose **Maintenance > Connect Device**.
2. Click  in the upper right corner to start devices in batches.



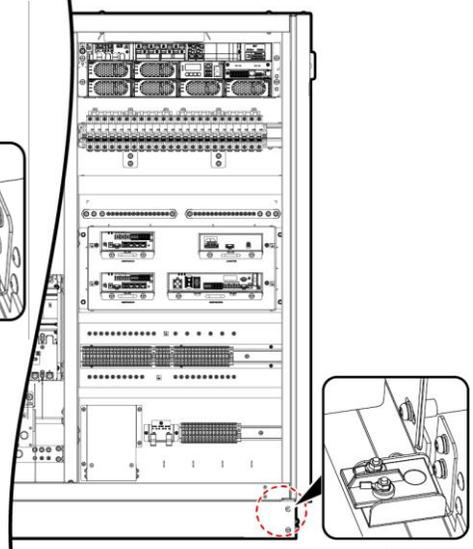
8.4 Checking Alarms

1. Log in to the SmartLogger WebUI and check whether an alarm is generated. If an alarm is generated, clear the alarm by referring to the handling suggestions.
2. Short-circuit the water sensor and check whether a water alarm is generated on the SmartLogger WebUI.
 - If a water alarm is generated, the water sensor is properly connected. In this case, the water alarm will be cleared after the short circuit is removed.
 - If no water alarm is generated, check whether the water sensor cable is properly connected.

Position of Water Sensor in Battery Cabin



Position of Water Sensor in Control Unit Cabin



IB04W00061

- After the alarm is cleared, choose **Monitoring** > **Running Param.** > **Fire suppression** > **Starting up** on the SmartLogger WebUI.

| All | No. | Signal Name | Value | Unit |
|--------------------------|-----|------------------------|-------------|------|
| <input type="checkbox"/> | 1 | DC output distribution | Starting up | |

9 FAQ

How Do I Level the ESS When Doors Cannot Be Opened or Closed

NOTE

This procedure applies only to some models.

1. Use a jack to support the ESS.
 - Jack specification: 30 t
 - Position requirements: on the control unit cabin side or its opposite side (the short side of the ESS container)

NOTE

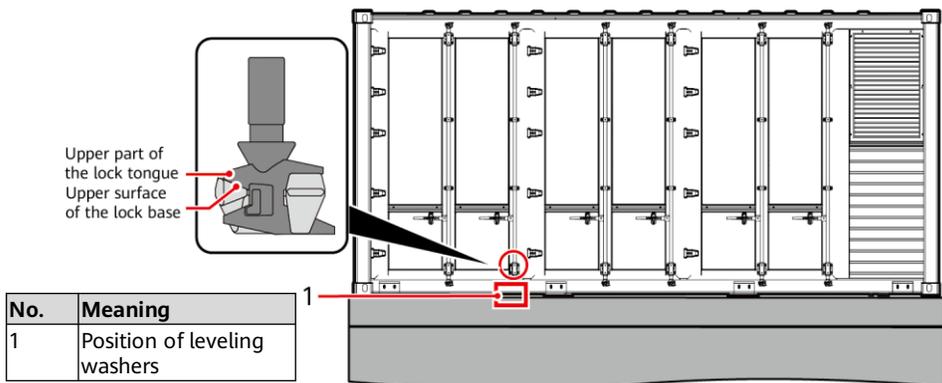
Wood sleepers can be used in the following circumstances.

- Insufficient jack height: Place wood sleepers underneath the jack.
- Natural ground surface: Use wood sleepers to extend contact area.

2. Adjust the height using leveling washers from the control unit cabin.

Scenario 1: The Upper Part of the Lock Tongue Interferes With the Upper Surface of the Lock Base

Use leveling washers to raise ESS by 5–10 mm on the foundation under the door hinge.



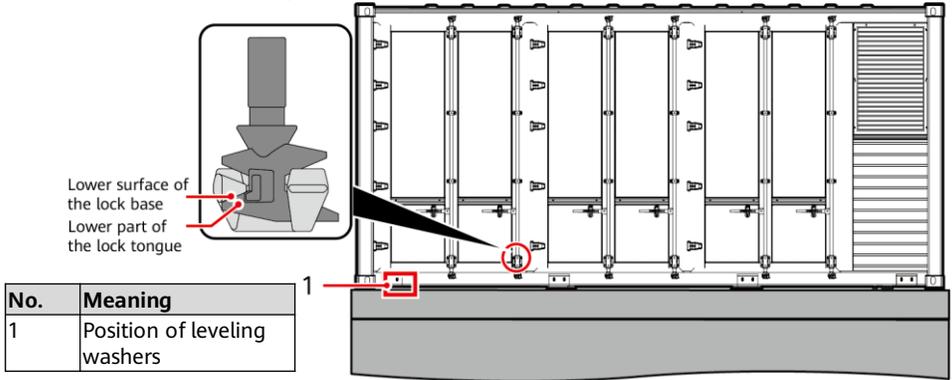
IB04W00066

NOTE

The raising height leveling washers may vary according to the actual conditions.

Scenario 2: The Lower Part of the Lock Tongue Interferes With the Lower Surface of the Lock Base

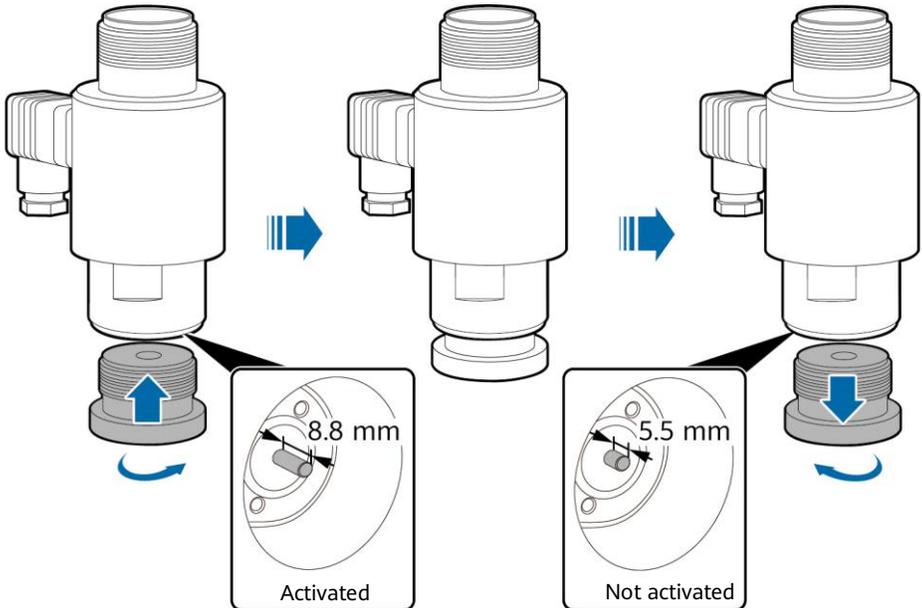
Use leveling washers to raise ESS by 5–10 mm on the foundation under the lock base farthest to the door hinge.



IB04W00067

How Do I Ensure that the Solenoid Valve Is Not Activated

1. Check whether the solenoid valve is not activated.
2. If it is activated, reset it. The reset procedure is as follows:
 - a. Insert the reset device into the solenoid valve to reset the ejector pin.
 - b. After resetting, remove the solenoid valve reset device.



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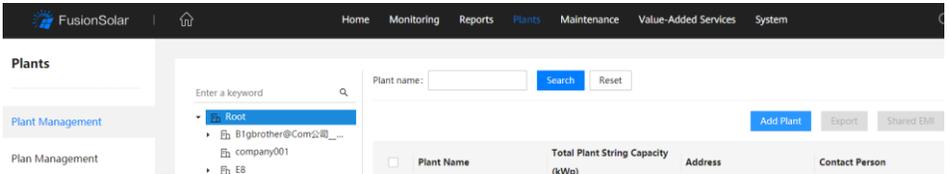
How Do I Connect the ESS to the Smart PV Management System

1. Enter `https://SmartPVMS` 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.

Add Plant X

Progress: Set Basic Info | Add Devices | Set String Capacity | Set Electricity Prices | Set Other Info

* Company:

* Plant name:

* Grid connection date:

Contact person:

Contact method:

* Owner's authorization obtained
If the content you entered involves third-party personal information, obtain authorization in advance.

Why Does the PSU Not Start After the Water and Fire Alarms Are Cleared

Choose **Monitoring** > **Running Param.** > **Fire suppression** > **Starting up** on the SmartLogger WebUI.



What Should I Do If the ESU Cable Connection Detection Abnormal Alarm Is Generated on the WebUI?

Press the reset button  in the upper right corner of the ESU screen. The ESU restarts cable connection detection.

NOTE

If the alarm persists, contact your dealer or technical support.

10 Contact Information



<https://digitalpower.huawei.com>

Path: **About Us** > **Contact Us** > **Service Hotlines**

Huawei Technologies Co., Ltd.
Huawei Industrial Base, Bantian, Longgang
Shenzhen 518129 People's Republic of China
<https://e.huawei.com>