UPS5000-E-(50 kVA–125 kVA) Quick Guide (Integrated UPS 3.0)

Issue: 06
Part Number: 31509228
Date: 2019-06-20

1 Overview

UPS Model	Capacity Configuration	Weight (Full Configuration)	Dimensions (H x W x D)
UPS5000-E-50K-HABBS	50 kVA	352 kg	2000 mm x 600 mm x 1100 mm
UPS5000-E-50K-HASBS		390 kg	
UPS5000-E-125K-HABBS	125 kVA	435 kg	
UPS5000-E-125K-HASBS		453 kg	

NOTE

- The appearance of the UPS5000-E-50K-HABBS (02311FTB-001) is similar to that of the UPS5000-E-125K-HABBS (02311FTD-002).
- The appearance of the UPS5000-E-50K-HASBS (02311FTC-001) is similar to that of the UPS5000-E-125K-HASBS (02311FTE-002).
- The appearance of the UPS5000-E-50K-HASBS (02311FTC-004) is similar to that of the UPS5000-E-125K-HASBS (02311FTE-004)

UPS5000-E-50K-HABBS(02311FTB-001)

(1) Power input status indicator

(2) Input circuit breaker

(3) Lighting circuit breaker

(4) Air conditioner power distribution circuit breaker

(5) IT load circuit breaker

(6) UPS input circuit breaker

(7) UPS maintenance bypass circuit breaker

(8) Control module

(9) Bypass module

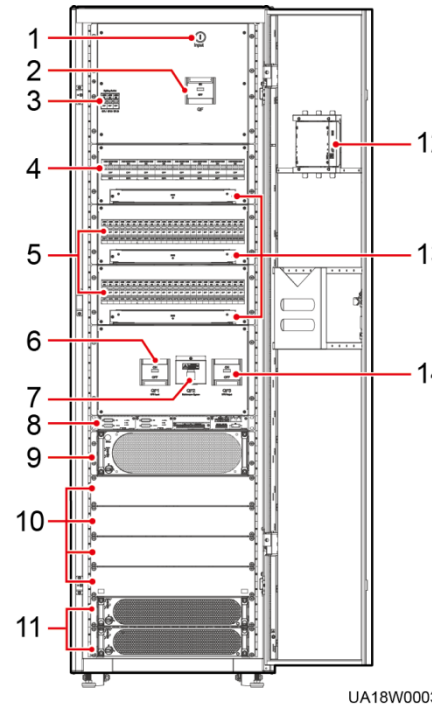
(10) Filler panel

(11) Power module

(12) Monitor display unit (MDU)

(13) Power distribution monitoring board

(14) UPS output circuit breaker



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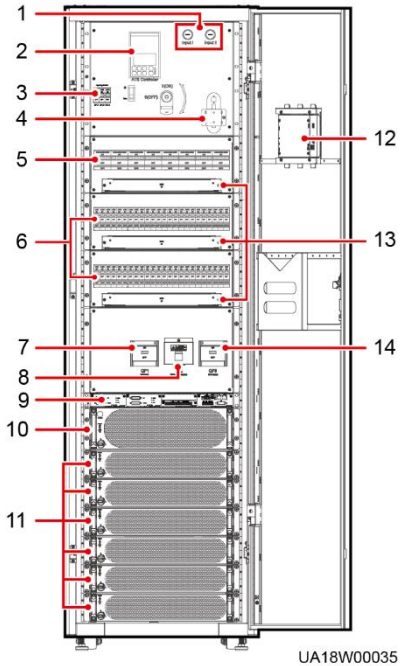
UPS5000-E-125K-HASBS(02311FTE-002)



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(1) Power input status indicator

(2) ATS

(3) Lighting circuit breaker

(4) ATS handle installation slot

(5) Air conditioner power distribution circuit breaker

(6) IT load circuit breaker

(7) UPS input circuit breaker

(8) UPS maintenance bypass circuit breaker

(9) Control module

(10) Bypass module

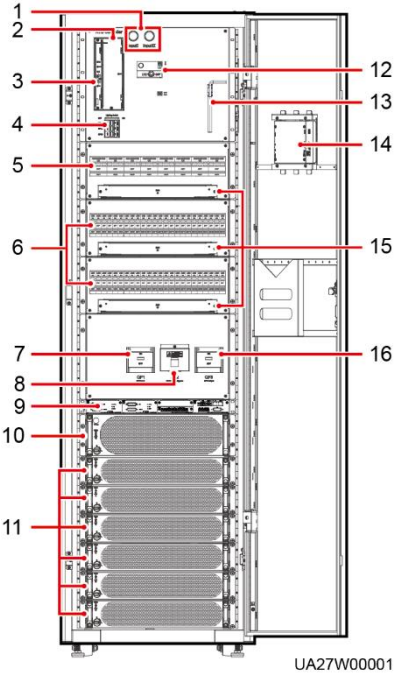
(11) Power module

(12) Monitor display unit (MDU)

(13) Power distribution monitoring board

(14) UPS output circuit breaker

UPS5000-E-125K-HASBS(02311FTE-004)



UA27W00001

(1) Power input status indicator

(2) ATS drive module

(3) ATS monitoring module

(4) Lighting circuit breaker

(5) Air conditioner power distribution circuit breaker

(6) IT load circuit breaker

(7) UPS input circuit breaker

(8) UPS maintenance bypass circuit breaker

(9) Control module

(10) Bypass module

(11) Power module

(12) ATS transfer switch

(13) ATS handle

(14) Monitor display unit (MDU)

(15) Power distribution monitoring board

(16) UPS output circuit breaker

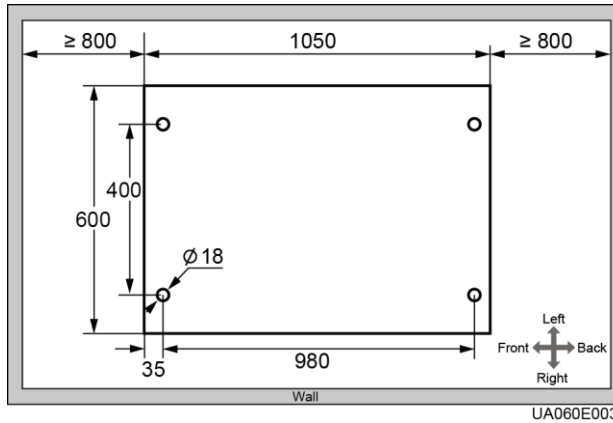
NOTICE

1. Before installation, read the user manual carefully to get familiar with product information and safety precautions.
2. Use insulated tools during installation.
3. Only engineers certified by Huawei or its agents are allowed to install, commission, and maintain the UPS. Otherwise, personal injury or equipment damage may occur, and the UPS faults caused are beyond the warranty scope of Huawei.

2 Installing the UPS

1. Determine the mounting holes based on the marking-off template, drill holes, and install expansion sleeves.

   Unit: mm



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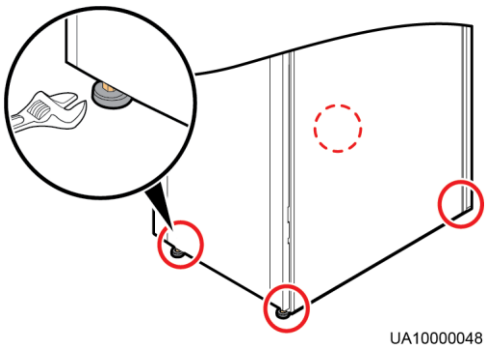
2. Adjust the anchor bolts and ensure that the anchor bolts touch the floor. Then level the UPS.



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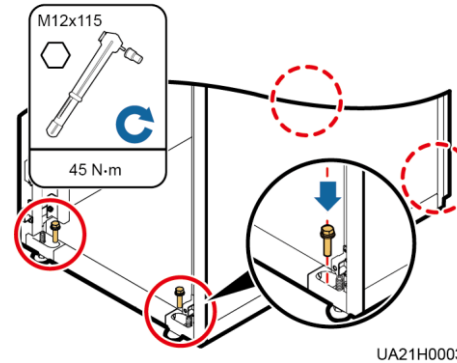
3. Secure the UPS.



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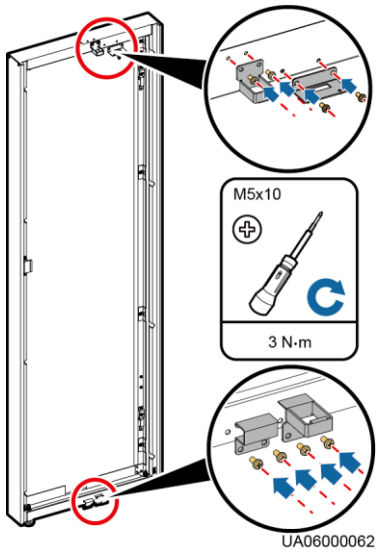
3 (Optional) Installing the Tail Frame

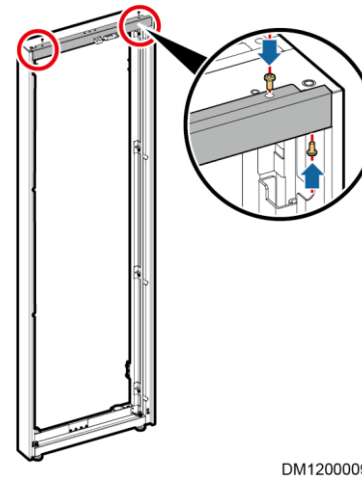
1. Secure the tail frame fittings to the tail frame.



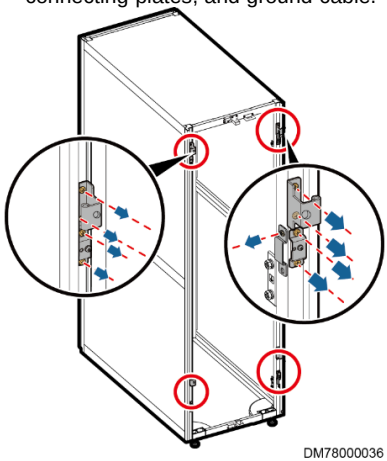
2. Secure the tail frame upper sealing plate to the tail frame.

NOTICE

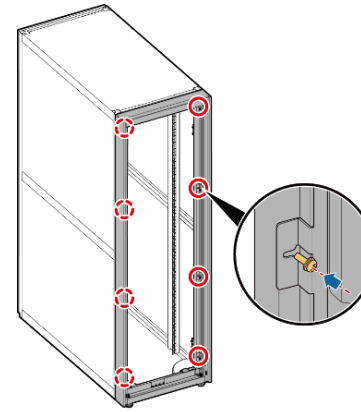
There are two upper sealing plates, and the one used in this step has a gap.



3. Remove the rear door of the cabinet, hinges, connecting plates, and ground cable.



4. Adjust the tail frame anchor bolts until the tail frame is as high as the cabinet. Then secure the tail frame to the UPS.



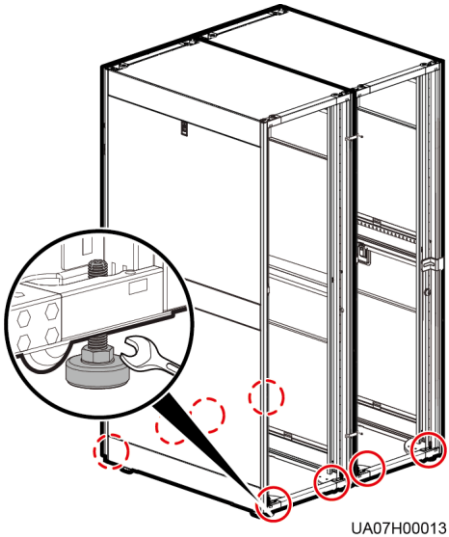
5. Install the hinges, connecting plates, and rear door on the tail frame.
6. Connect the ground cable to the rear door of the cabinet.

4 (Optional) Combining Cabinets

NOTE

The figures are for reference only. The actual product appearance prevails.

1. Open the front and rear doors. Wrench the anchor bolts using an wrench to adjust the cabinet height. Use a level to level the cabinet.



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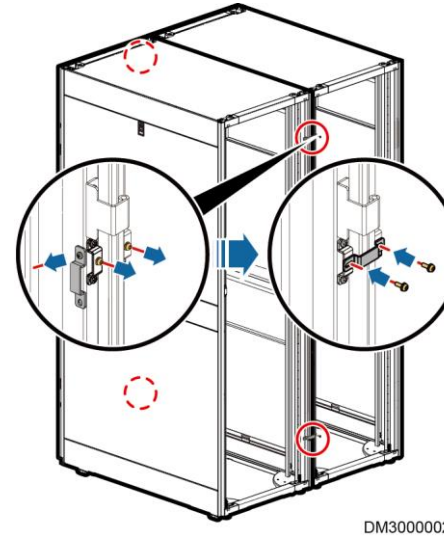
2. Remove the cabinet connecting kits from the rack.
3. Secure the connecting kits in the connection positions on the front door using screws.



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4. Use the same method to secure the connecting kits in the connection positions on the rear door.
5. Repeat the procedure to combine other cabinets.
6. Secure the bolts using a socket wrench.

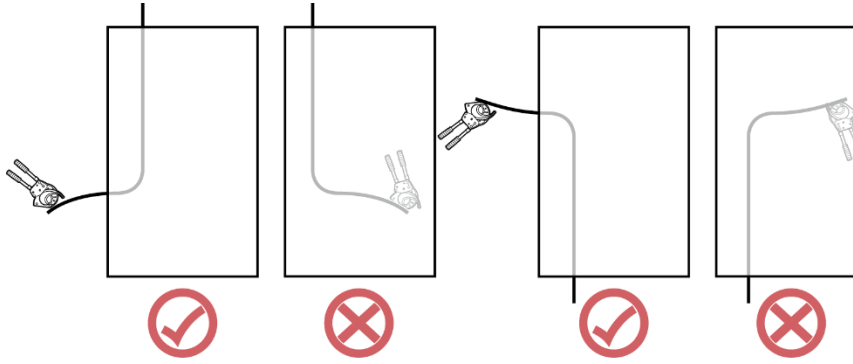
NOTE

Remove the screw from the supporting kit of the connecting kit to secure the connecting kit.

5 Connecting Cables

⚠ WARNING

- Prepare cables away from the cabinets to prevent scraps from falling inside. Cable scraps may ignite and cause personal injury or device damage.
- After cables have been installed, clean the cabinet in a timely manner. Ensure that there is no foreign matter inside and around the cabinet.



UA21I10068

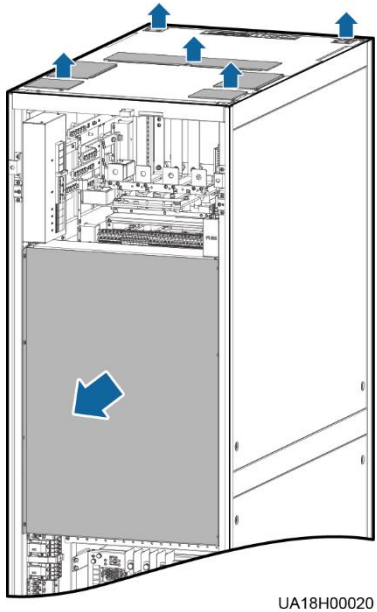
Recommended Cross-Sectional Areas for Power Cables			UPS5000-E-125K (ATS)	UPS5000-E-125K (MCCB)	UPS5000-E-50K (ATS)	UPS5000-E-50K (MCCB)
Input I	Input I current (A)		385	385	184	184
	Recommended circuit Breaker		Three-pole, 400 A	Three-pole, 400 A	Three-pole, 250 A	Three-pole, 250 A
	Recommended cross-sectional area (mm^2)	L1	4 x 185	4 x 185	4 x 95	4 x 95
		L2				
		L3				
		N				
		PE	95	95	50	50
Input II	Input II current (A)		385	N/A	184	N/A
	Recommended circuit Breaker		Three-pole, 400 A	N/A	Three-pole, 250 A	N/A
	Recommended cross-sectional area (mm^2)	L1	4 x 185	N/A	4 x 95	N/A
		L2				
		L3				
		N				
		PE	95	N/A	50	N/A
Battery cable	Maximum discharge current (A)		411	411	164	164
	Recommended cross-sectional area (mm^2)	+	2 x 95	2 x 95	95	95
		N	2 x 95	2 x 95	95	95
		-	2 x 95	2 x 95	95	95
		PE	95	95	50	50

Recommended Cross-Sectional Areas for Output Cables		Cable Specifications
Air conditioner (40 A) Recommended cross-sectional area (mm^2)	L1	5 x 6
	L2	
	L3	
	N	
	PE	
Air conditioner (63 A) Recommended cross-sectional area (mm^2)	L1	5 x 10
	L2	
	L3	
	N	
	PE	
Lighting system Recommended cross-sectional area (mm^2)	L	3 x 2.5
	N	
	PE	
IT load (40 A) Recommended cross-sectional area (mm^2)	L	3 x 6
	N	
	PE	
IT load (63 A) Recommended cross-sectional area (mm^2)	L	3 x 10
	N	
	PE	

NOTE

- Please refer to the user manual for details about cable requirements.
- The cabling route is for reference only. Connect cables based on site requirements.

1. Remove the insulation protective panel from the rear of the cabinet and remove covers from the top as required.



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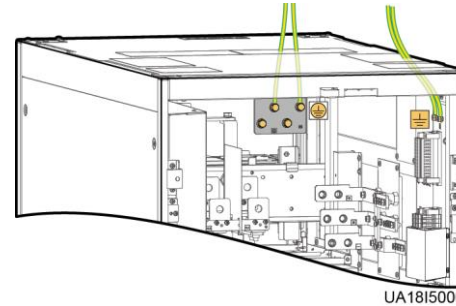
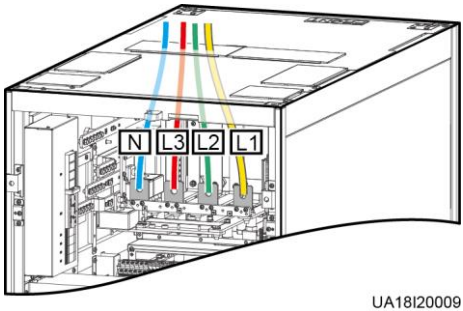
2. Connect a ground cable to the UPS cabinet.



UA18I50002

3. Connect the AC input power cable.

MCCB input



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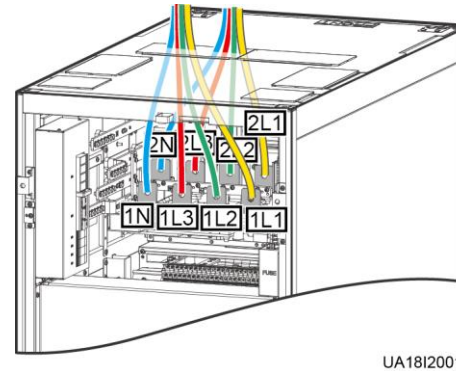
02311FTC-001 and 02311FTE-002 ATS input



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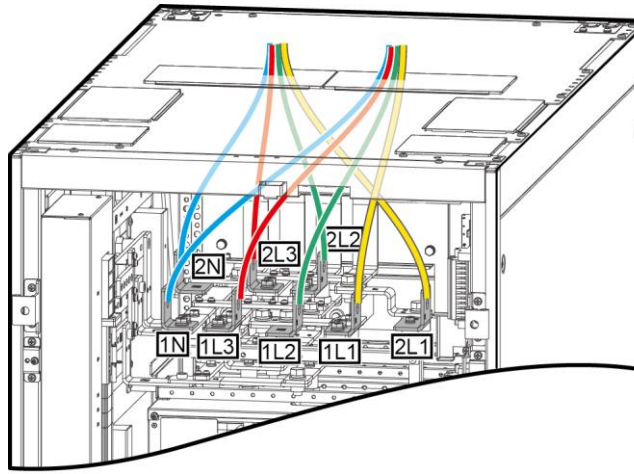
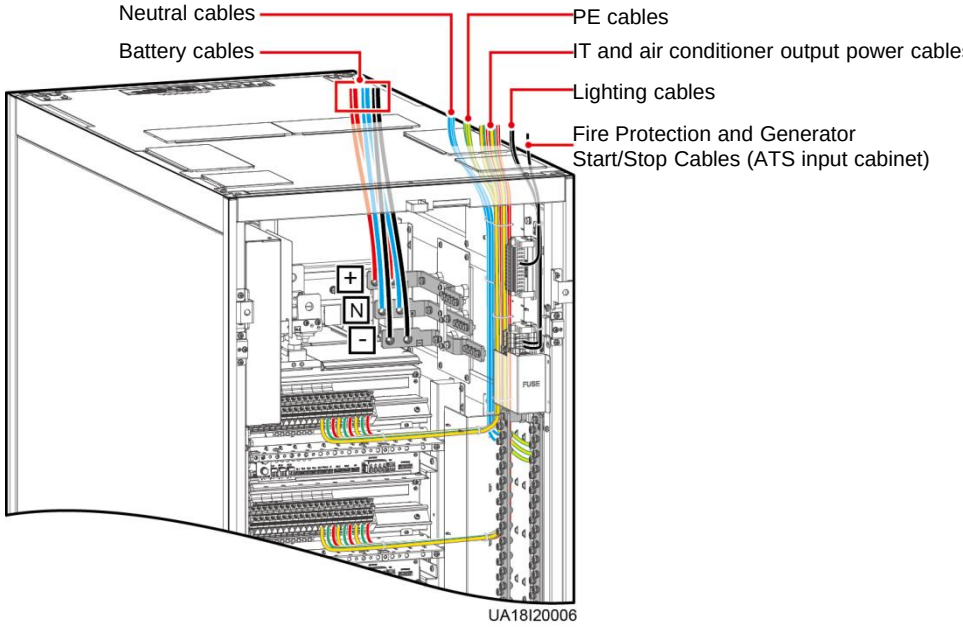
02311FTC-004 and 02311FTE-004 ATS input



UA27I20001

4. Connect battery cables, AC output power cables, fire protection cables and generator Start/Stop cables.



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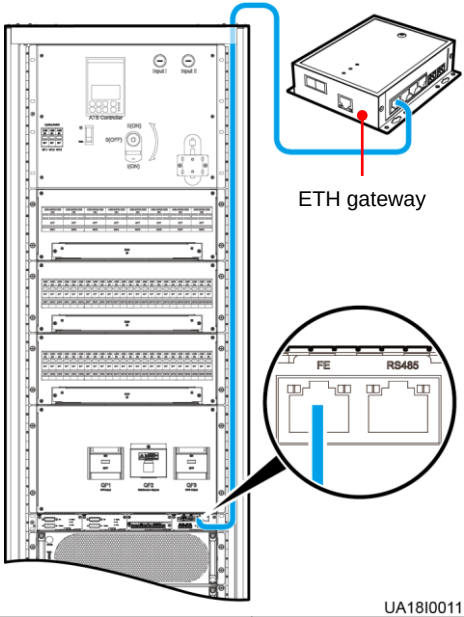
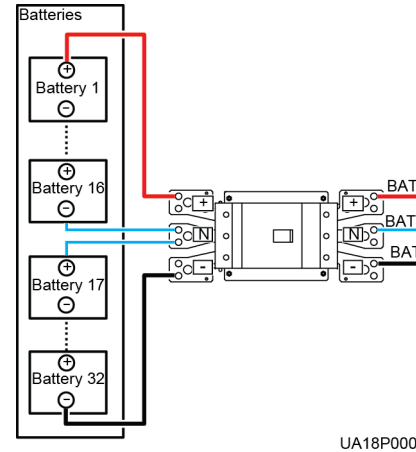
5. Connect a communications cable between the FE port on the UPS monitoring interface card and any PoE port on the ETH gateway.



UA18I0011



UA18P00002

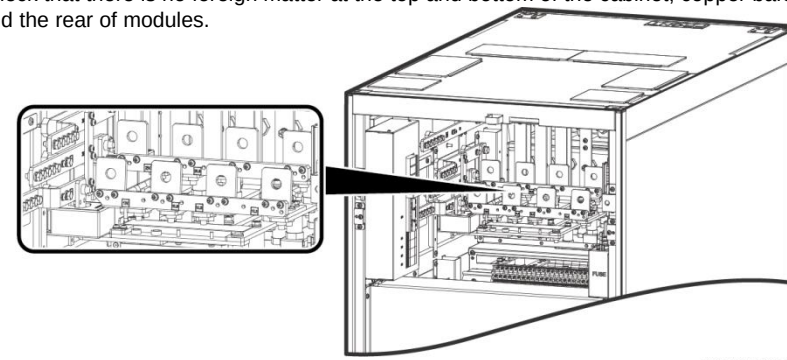
Port Description	Bolt Specifications	Bolt Length	Torque
AC input	M12	45 mm	46 N·m
Battery input	M10	30 mm	26 N·m
PE	M12	45 mm	46 N·m
Safe grounding	M6	16 mm	4.5 N·m

NOTE

The wire routed from the middle point of positive and negative battery strings is the neutral wire. Take a battery string consisting of 32 batteries for example. The battery neutral wire is routed from the middle between positive and negative battery strings, each consisting of 16 batteries.

6 Verifying the Installation

1. Check that there is no foreign matter at the top and bottom of the cabinet, copper bars, switches, and the rear of modules.

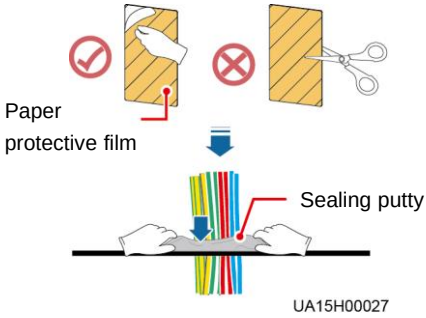


UA18W00039

2. After routing cables and verifying cable connections, seal the gap between cables and the cabinet using sealing putty. (Remove the paper protective film from the sealing putty.)

NOTICE

Sealing putty must be used as a whole and the gap can be sealed only from the top.



3. After verifying the installation, reinstall all the covers. After the installation is complete, reinstall the dustproof cover to prevent dust inside if the UPS is not to be powered on immediately.

7 (02311FTC-001 and 02311FTE-002) ATS Commissioning Before System Power-On

⚠CAUTION

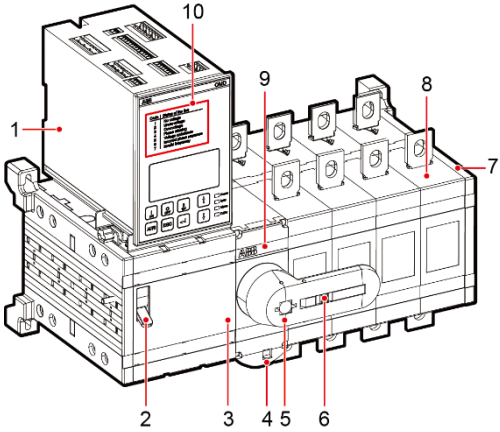
Perform system commissioning and power-on strictly according to the system manual and ATS instructions. For any changes in operations and parameters, consult Huawei engineers. Otherwise, system commissioning or power-on may fail, or even the cabinet is damaged.

NOTICE

1. Only electrical professionals are allowed to install and maintain the ATS.
2. The generator can be connected only to power supply 2 (LN 2)-switch II. If the generator is configured, power supply 2 (LN 2)-switch II cannot be set as the preferred power supply.
3. Do not open any cover of the ATS. Even if the power supply is disconnected, hazardous external control voltage may still exist inside the product.
4. Do not adjust the control cable when the ATS or external control cable is electrified.
5. Do not replace the fuse (F1) with another model. Only fuses labeled with the same model can be used as replacements.
6. When the ATS is connected to the electric loop, do not attempt to install or maintain the device.
7. Before performing maintenance tasks, ensure that the power supply to the switch is disconnected.

NOTE

1. Before power-on, operate the handle to switch on and off the ATS for one to three times. Ensure that the primary and secondary contacts of the ATS work smoothly.
2. Before power-on, check that the phase sequence of the two power supplies for the ATS is correct using a phase sequence meter.



DP23000046

(1) OTM_C8D controller (8D controller for short)

(2) Motor/Manual selection lever

(3) Motor operator

(4) Handle locking latch

(5) Manual handle

(6) Handle buckle

(7) Position for auxiliary contacts

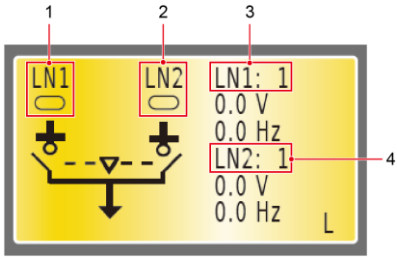
(8) Transfer switch

(9) Operator

(10) Alarm ID description

1. Switch on the power switch for the ATS electric operation mechanism (Q1 and Q2 in the lower left side at the rear of the cabinet) to power the ATS electric operation mechanism.
2. Check whether the controller has alarms. If an alarm exists, rectify the fault first.

   View the alarm ID on the controller LCD. If LN 1 and LN 2 power indicators are hollow, there is an alarm. Locate the fault based on the alarm ID and the alarm ID reference list on the 8D controller, and rectify the fault.



(1) LN 1 power status

(2) LN 2 power status

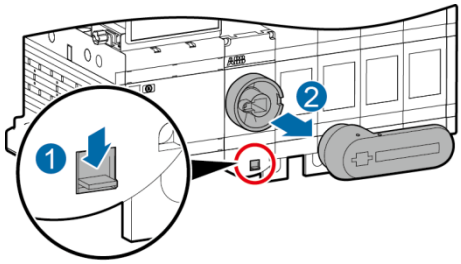
(3) LN 1 power alarm ID

(4) LN 2 power alarm ID

3. Press the locking latch on the ATS panel, pull out the handle, and insert it into the slot.

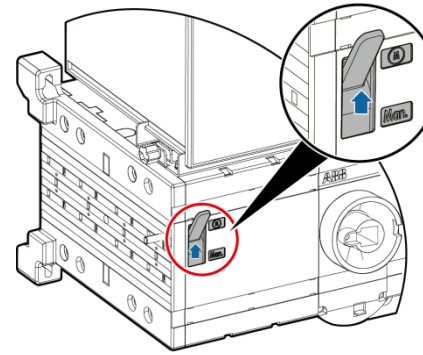
NOTICE

The automatic operation will be disabled after the handle is inserted into the switch panel.



DP23000035

4. Set Motor/Manual selection lever to the Motor (M) position.



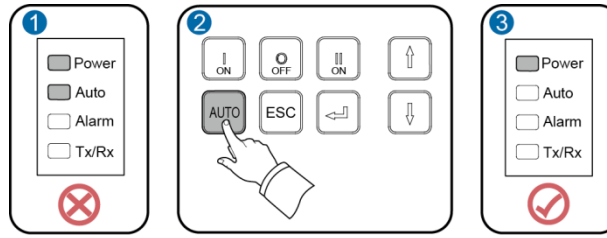
DP23000034

5. Modify configurations of the 8D controller.

NOTICE

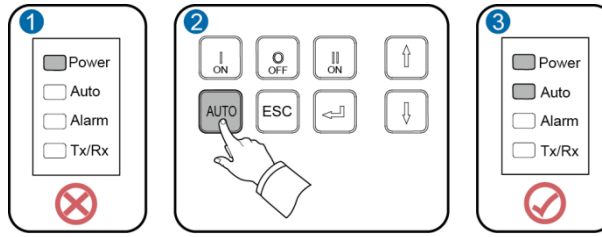
1. You are not allowed to modify the ATS configurations if not authorized by Huawei engineers.
2. When the controller is in button mode, do not simultaneously press and hold down the I, II, and O buttons on the controller panel. Ensure that the interval between two commands is 5s at least. If another command is issued before the previous one is executed, the protection fuse (F1) under the electric operation mechanism may be blown.

a. Check whether the Power LED and Auto LED indicators are on and whether the controller is in button mode. If the Auto LED indicator is off, the controller is in button mode; if the Auto LED is on, press the Auto button once to turn the Auto LED off and the controller enters the button mode.
b. Press Enter and enter the password 0001 to log in to the main menu, then you can modify the configurations in accordance with the user manual delivered with the ATS.



DP23000038

6. Set the 8D controller to Auto mode.
   Check whether the Power LED and Auto LED indicators are on. If the Auto LED indicator is on, the controller is in Auto mode; If the Auto LED is off, press the Auto button once and the controller enters the Auto mode.



DP23000036

NOTE

1. To manually operate the ATS, set the Motor/Manual selection lever to the Manual (Man.) position and insert the handle.
2. For details about the ATS, see the user manual delivered with the ATS.

8 Powering On and Starting the UPS

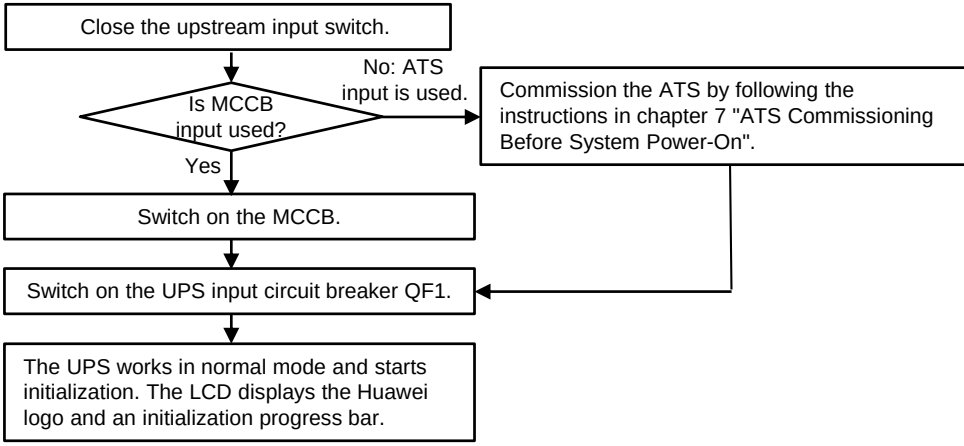
NOTICE

Before power on, ensure that all the items in the *UPS5000 Commissioning and Acceptance Report* have been checked, that there is no foreign matter or dust inside and outside the cabinet, that the cabinets are connected securely, that cables are properly connected, and that all the UPS switches and upstream switch are OFF.

8.1 Powering On the UPS

NOTICE

Measure the voltage and frequency of the UPS input switch and upstream input switch. Voltage range: 80–280 V AC (phase voltage); frequency range: 40–70 Hz.



8.2 Starting the Inverter

NOTICE

- **Single/Parallel**, **Output frequency**, **Battery capacity**, and **Number of cells** must be correctly set. Otherwise, the UPS running will be affected.
- **Output voltage level** refers to the line voltage.

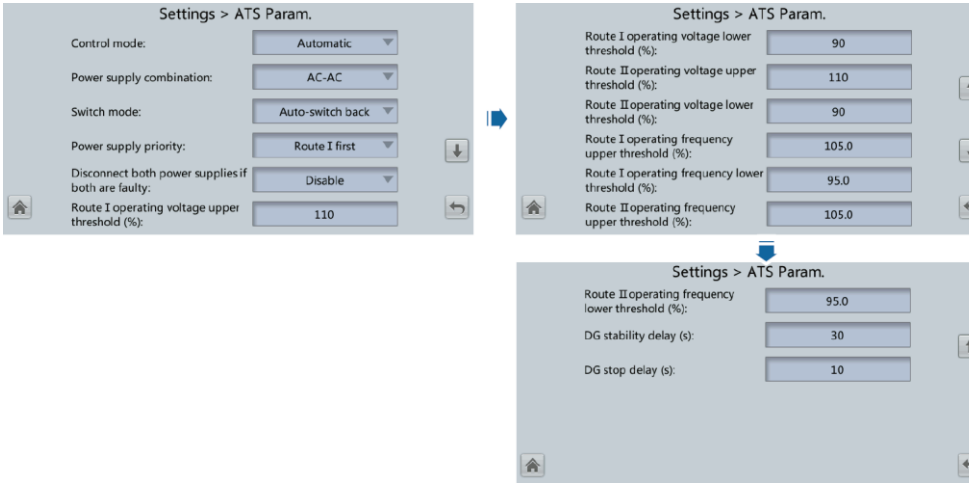
Initial Startup

a) If this is the initial startup, set the language, time, date, network parameters, and system parameters on the **Settings Wizard** screen.

Battery Specifications	Number of Batteries Connected in Series	Number of Battery Strings Connected in Parallel to the UPS	Number of Cells	Battery Capacity
100 Ah/12 V	32	2	32 x 6 = 192	100 Ah + 100 Ah = 200 Ah
100 Ah/2 V	192	2	192 x 1 = 192	100 Ah + 100 Ah = 200 Ah
100 Ah/12 V	40	3	40 x 6 = 240	100 Ah + 100 Ah + 100 Ah = 300 Ah
100 Ah/2 V	240	4	240 x 1 = 240	100 Ah + 100 Ah + 100 Ah + 100 Ah = 400 Ah

- **Number of cells** indicates the number of 2 V DC batteries in a battery string connected to the UPS.
- If multiple UPSs share battery strings, the battery capacity of each UPS is the total capacity of the battery strings.

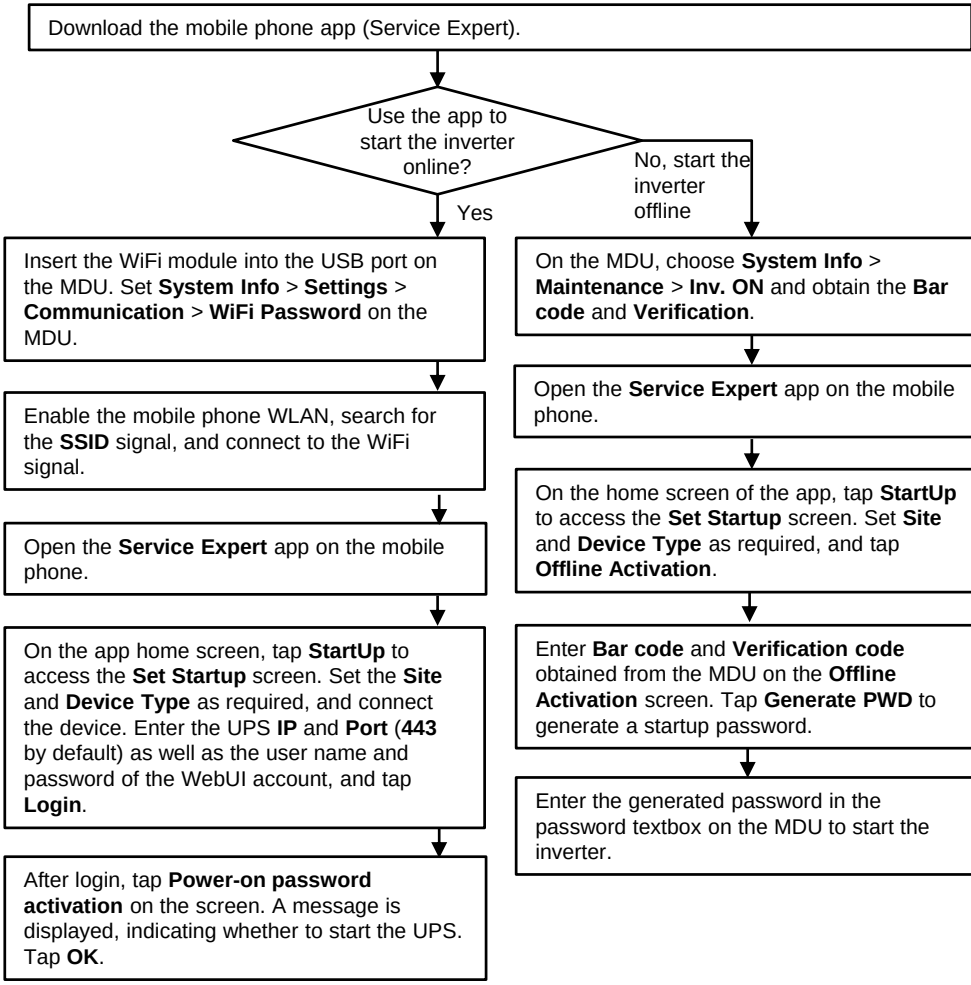
b) (02311FTC-004 and 02311FTE-004 cabinets) Set ATS parameters.



c) After you perform the settings, the **Bypass mode** and **No battery** alarms are reported by the MDU and do not need to be cleared. If there is any other alarm, you need to rectify the fault.
d) On the monitoring screen, tap the **UPS** icon to verify that the UPS is working in bypass mode.
e) Start the inverter on the app.

NOTE

- The **Service Expert** app can be downloaded from Huawei app store and can run on Android.
- The port number is **443** by default and can be modified. If the UPS is managed using the app, the port number must be set to **443**.



Non-initial Startup

a) On the main menu, choose **Common Functions** and tap **Inv. ON**.

b) In the displayed login window, enter the user name and password, and tap  .

c) In the displayed dialog box, tap **Yes** to start the inverter.

NOTE

To ensure system security, change the LCD and WebUI passwords after the first login.

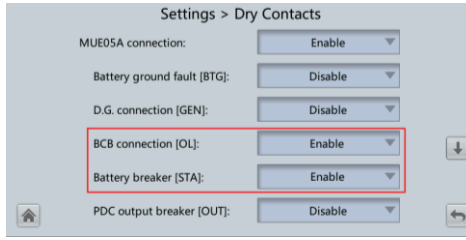
System User	LCD Preset Password	WebUI Preset Password
admin (system administrator)	000001	Changeme
operator (common user)	000001	Changeme

8.3 Powering On Loads

1. Check that the UPS has transferred to normal mode and that the **Bypass mode** alarm has disappeared. Use a multimeter to check that the valid three-phase output voltage is 220 V AC, 230 V AC, or 240 V AC and the frequency is 50 Hz or 60 Hz.
2. Check that the settings of battery capacity and number of cells on the Basic Param. screen are consistent with the actual configuration. Check that the battery strings are connected properly. (Use a multimeter to check the voltages of the positive and negative battery strings and verify that the sum of the absolute voltages of the positive and negative battery strings is greater than 1.6 x Number of cells.)
3. Close the battery string circuit breaker. (If there are multiple battery strings, close the circuit breaker for each battery string and then the general circuit breaker between battery strings and the UPS.) The No battery alarm disappears.
4. Turn on the UPS output circuit breaker QF3.
5. Close the UPS downstream output switch to supply power to the loads.

8.4 (Optional) Setting Parameters for the BCB Box

1. (Optional) If a BCB box is configured, choose **Settings** > **Dry Contacts**, set **MUE05A connection** to **Enable**, and then set **BCB connection [OL]** and **Battery breaker [STA]** to **Enable**.



9 Shutting Down the UPS

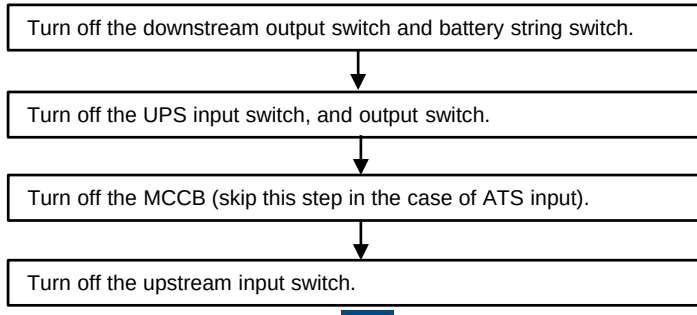
NOTICE

After you shut down the inverter, the UPS transfers to bypass mode if the bypass is normal; the UPS supplies no power if the bypass is abnormal. Before shutting down the UPS, ensure that all loads have been shut down.

9.1 Shutting Down the Inverter to Transfer the UPS to Bypass Mode

1. On the main menu of the LCD, choose **Common Functions** and tap **Inv. OFF**.
2. In the displayed dialog box, tap **Yes** to shut down the inverter.

9.2 Powering Off a Single UPS



10 Common Alarms and Troubleshooting Measures

Alarm	Possible Cause	Troubleshooting Measures
Mains ph. reversed	The mains input phase sequence is reversed.	Verify that the mains input phase sequence is correct using a phase sequence meter.
Bypass ph. reversed	The bypass input phase sequence is reversed.	Verify that the bypass input phase sequence is correct using a phase sequence meter.
Not ready	The ready switch is OFF.	Close the ready switch  on the bypass module or power module.
	The ECM ejector lever is not fastened.	1. Fasten the ECM ejector lever. 2. If the fault persists, replace the ECM.
Battery overvoltage	There is a battery with the lowest voltage in the battery string.	Check whether battery strings are deteriorating.
Battery undervoltage	• The UPS has worked in battery mode for a long time. • The charger is faulty.	1. Check whether the battery voltage is normal. 2. Check whether the output is overloaded. 3. Check whether any battery is damaged. If yes, replace the battery. 4. Check whether a charger alarm is triggered. If a charger is faulty, replace the related faulty power module.
Mains voltage abnormal	The mains voltage exceeds the upper threshold or is below the lower threshold, or the frequency is abnormal.	Check the mains input voltage and frequency.
Abnormal bypass voltage	The bypass voltage or frequency is abnormal.	• Check the bypass input voltage, frequency, and cable connections. • Check whether the output voltage level and upper and lower thresholds of the bypass voltage are properly set on the LCD. Check whether the rated frequency and frequency range are properly set.
EPO	Emergency power-off is performed.	Check the EPO button status. If this is caused by mistake, restore the button and perform **Clear Fault** on the LCD.

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