

USER MANUAL

PowerValue 11/31/33T G2

10–20kVA





About this manual



Document information

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Safety symbols and warnings

The following symbols are used in this manual. The list below explains each symbol

	This symbol in conjunction with the signal word "DANGER" indicates an imminent electrical hazard. Failure to observe the related safety note may cause injury, death or equipment damage.
	This symbol in conjunction with the signal word "WARNING" indicates a potentially dangerous situation. Failure to observe may cause injury, death or equipment damage.
	This symbol in conjunction with the signal word "NOTE" indicates operator tips or particularly useful or important information for the use of the product. This symbol and wording does not indicate a dangerous situation.
	This symbol indicates that reading the instruction manual/booklet before starting work or before operating equipment or machinery is compulsory.
	Recycle.
	Do not dispose of with ordinary trash.

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1. Important safety instructions



READ THIS IMPORTANT SAFETY INSTRUCTIONS CHAPTER BEFORE READING THE OPERATING MANUAL

1.1 Operator precautions

Always follow the precautions and instructions described in this manual. Any deviations from the instructions may result in electric shock or cause accidental load loss.

This manual only contains the installation and operation instructions for users.

All service and maintenance work must be performed only by service personnel qualified and authorized by ABB. Refer to the service manual (separate document).

ABB DOES NOT ACCEPT ANY RESPONSIBILITY FOR DAMAGE CAUSED BY INCORRECT USE OF THE UPS SYSTEM.



DANGER

DO NOT REMOVE ANY SCREWS FROM THE UPS SYSTEM OR FROM THE BATTERY CABINET: DANGER OF ELECTRICAL SHOCK.



DANGER

HIGH FAULT CURRENTS (LEAKAGE CURRENTS). BEFORE CONNECTING TO THE MAINS, ENSURE THAT THE UPS IS EARTHED!



DANGER

DISPLAY A WARNING LABEL ON ALL PRIMARY POWER ISOLATORS INSTALLED AWAY FROM THE UPS AREA TO WARN ELECTRICAL MAINTENANCE PERSONNEL THAT THE CIRCUIT FEEDS A UPS.

MAKE SURE THE WARNING LABEL CONTAINS THE FOLLOWING TEXT OR EQUIVALENT: "ISOLATE THE UPS (UNINTERRUPTIBLE POWER SUPPLY) BEFORE WORKING ON THIS CIRCUIT."

1.2 Environmental considerations

To operate the UPS with optimal efficiency, your installation site should meet the environmental parameters outlined in this user manual.

Excessive amounts of dust or moisture in the operating environment may cause damage or lead to malfunction. The UPS should always be protected from extreme weather conditions. The operating environment must meet the weight, airflow, size and clearance requirements specified in the technical datasheet.

Under no circumstances should the UPS be installed in an airtight room, in the presence of flammable gases, or in an environment exceeding the environmental requirements specified below. An ambient temperature of +20 °C to +25 °C is recommended for a long life for the UPS and

batteries. The cooling air entering the UPS must not exceed +40 °C, and the humidity should be below 95% (non-condensing). When the UPS operating temperature is between +40 °C~+50 °C, the output power and charging current need to be derated to 50%.

The protective class of UPS is protective class I. The ambient operating temperature range of UPS is 0~50 °C. The protective class of External Battery Modular is protective class I. The ambient operating temperature range of External Battery Modular is 0~40 °C.

1.2.1 UPS disposal and recycling

1.2.1.1 For professional users in the European Union



THE CROSSED-OUT WHEELED BIN SYMBOL ON THE PRODUCT(S) AND/OR ACCOMPANYING DOCUMENTS MEANS THAT USED ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) SHOULD NOT BE MIXED WITH GENERAL HOUSEHOLD WASTE.

IF YOU WISH TO DISCARD ELECTRICAL AND ELECTRONIC EQUIPMENT (EEE), PLEASE CONTACT YOUR DEALER OR SUPPLIER FOR FURTHER INFORMATION.

DISPOSING OF THIS PRODUCT CORRECTLY WILL HELP SAVE VALUABLE RESOURCES AND PREVENT ANY POTENTIAL NEGATIVE EFFECTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT COULD OTHERWISE ARISE FROM INAPPROPRIATE WASTE HANDLING.

1.2.1.2 For disposal in countries outside the European Union



THE CROSSED-OUT WHEELED BIN SYMBOL IS ONLY VALID IN THE EUROPEAN UNION (EU) AND MEANS THAT USED ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) SHOULD NOT BE MIXED WITH GENERAL HOUSEHOLD WASTE.

IF YOU WISH TO DISCARD THIS PRODUCT, PLEASE CONTACT YOUR LOCAL AUTHORITIES OR DEALER AND ASK FOR THE CORRECT METHOD OF DISPOSAL.

DISPOSING OF THIS PRODUCT CORRECTLY WILL HELP SAVE VALUABLE RESOURCES AND PREVENT ANY POTENTIAL NEGATIVE EFFECTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT COULD OTHERWISE ARISE FROM INAPPROPRIATE WASTE HANDLING.

1.3 Declaration of safety, conformity and CE marking

The **PowerValue 11/31/33T G2 10–20kVA** is designed, manufactured and commercialized in accordance with the **EN ISO 9001** standard related to quality management systems.

These products conform with the following directives:

- 2014/35/EU Low voltage directive
- 2014/30/EU Electromagnetic Compatibility directive (EMC)
- 2011/65/EU Restriction of the use of certain hazardous substances (RoHS) directive



WARNING

THIS IS A CATEGORY C3 UPS PRODUCT FOR COMMERCIAL AND INDUSTRIAL APPLICATION IN THE SECOND ENVIRONMENT—INSTALLATION RESTRICTIONS OR ADDITIONAL MEASURES MAY BE NEEDED TO PREVENT DISTURBANCES.

These products also meet the following product standards:

Table 1: Standards

Product Standards	
low-frequency signal	IEC61000-2-2
ESD	IEC 61000-4-2 Level 3
RS	IEC 61000-4-3 Level 3
EFT	IEC 61000-4-4 Level 4
Surge	IEC 61000-4-5 IEC 61000-4-5 Level 3 (Line-Line) Level 4 (Line-Earth)
CS	IEC 61000-4-6 Level 3
Power Frequency magnetic field immunity	IEC 61000-4-8 Level 4
Conducted	IEC 62040-2 Category C3
Radiated	IEC 62040-2 Category C3
Performance classification	IEC 62040-3
safety	IEC 62040-1
Transportation	ISTA 3B

1.4 Inquiries

Inquiries regarding the UPS should be addressed to the local ABB office or an agent authorized by ABB. Note the type code and the serial number of the equipment before

contacting ABB or an authorized agent. The serial number is shown on the nameplate of the product. For further information about troubleshooting, see Chapter 6.

1.5 Operation

	DO NOT DISCONNECT THE MAINS CABLE FROM THE UPS OR THE BUILDING WIRING SOCKET DURING OPERATION, AS THIS REMOVES THE GROUND FROM THE UPS AND ALL CONNECTED LOADS.		INDISCRIMINATE OPERATION OF SWITCHES MAY CAUSE OUTPUT LOAD LOSS OR DAMAGE TO EQUIPMENT.
	PRESS THE OFF BUTTON TO FULLY DISCONNECT THE UPS. ENSURE THE UPS IS ON BYPASS OR ON STANDBY MODE BEFORE DISCONNECTING IT FROM THE MAINS.		NEVER DISPOSE OF BATTERIES IN A FIRE, AS THEY MAY EXPLODE.
	TO REDUCE THE RISK OF FIRE, CONNECT THE UPS TO A CIRCUIT PROVIDED WITH BRANCH CIRCUIT OVERCURRENT PROTECTION WITH AN AMPERE RATING IN ACCORDANCE WITH THE IEC/EN 60934 STANDARD OR YOUR LOCAL ELECTRICAL CODE.		DO NOT OPEN OR DAMAGE THE BATTERIES.
	SEE TECHNICAL SPECIFICATIONS FOR RECOMMENDATIONS.		RELEASED ELECTROLYTE IS HARMFUL TO THE SKIN AND EYES.

1.5.1 Equipment care

For the best preventive maintenance, keep the area around the equipment clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner.

For full battery life, keep the equipment at an ambient temperature of 25 °C (77 °F).



The batteries are rated for a 3–5-year service life. The length of service life varies, depending on the frequency of usage and the ambient temperature. Batteries used beyond the expected service life will often have severely reduced runtimes. Replace batteries at least every 4 years to keep units running at peak efficiency.

1.5.2 Transporting the UPS



PLEASE TRANSPORT THE UPS ONLY IN THE ORIGINAL PACKAGING. IF THE UPS REQUIRES ANY TYPE OF TRANSPORTATION, VERIFY THAT THE UPS IS DISCONNECTED AND TURNED OFF.

2. General characteristics

2.1 UPS and EBM product information

UPS cabinet	Article number	Unit Size (W x H x D)(mm)	Nett Weights (kg)
UPS PowerValue 11/31T G2 10kVA B	4NWP100117R0021	300*805*726	106
UPS PowerValue 11/31T G2 10kVA B BF	4NWP100117R0023		106
UPS PowerValue 11/31/33T G2 20kVA B	4NWP100118R0021		160
UPS PowerValue 11/31/33T G2 20kVA B BF	4NWP100118R0023		160
UPS PowerValue 11/31T G2 10kVA S	4NWP100117R0022		53
UPS PowerValue 11/31T G2 10kVA S BF	4NWP100117R0024		53
UPS PowerValue 11/31/33T G2 20kVA S	4NWP100118R0022		55
UPS PowerValue 11/31/33T G2 20kVA S BF	4NWP100118R0024		55
EBM cabinet	Article number	Unit Size (W x H x D)(mm)	Nett Weights (kg)
Batt Mod PowerValue 11/31/33T G2 10kVA ⁽¹⁾	4NWP100119R0021	225*589*518	115
Batt case PowerValue 11/31/33T G2 10kVA ^{(1) (3)}	4NWP100119R0022		10
Batt Mod PowerValue 11/31/33T G2 20kVA ⁽²⁾	4NWP100119R0023		115
Batt case PowerValue 11/31/33T G2 20kVA ^{(2) (3)}	4NWP100119R0024		10

(1) For tower 10kVA UPS

(2) For tower 20kVA UPS

(3) EBM Case without Battery



NOTE

UPS "B" MODEL AND "B BF" MODEL WITH BATTERIES, UPS "S" MODEL AND "S BF" MODEL WITHOUT BATTERIES. "BF" MODEL IS A HARDWARE BACKFEED PROTECTION MODEL.

2.2 Optional modular or accessory

If ordering another function modular type or accessories, please contact the distributors/agents.

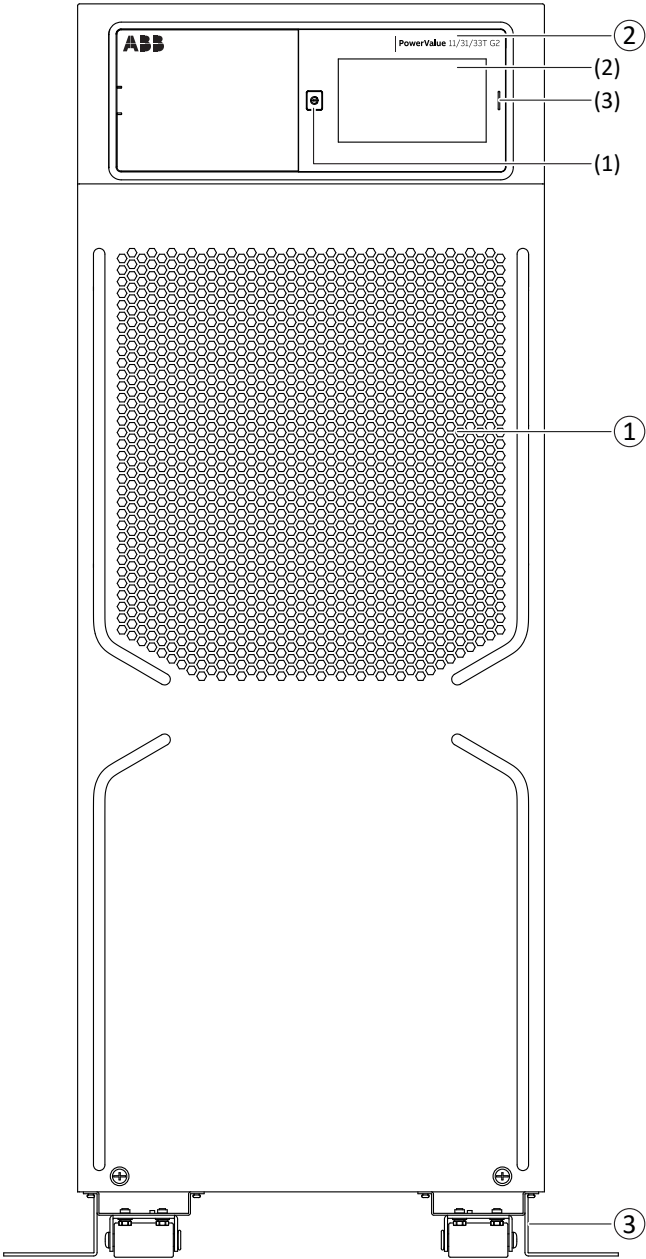
Type	Description	Article number	Remark
Intelligent Card	Dry Contact card (AS400)	4NWP100120R0001	Independent shipment See Chapter 5.3
	Network Management card (NMC)	4NWP100110R0001	
	MODBUS card (CMC)	4NWP104039R0001	
EMP	Temperature and humidity sensors	4NWP104040R0001	
COMM Cable	RS232 CABLE	4NWP100119R0029	Independent shipment For RS232 communication
Battery cable	Battery cable (20 or 40 batteries) for Tower UPS connection with user's own EBM	4NWP100119R0026	Independent shipment 1.8m length, see Chapter 3.3.3
		4NWP100119R0027	Independent shipment 5m length, see Chapter 3.3.3
		4NWP100119R0028	Independent shipment 10m length, see Chapter 3.3.3
Gland kit	Gland kit accessory for UPS hard-wiring installation	4NWP100119R0025	Independent shipment

2.3 UPS front panel and rear panel

2.3.1-1:
UPS front panel

2.3.1 UPS front panel

Figure 2.3.1-1 shows the front panel



2.3.1-1

No	Item
1	Ventilation area
2	LCD Modular, including
(1)	Power button
(2)	Touch screen
(3)	LED indicator
3	Tower foot

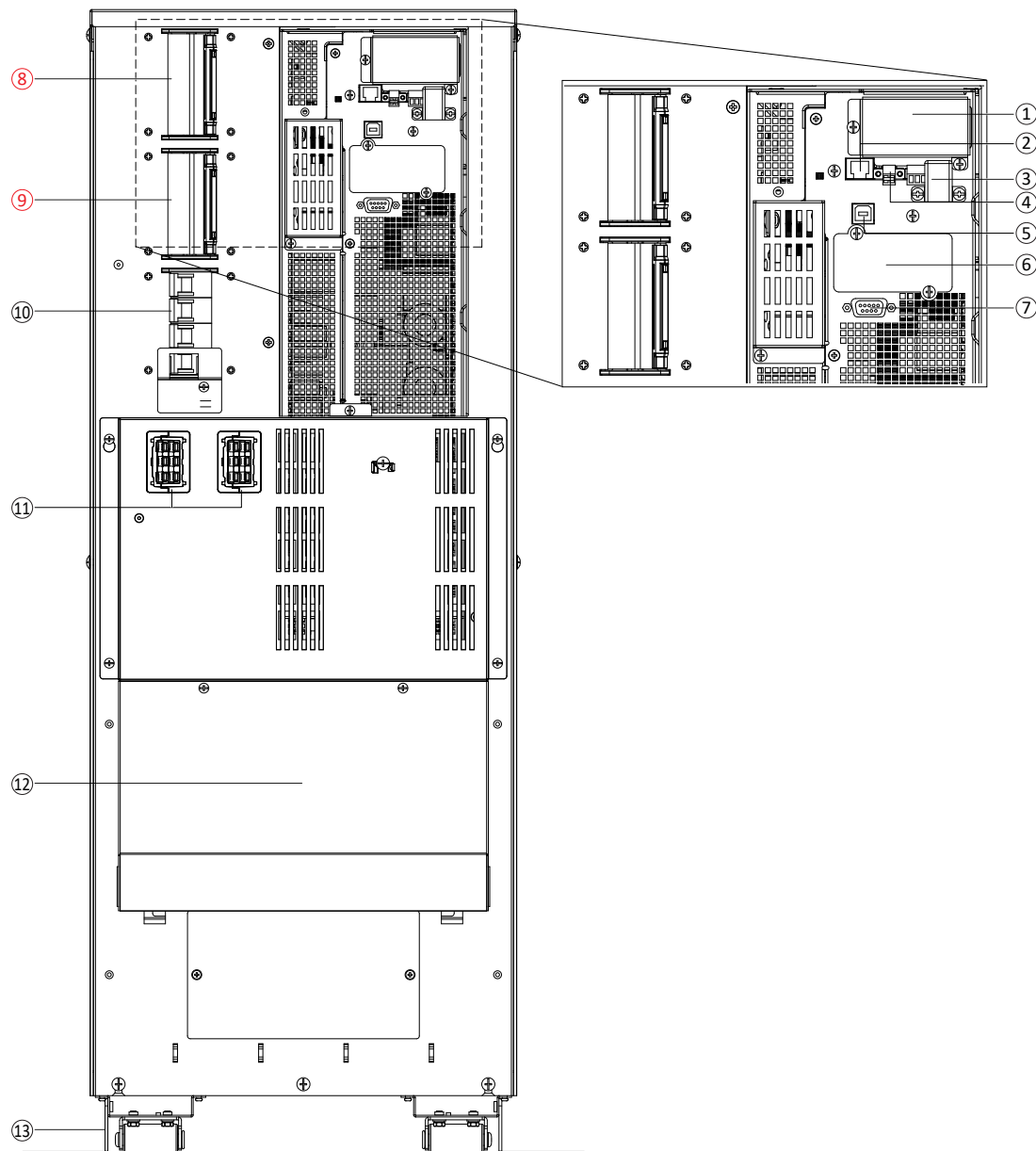
2.3.2-1:
UPS rear panel with BFP

2.3.2 UPS rear panel

The model with BFP function



FOR MAINTENANCE BYPASS SWITCH OPERATION, PLEASE CONTACT YOUR LOCAL SUPPLIER.

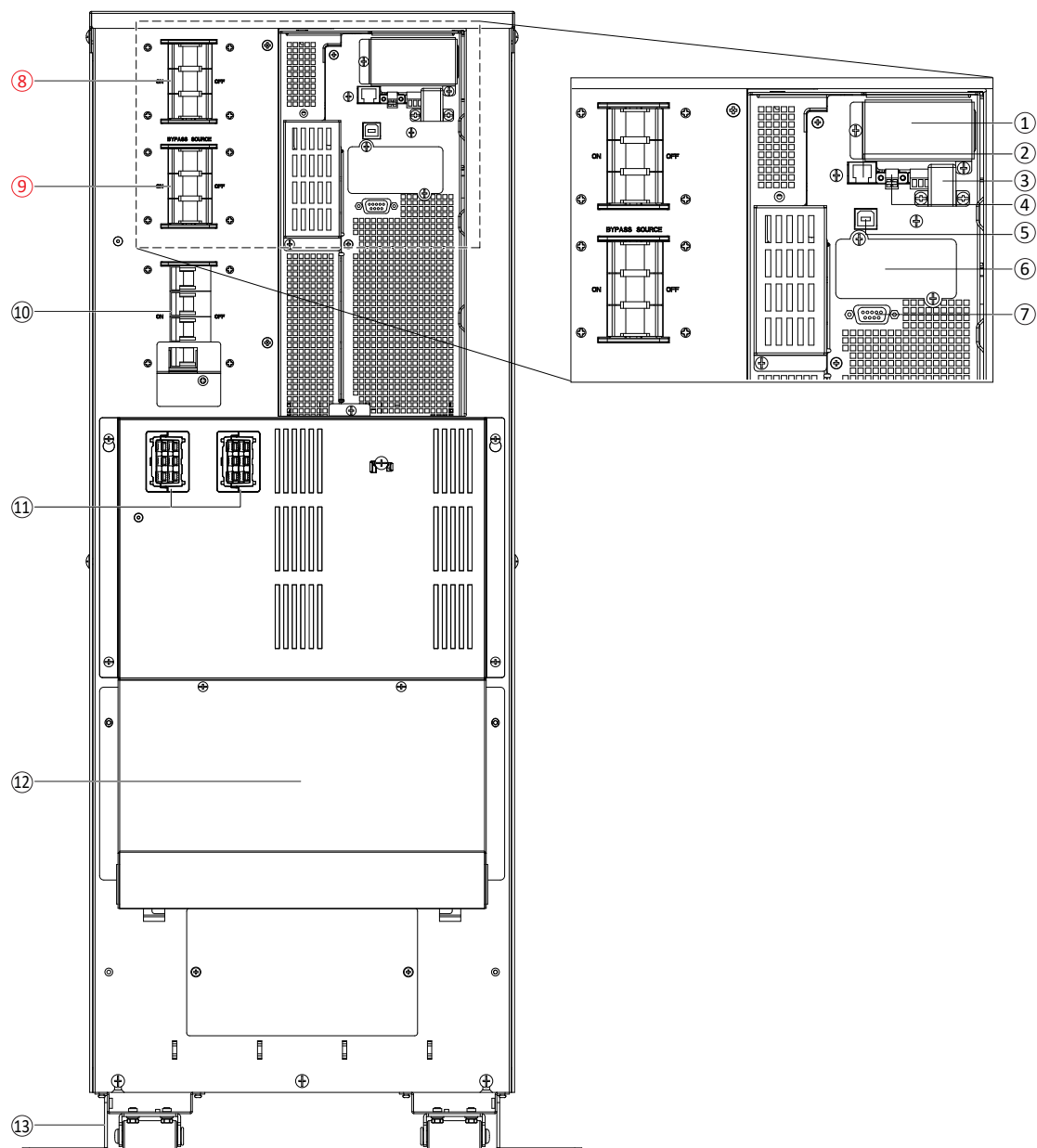


2.3.2-1

No	Item
1	Parallel port
2	RJ45 (for EBM detect)
3	DRY in/out (With anti-electric shock cover)
4	RPO
5	USB
6	Intelligent slot
7	RS232
8	Main input breaker
9	Bypass input breaker
10	Maintenance bypass switch
11	External battery port
12	AC Input/Output port (terminal block)
13	Tower foot

2.3.2-2:
UPS rear panel
without BFP

The model without BFP function



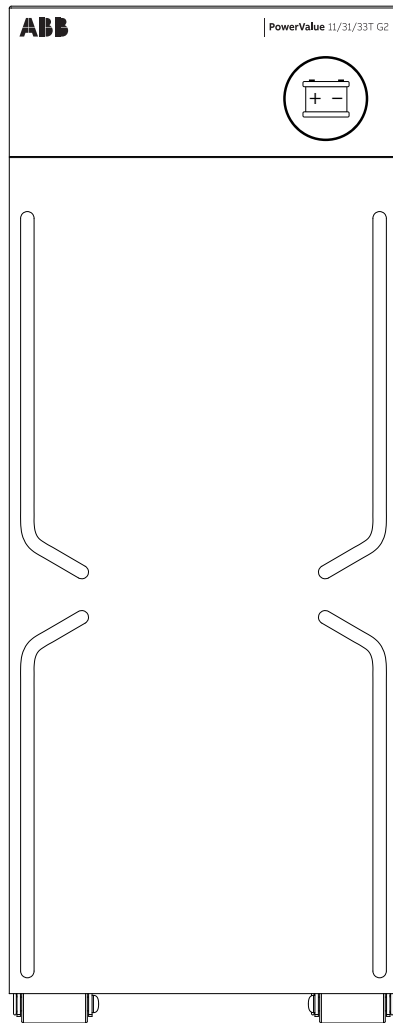
2.3.2-2

No	Item
1	Parallel port
2	RJ45 (for EBM detect)
3	DRY in/out (With anti-electric shock cover)
4	RPO
5	USB
6	Intelligent slot
7	RS232
8	Main input breaker
9	Bypass input breakere
10	Maintenance bypass switch
11	External battery port
12	AC Input/Output port (terminal block)
13	Tower foot

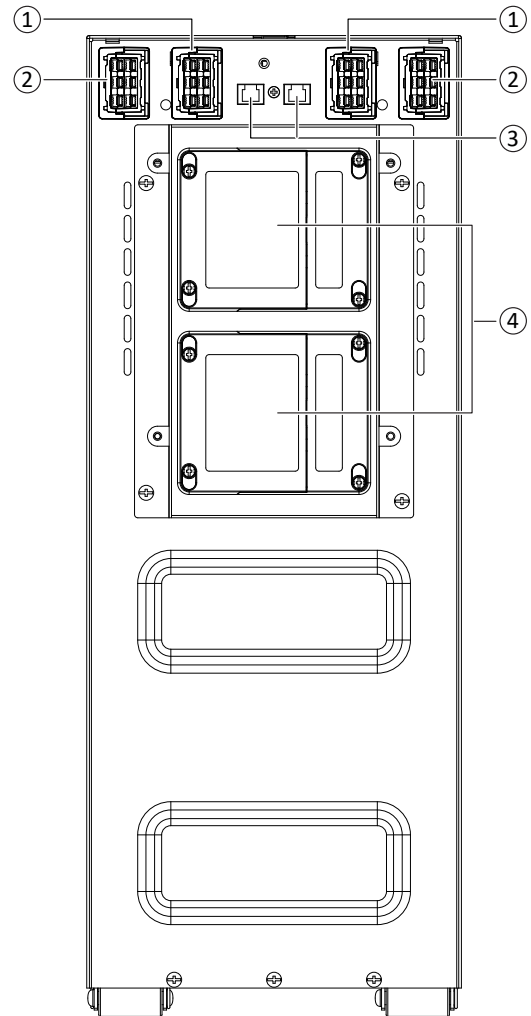
2.4 EBM front panel and rear panel (External Battery Module)

2.4-1:
EBM front panel

2.4-2:
EBM rear panel



2.4-1



2.4-2

No	Item
1	EBM port 1
2	EBM port 2
3	EBM detection (RJ45 port)
4	Fuse board cover (replace EBM fuse)

3. Installation

3.1 Delivery, transportation and storage

3.1.1 Visual inspection

When receiving the goods, make sure that they correspond to the material indicated in the delivery note. Carefully examine the packed unit(s) for any sign of physical damage.

The packing container of the UPS protects it from mechanical and environmental damage. To increase protection, the UPS is wrapped in a plastic sheet. Keep the packaging for later reuse.



IN THE EVENT OF RECOGNIZABLE
DAMAGE: DO NOT CONNECT ANY
VOLTAGE TO THE UNIT/DO NOT START
OPERATING THE UNIT

3.1.2 Unpacking list

Verify that the following additional items are included with the unit.

	Long backup time model	Standard model	Batt Mod PowerValue
	UPS PowerValue 11/31T G2 10kVA S	UPS PowerValue 11/31T G2 10kVA B	11/31/33T G2 10kVA
	UPS PowerValue 11/31T G2 10kVA S BF	UPS PowerValue 11/31T G2 10kVA B BF	Batt case PowerValue 11/31/33T G2 10kVA
	UPS PowerValue 11/31/33T G2 20kVA S	UPS PowerValue 11/31/33T G2 20kVA B	Batt Mod PowerValue 11/31/33T G2 20kVA
	UPS PowerValue 11/31/33T G2 20kVA S BF	UPS PowerValue 11/31/33T G2 20kVA B BF	Batt case PowerValue 11/31/33T G2 20kVA
Battery cable (2PCS.)			√ (Refer to Figure 3.3.3-2)
EBM detection cable (1PC)			√ (Refer to Figure 3.3.3-1)
Copper busbar (3PCS for 10k, 5PCS for 20k)	√ (Refer to Table 4 in Section 3.3.2)	√ (Refer to Table 4 in Section 3.3.2)	
M6*12mm screw for Copper busbar (1PCS)			
USB cable (1PC)			
Parallel cable (1PC)	(Refer to Figure 4.8.2.1-2)	(Refer to Figure 4.8.2.1-2)	
Locker for parallel cable (1PCS)			
Tower foot (4PCS)			
M5*12mm screw for UPS tower foot (8PCS)			
M4*8mm screw for EBM tower foot (4PCS)			

Note: √--- Standard configuration (Shipment with UPS);

3.1.3-1: Step 1

3.1.3-2: Step 2

3.1.3-3: Step 3

3.1.3-4: Step 4

3.1.3-5: Step 5

3.1.3 Unpacking UPS



WARNING

THE SYSTEM SHOULD BE INSTALLED ONLY BY QUALIFIED ELECTRICIANS IN ACCORDANCE WITH APPLICABLE SAFETY REGULATIONS.

THE CABINET IS HEAVY: PLEASE INSTALL IT WITH AT LEAST TWO PEOPLE.



WARNING

UNPACKING THE UNIT IN A LOW-TEMPERATURE ENVIRONMENT MAY CAUSE CONDENSATION IN AND ON THE CABINET. DO NOT INSTALL THE UNIT UNTIL THE INSIDE AND OUTSIDE OF THE UNIT ARE ABSOLUTELY DRY (ELECTRIC SHOCK HAZARD).



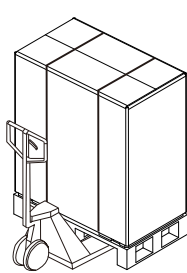
NOTE

IF ANY EQUIPMENT HAS BEEN DAMAGED DURING SHIPMENT, KEEP THE SHIPPING CARTONS AND PACKING MATERIALS FOR THE CARRIER OR PLACE OF PURCHASE AND FILE A CLAIM FOR SHIPPING DAMAGE. IF YOU DISCOVER DAMAGE AFTER ACCEPTANCE, FILE A CLAIM FOR CONCEALED DAMAGE.

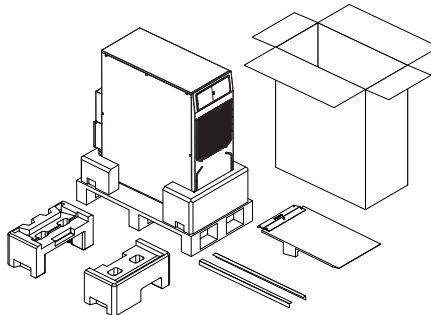
Step 1. Use a forklift to move the product to the installed area. Refer to Figure 3.1.3-1. Please make sure the bearing capacity of the forklift is sufficient.

Step 2. Remove carton and foam as shown in Figure 3.1.3-2

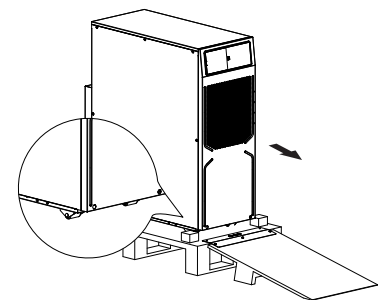
Step 3. Use the ramp to get the UPS off the pallet. Refer to Figure 3.1.3-3.



3.1.3-1



3.1.3-2



3.1.3-3

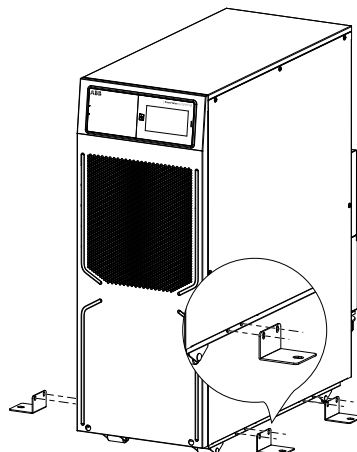
Step 4. Place the unit on a flat surface in its final location and install "Tower foot" for stability.

Step 5. Install the unit in the ground: place 4pcs bolts (M8 is recommended) in the final location beforehand. For the bolt's position, please see below, then fix the unit to the bolts (optional). In a vibrating environment, ensure that the UPS is fixed to the ground with "Tower foot." Please purchase the recommended bolts locally.

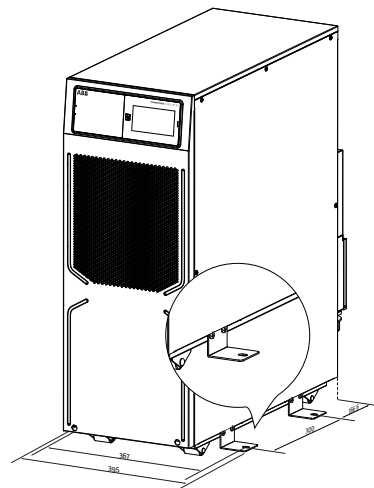


NOTE

IF YOU NEED TO FIX THE UPS ON A LEVEL SURFACE, PLEASE PURCHASE THE RECOMMENDED BOLTS LOCALLY.



3.1.3-4



3.1.3-5

3.1.4-1: Step 1

3.1.4-2: Step 2

3.1.4-3: Step 3

3.1.4-4: Step 4

3.1.4-5: Step 5

3.1.4-6: Step 6

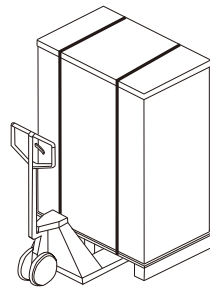
3.1.4 Unpacking External Battery Modular Cabinet



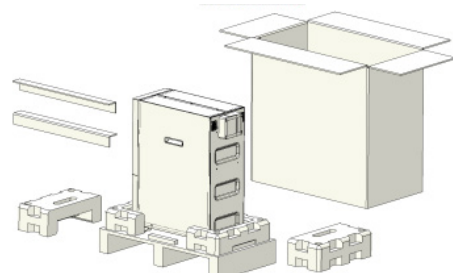
"BATT MOD" IS DELIVERED WITH CONNECTED BATTERY BLOCKS. INSTALLATION MUST BE DONE BY QUALIFIED PERSONNEL.
THE CABINET IS HEAVY. INSTALL IT WITH AT LEAST TWO PEOPLE.

Step 1. Use a forklift to move the product to the installed area. Refer to Figure 3.1.4-1. Please make sure the bearing capacity of the forklift is sufficient.

Step 2. Remove carton and foam as shown in Figure 3.1.4-2.



3.1.4-1



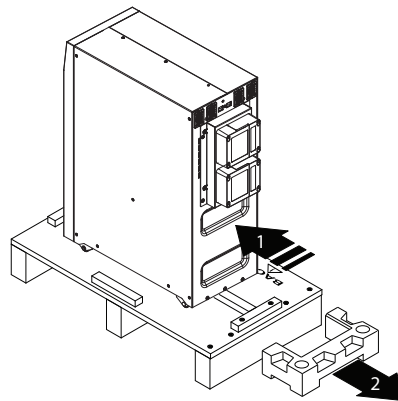
3.1.4-2

Step 3. Move the EBM forward to reach the small wooden board as shown in Figure 3.1.4-3.

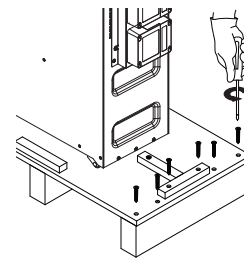
Step 4. Remove the last row of screws with a Phillips screwdriver as shown in Figure 3.1.4-4.

Step 5. Use a Phillips screwdriver to remove the screws on the T-shaped wooden board as shown in Figure 3.1.4-5.

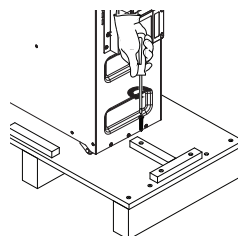
Step 6. Remove the T-shaped plank as shown in Figure 3.1.4-6.



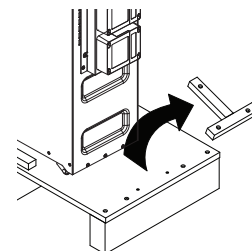
3.1.4-3



3.1.4-4



3.1.4-5



3.1.4-6



BEFORE REMOVING THE WOODEN BASE, ENSURE THE STABILITY OF THE EBM ON THE PALLET.

3.1.4-7: Step 7

3.1.4-8: EBM right view

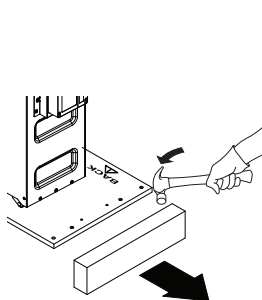
3.1.4-9: Step 8

3.1.4-10: Step 9

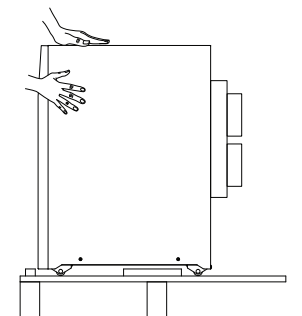
3.1.4-11: Step 10

Step 7. Use a claw hammer to remove the wooden base as shown in Figure 3.1.4-7. The side view of the EBM on the pallet is shown in Figure 3.1.4-8.

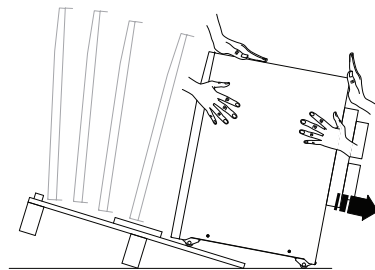
Step 8. Slowly remove the EBM as shown in Figure 3.1.4-9.



3.1.4-7



3.1.4-8



3.1.4-9

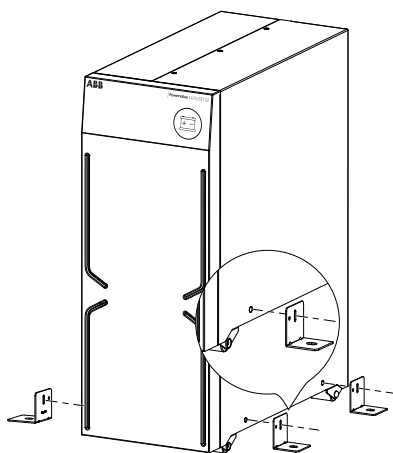
Step 9. Place the unit on a flat surface in its final location and install "Tower foot" for stability.

Step 10. Install unit in the ground (optional): Place 4pcs bolts (M8 is recommended) in the final location beforehand. For bolt's position please refer to below, then fix the unit to the bolts (optional). In a vibrating environment, ensure that the EBM is fixed to the ground with "Tower foot". Please purchase the recommended bolts locally.

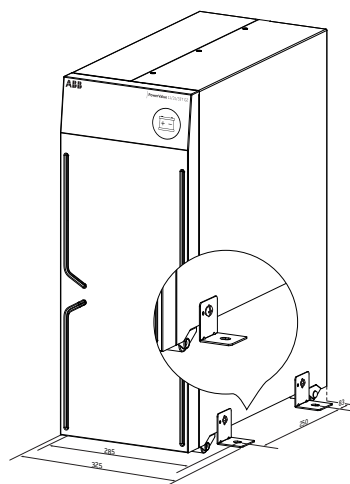


NOTE

IF YOU NEED TO FIX THE EBM ON A LEVEL SURFACE, PLEASE PURCHASE THE RECOMMENDED BOLTS LOCALLY.



3.1.4-10



3.1.4-11

3.1.5 Storage of UPS

If the system must be stored prior to installation, storage must be in a dry place. The admissible storage temperature range is -25 °C to +55 °C without a battery (-15 °C to +40 °C with a battery).

Before storing, charge the UPS for 24 hours. During storage, recharge the battery in accordance with the following table:

Storage temperature	Recharge frequency	Charging duration
-15 °C–40 °C	Every 6 months	48 hours

3.2 Site planning and positioning



MAKE SURE THE MAINS SUPPLY AND THE TOTAL LOAD DEMAND ARE WITHIN UPS SPECIFICATIONS

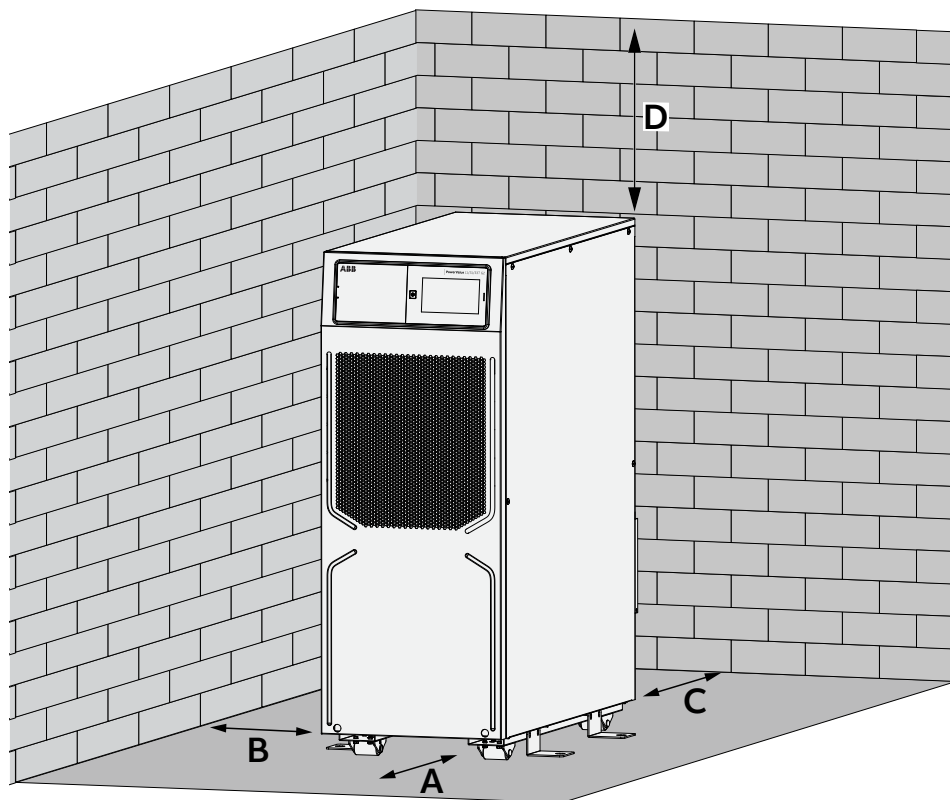


UPS DEVICE SHOULD BE PLACED IN AN ACCESS-RESTRICTED LOCATION/ROOM TO IMPROVE PRODUCT SAFETY AND RELIABILITY

To ensure a long service life, install the unit in a position where any danger to the UPS is minimized:

- Install the UPS indoors.
- To keep air flowing freely, it is recommended to keep a clearance with a 500mm space for both the front and rear. The recommended spacing for the UPS installation is as follows:

Clearances	10kVA B/10kVA S	20kVA B/20kVA S
Minimum clearances for single UPS		
A	500mm	500mm
B	0	0
C	500mm	500mm
D	50mm	50mm
Minimum clearances for UPS plus other cabinets in row		
A	500mm	500mm
B	0	0
C	500mm	500mm
D	50mm	50mm



3.3 Power cables connection

This chapter introduces how to wire the AC IN/OUT cable to UPS in different modes, and how to connect the UPS with EBM.

3.3.1-1:
Single-phase input
system without
BFP model

3.3.1-2:
Three-phase input
system without
BFP model

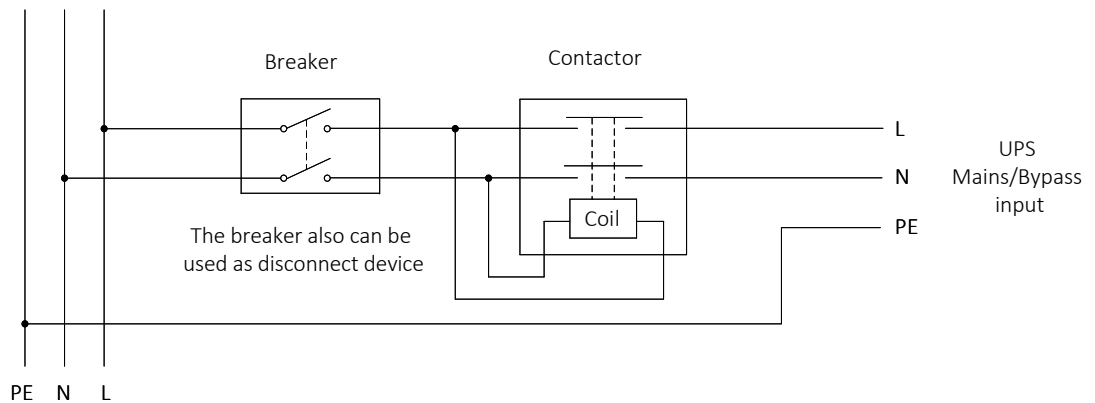
3.3.1 Input/Output wiring specification



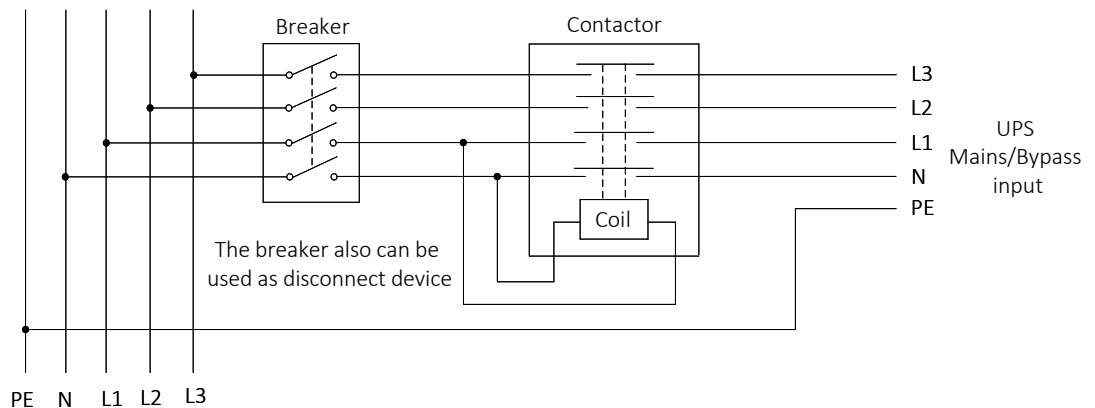
BEFORE WIRING THE UPS, THE UPSTREAM BREAKER AND BACKFEED CONTACTOR SHOULD BE CONFIGURED TO AVOID POWER BACKFEED TO THE INPUT TERMINAL BLOCK, AND THE "BACKFEED VOLTAGE DANGER" WARNING LABEL SHOULD BE ADDED TO THE BACKFEED CONTACTOR OR DEVICE.

BEFORE OPERATING, THE UPS INPUT SHOULD BE CUT OFF, AND ALL TERMINALS' VOLTAGE SHOULD BE CHECKED TO AVOID VOLTAGE HAZARDS. THE BACKFEED CONTACTOR RATING CURRENT SHOULD BE LARGER THAN THE UPS RATING INPUT CURRENT.

The figures below show the wiring system of the UPS input (without BFP model).



3.3.1-1



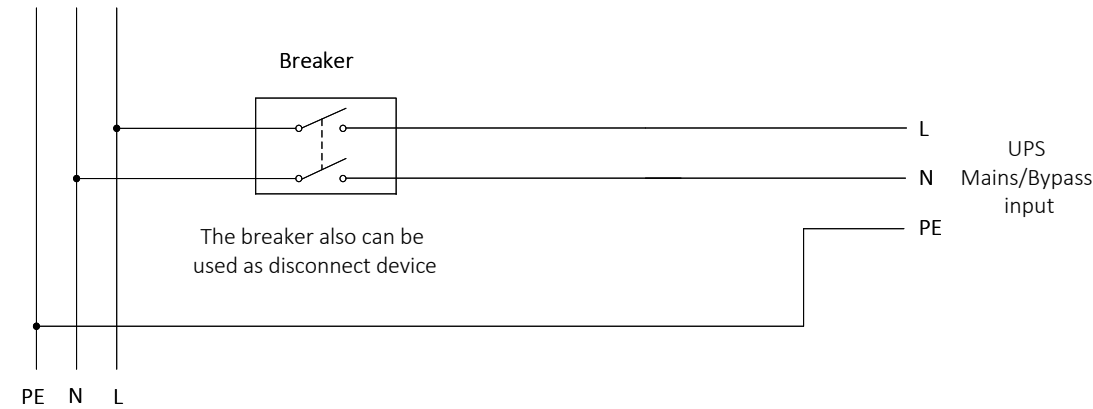
3.3.1-2

3.3.1-3:
Single-phase input
system with BFP model

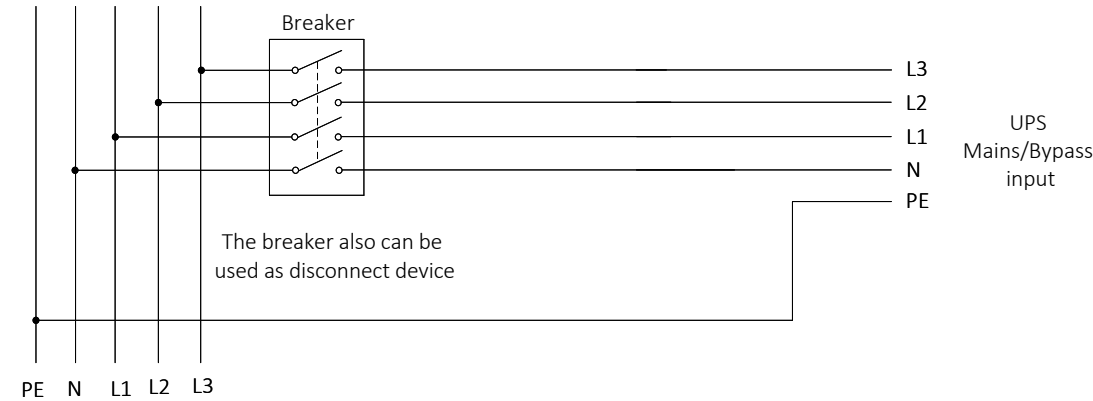
3.3.1-4:
Three-phase input
system with BFP model

3.3.1-5:
Wiring diagram

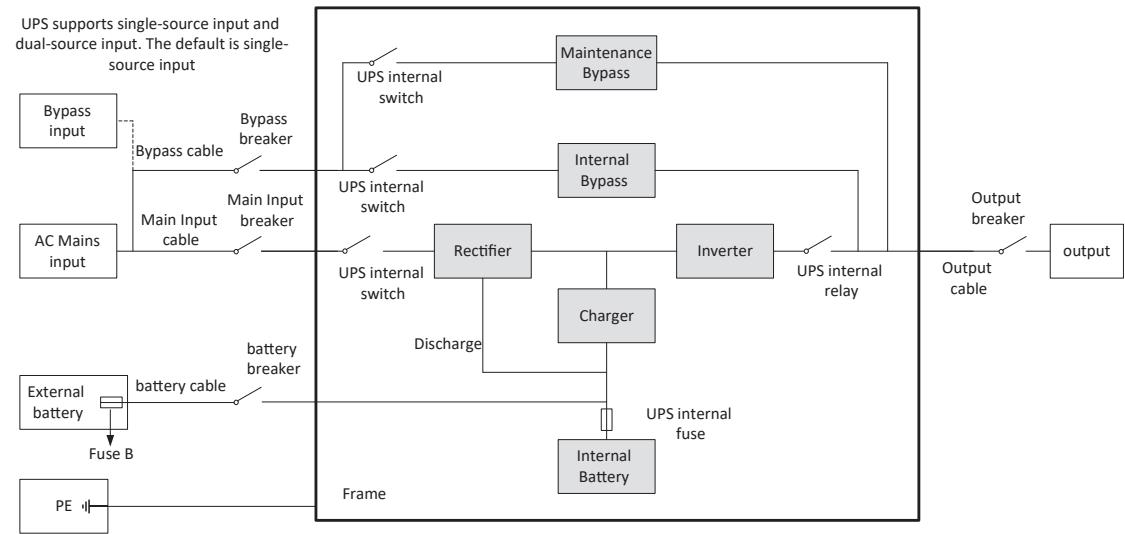
The figures below show the wiring system of the UPS input (with BFP).



3.3.1-3



3.3.1-4



3.3.1-5



THE RATED CURRENT OF THE UTILITY POWER SWITCH MUST BE GREATER THAN THE UPS INPUT CURRENT, OTHERWISE THE UTILITY POWER SWITCH MAY GET DAMAGED OR BURN OUT

Recommended circuit breaker and contactor current specifications:

Table 2: Specifications of protective devices

RATINGS	10kVA	20kVA
SINGLE INPUT FEED		
1-phase main input breaker	80A	160A
3-phase main input breaker	32A	63A
1-phase bypass input breaker	63A	125A
3-phase bypass input breaker	/	63A
1-phase main input Contactor(1)	≥80A	≥160A
3-phase main input Contactor(1)	≥32A	≥63A
1-phase bypass input Contactor(1)	≥63A	≥125A
3-phase bypass input Contactor(1)	/	≥63A
1-phase output	63A	125A
3-phase output	/	63A
battery breaker	80A	80A
Fuse B rating	100A	100A



(1) NOT REQUIRED FOR BFP MODELS



READ THE SAFETY INSTRUCTIONS REGARDING BACKFEED PROTECTION REQUIREMENTS.

FOR THE SPECIFICATIONS OF PARALLEL POWER CABLES, REFER TO TABLE 5 AND TABLE 6 IN SECTION 4.8.1.1.

Recommended cable minimum cross-sectional area (unit: mm²)

Table 3: Cable specifications for single UPS

UPS power rating	Input/Output Mode	Input					Output			Battery	
		Main input		Bypass input		Ground wire	Output		Ground wire	+/N/- wire	Ground wire
		L wire	N wire	L wire	N wire		L wire	N wire			
10,000VA	3-1	4	4	10	10	10	10	10	10	10	10
	1-1	16	16	10	10	16	10	10	10	10	10
	3-3	10	10	10	10	10	10	10	10	10	10
20,000VA	3-1	10	10	25	25	25	25	25	25	10	10
	1-1	50	50	25	25	50	25	25	25	10	10

PLEASE SELECT THE LARGER CROSS-SECTION CONDUCTOR FOR THE UPS INPUT CABLE IN THE SINGLE-SOURCE APPLICATION.



IT IS RECOMMENDED THAT THE UPS OUTPUT CABLE LENGTH DOES NOT EXCEED 10M. IN THE THREE-PHASE OUTPUT MODE, THE THREE-PHASE LOAD MUST BE BALANCED. THE SELECTIONS FOR THE COLOR OF WIRES SHOULD BE IN ACCORDANCE WITH LOCAL ELECTRICAL LAWS AND REGULATIONS.

3.3.2 Wiring for AC cable (AC source to UPS)



WARNING

HIGH LEAKAGE CURRENT: EARTH CONNECTION ESSENTIAL BEFORE CONNECTING SUPPLY.



WARNING

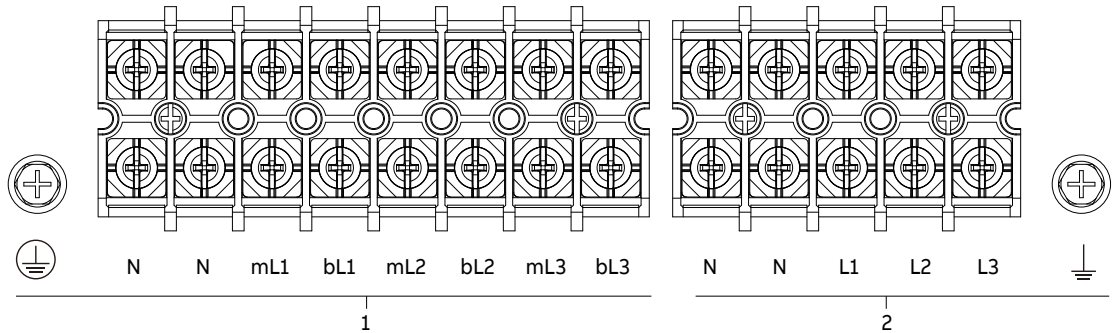
THIS TYPE OF CONNECTION MUST BE CARRIED OUT BY QUALIFIED ELECTRICAL PERSONNEL. BEFORE CARRYING OUT ANY CONNECTION, CHECK THAT THE UPSTREAM PROTECTION DEVICES (NORMAL AC SOURCE AND BYPASS AC SOURCE) ARE OPEN "O" (OFF). ALWAYS CONNECT THE GROUND WIRE FIRST.

Remove the cover of the terminal block. Layout of AC input/output as below:



NOTE

THE RECOMMENDED TERMINAL BLOCK TIGHTENING TORQUE IS 25KGF/CM².



3.3.2-1

1. UPS input: PE/N/N/mL1/bL1/mL2/bL2/mL3/bL3 ("m" is mains input, "b" is bypass input)
2. UPS output: N/N/L1/L2/L3/PE

10kVA model: The UPS provides busbars (as below) for 4 modes of wiring application. The default is 3-1 mode (single-source). The busbars of 1# (2PCS), 3# (1PCS), 4# (1PCS) are installed on the UPS, and the busbars of 5# (1PCS), 6# (1PCS), 7# (1PCS) are accessories.

20kVA model: The UPS provides busbars (as below) for 6 modes of wiring application. The default is 3-3 mode (single-source). The busbars of 1# (5PCS) are installed on the UPS, and the busbars of 3# (1PCS), 4# (1PCS), 5# (1PCS), 6# (1PCS), 7# (1PCS) are accessories.

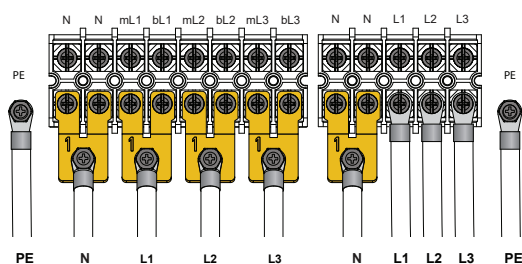
Table 4: Specification of busbars

UPS power rating	Input/Output mode	Busbars					
		Item# and Figure					
		1#	3#	4#	5#	6#	7#
10kVA	3-1 Single-source	2PCS	1PC	1PC	/	/	/
	3-1 Dual-source	2PCS	1PC	/	1PC	/	/
	1-1 Single-source	2PCS	1PC	/		1PC	/
	1-1 Dual-source	2PCS	1PC	/	1PC	/	1PC
20kVA	3-3 Single-source	5PCS	/	/	/	/	/
	3-3 Dual-source	2PCS	/	/	/	/	/
	3-1 Single-source	2PCS	1PC	1PC	/	/	/
	3-1 Dual-source	2PCS	1PC	/	1PC	/	/
	1-1 Single-source	2PCS	1PC	/		1PC	/
	1-1 Dual-source	2PCS	1PC	/	1PC	/	1PC



10kVA UPS DOES NOT SUPPORT 3-3 MODE

• Mode 3-3 (single-source) for 20kVA



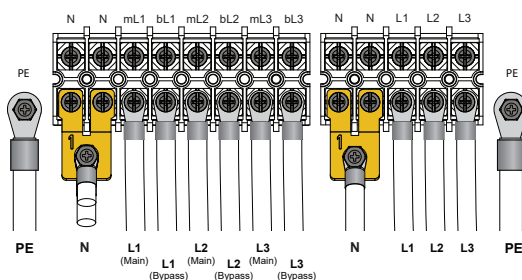
Input:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short terminal mL1/ bL1 with busbar #1, connect AC cable (L1);
Short terminal mL2/ bL2 with busbar #1, connect AC cable (L2);
Short terminal mL3/ bL3 with busbar #1, connect AC cable (L3).

Output:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Connect terminal L1/L2/L3 to AC cable (L1/L2/L3).

• Mode 3-3 (dual-source) for 20kVA



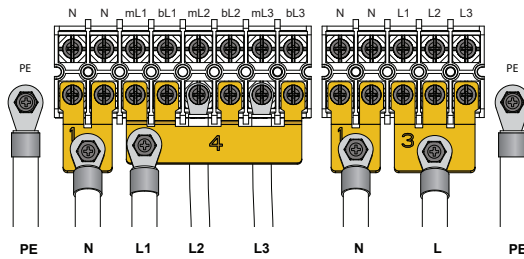
Input:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC main source cable (N) and bypass source cable (N);
Connect input terminal mL1/mL2/mL3 to main source cable (L1/L2/L3);
Connect bypass terminal bL1/bL2/bL3 to bypass source cable (L1/L2/L3).

Output:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Connect terminal L1/L2/L3 to AC cable (L1/L2/L3).

• **Mode 3-1 (single-source) for 10kVA/20kVA**



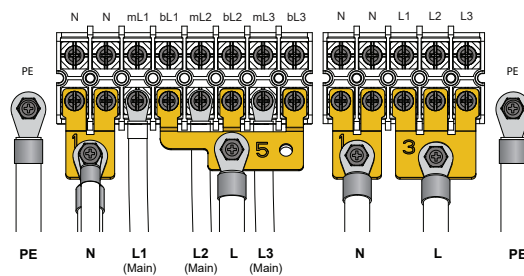
Input:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short input terminal mL1/bL1/bL2/bL3 with busbar #4, connect to AC cable (L1);
Connect terminal mL2 to AC cable (L2) and terminal mL3 to AC cable (L3).

Output:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short terminal L1/L2/L3 with busbar #3, connect AC cable (L).

• **Mode 3-1 (dual-source) for 10kVA/20kVA**



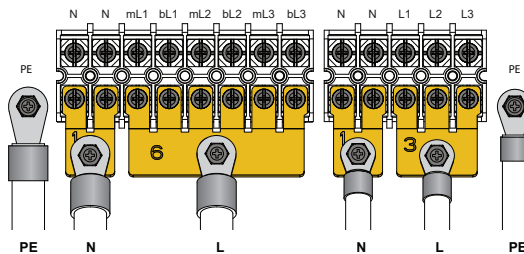
Input:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC main source cable (N) and bypass source cable (N);
Connect input terminal mL1/mL2/mL3 to main source cable (L1/L2/L3);
Short bypass terminal bL1/bL2/bL3 with busbar #5, connect bypass source cable (L).

Output:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short terminal L1/L2/L3 with busbar #3, connect AC cable (L).

• **Mode 1-1 (single-source) for 10kVA/20kVA**



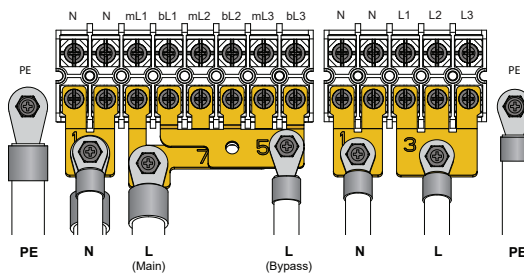
Input:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short terminal mL1/bL1/mL2/bL2/mL3/bL3 with busbar #6, connect AC cable (L).

Output:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short terminal L1/L2/L3 with busbar #3, connect AC cable (L).

• **Mode 1-1 (dual-source) for 10kVA/20kVA**



Input:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC main source cable (N) and bypass source cable (N);
Short input terminal mL1/mL2/mL3 with busbar #7, connect main source cable (L);
Short bypass terminal bL1/bL2/bL3 with busbar #5, connect bypass source cable (L).

Output:

Connect ground cable (PE) to ground screw of chassis first;
Short terminal N/N with busbar #1, connect AC cable (N);
Short terminal L1/L2/L3 with busbar #3, connect AC cable (L).

3.3.3-1:
EBM detection cable

3.3.3-2:
Battery cable

3.3.3 Wiring with external battery module (EBM) (DC source to UPS)



BE SURE TO DISCONNECT THE BATTERY CABLE FROM THE EBM BEFORE CONNECTING THE BATTERY TERMINALS OF THE UPS.

MAKE SURE THE UPS IS COMPLETELY OFF BEFORE CONNECTING OR DISCONNECTING THE EBM.

BEFORE CONNECTING THE EBM, MAKE SURE THAT THE EBM SPECIFICATION IS COMPATIBLE WITH UPS CONFIGURATION.

DO NOT REVERSE THE POLARITY OF THE EXTERNAL BATTERY.

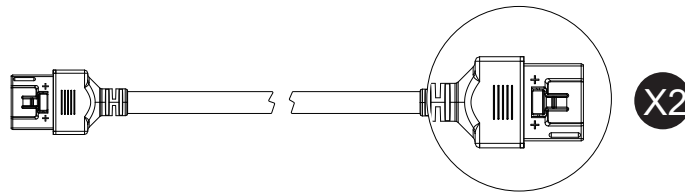
Connect the 10kVA UPS to the $\pm 120\text{V}$ battery module using two battery cables. Connect the 20kVA UPS to the $\pm 240\text{V}$ battery module using two battery cables. Ensure that the ports on the back of the UPS and the battery pack are properly connected.

• Connect with the configured EBM:

After unpacking the EBM cabinet, there are two battery cables and a battery detection cable, as shown below.



3.3.3-1



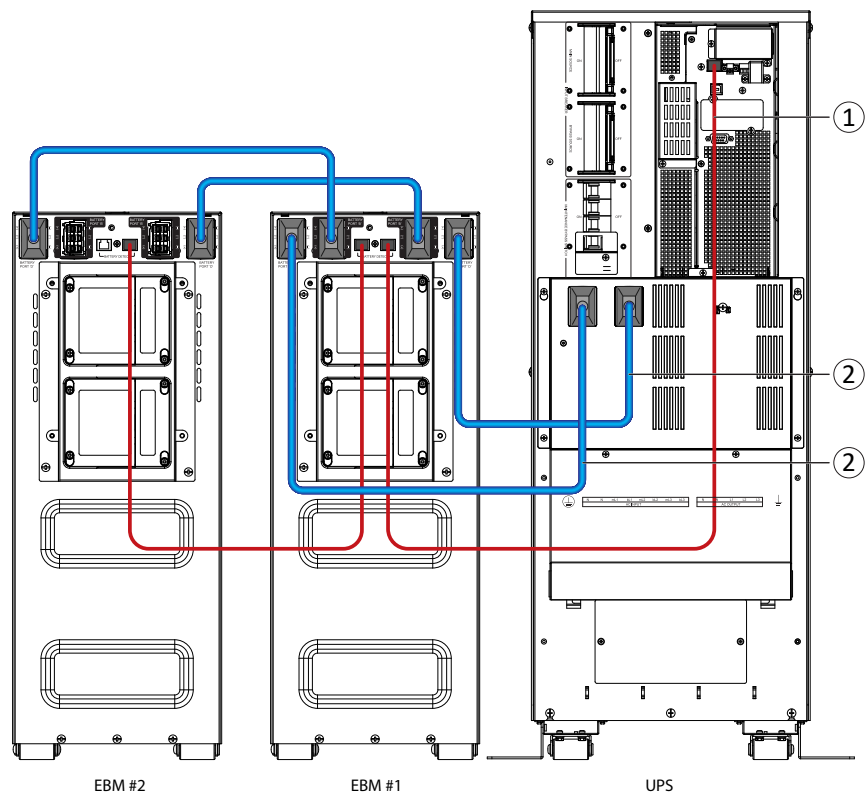
3.3.3-2



PLEASE CONNECT THE BATTERY CABLE FROM THE UPS SIDE FIRST.

Connect EBM to UPS with "Battery cable" and "EBM detect cable."

3.3.3-3:
UPS and the configured
EBM connection



3.3.3-3

No	Item
①	EBM detection cable
②	Battery cable*2

3.3.3-6:
UPS and the user's own
EBM connection



EBM AUTOMATIC DETECTION FUNCTION SUPPORTS UP TO 3 EBMS FOR TOWER 10kVA UPS.
FOR MORE EBM QUANTITY (MAX. 6), THE BATTERY CAPACITY NEED TO CONFIGURE IN LCD.
PLEASE REFER TO CHAPTER 4.10.4 BATTERY SETTING.
EBM AUTOMATIC DETECTION FUNCTION SUPPORTS UP TO 6 EBM's FOR TOWER 20kVA UPS.



WHEN THE UPS IS CONNECTED TO THE BATTERY DETECTION CABLE, PLEASE OBSERVE THE
CHANGES IN THE BATTERY AH ON THE LCD (MENU SCREEN->METER->BATTERY->BATTERY AH).

• **Connect with user's own EBM:**

Connect the user's own EBM to the UPS with "Battery cable" (if configured). A battery for the UPS connection cable is optional.



BEFORE CONNECTING THE BATTERY TERMINALS OF THE UPS, BE SURE TO CONNECT THE
USER'S OWN EBM FIRST.

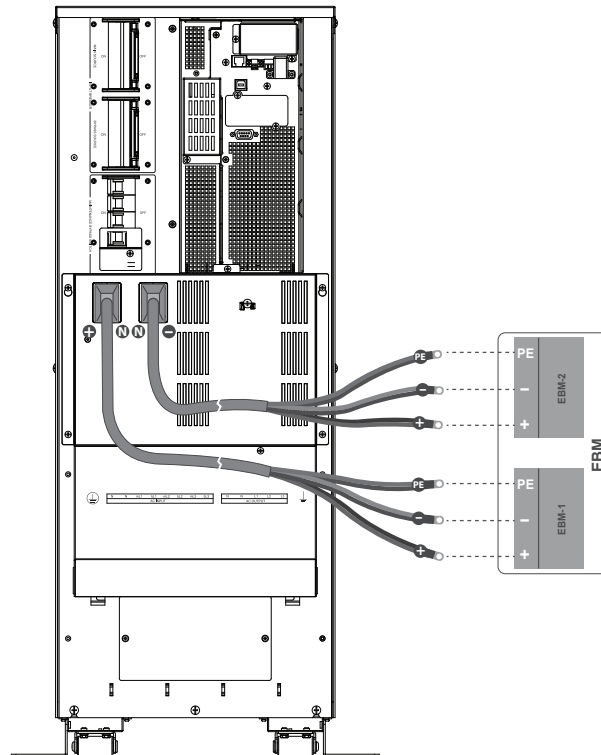
ELECTRIC SHOCK RISK/ENERGY RISK: WHEN OPERATORS CONNECT AND REPAIR THE USER'S
OWN EBM, PLEASE MAKE SURE THAT THE UPS IS COMPLETELY TURNED OFF. THE EXPOSED
CONDUCTIVE TERMINALS WITH A HAZARDOUS VOLTAGE SHOULD BE PROPERLY PROTECTED
TO PREVENT UNINTENTIONAL CONTACT AND SHORT CIRCUITS.



THE EBM MUST BE GROUNDED INDIVIDUALLY FOR A 5m OR 10m BATTERY CABLE.
THE USER'S OWN EBM NEEDS TO HAVE A BREAKER OR FUSE-RELATED PROTECTION. FOR
DEVICE SELECTION, PLEASE REFER TO TABLE 2 IN CHAPTER 3.3.1.



CONNECT THE 10kVA UPS TO THE $\pm 120V$ BATTERY MODULE.
CONNECT THE 20kVA UPS TO THE $\pm 240V$ BATTERY MODULE.



3.3.3-6

4. Operation

4.1 LCD panel

4.1-1
LCD panel

The UPS has a touch graphical LCD. It provides useful information about the UPS itself, load status, events, measurements and settings.



4.1-1

The LED:

LED status	description	UPS status
	Red on	Fault mode
	Red flash	General alarm
	Yellow on	Battery mode
	Yellow flash	Bypass mode with output
	Green on	Line mode or ECO mode
	Off	No output (power off/shutdown/bypass without output)

The Button:

button	function	description
	On/off	When only battery power is available, press to power on When UPS is not turned on, press this key to turn on When working normally, press to turn to standby mode When the UPS is in fault mode, press to clear the fault (some faults cannot be cleared directly)

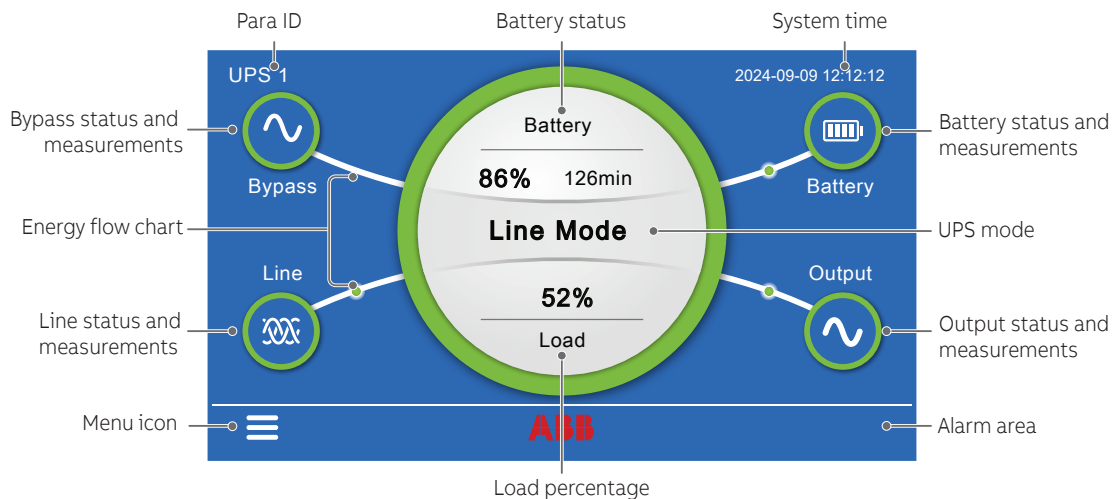
The Buzzer:

The buzzer	General Meaning
1 beep every 2 minutes	Load supplied on bypass
1 beep every 4 seconds	Load supplied on battery If battery low, beeps every second
1 beep every second	General warning active
2 beeps every second	Overload warning
Continuous	Fault active
Only beep	Touch screen operation sound

4.2 LCD description

4.2-1
Main Screen

The LCD backlight automatically dims after 5 minutes of inactivity (except in cases of a UPS fault). Press any button to wake up the screen.

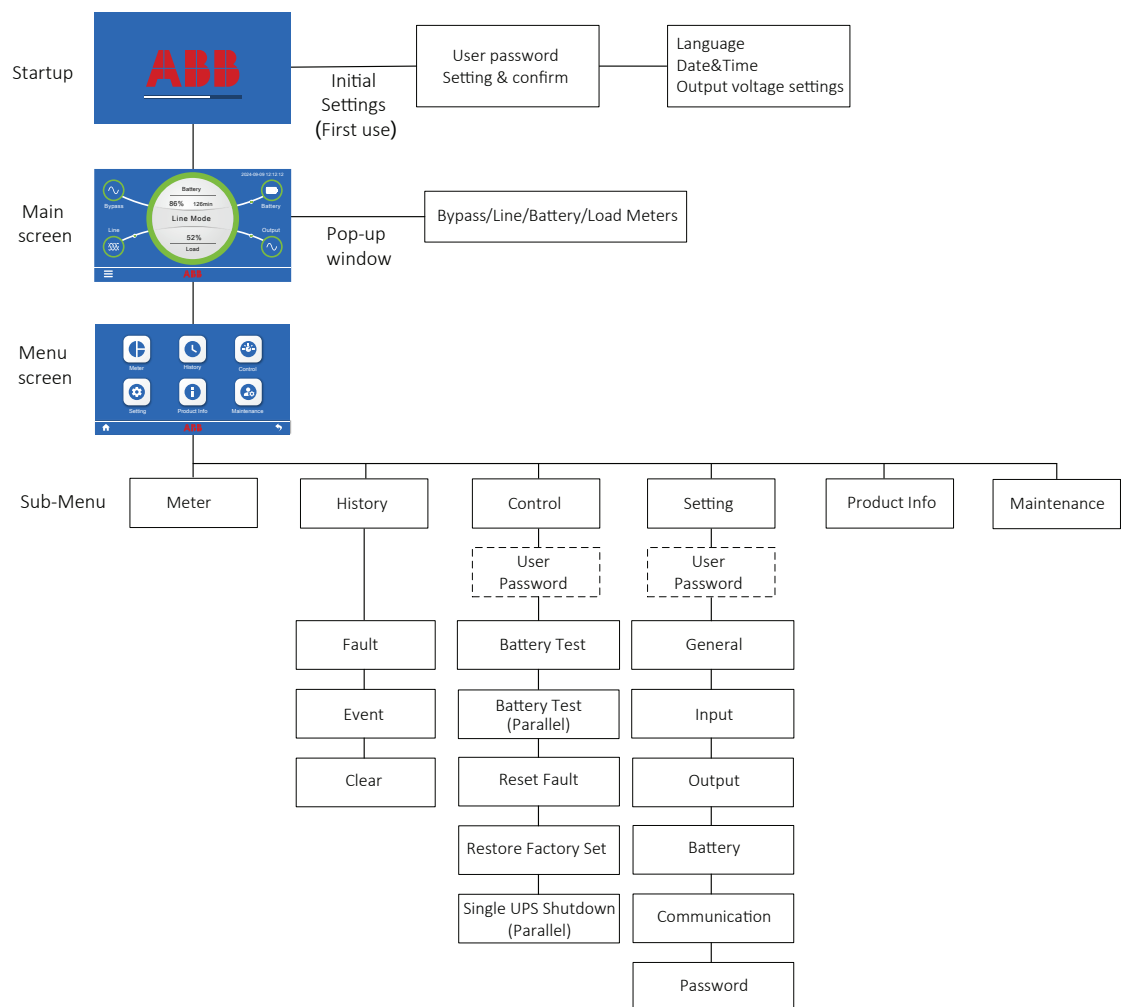


4.2-1

Display Area	Icon	Description
Battery status	Battery 86% 126min	Battery capacity Backup time
UPS mode	Line Mode	The normal working mode of the UPS
Load percentage	L1 L2 L3 52% 52% 52% Load	When there is a 3-phase input, the load for each of the 3 phases is displayed in this area
Bypass status and measurements	Bypass Bypass	A different icon shows the phase number of the bypass Clicking on this icon brings up a popup of the measurements of the bypass
Battery status and measurements	Battery	Clicking on this icon brings up a popup of the battery's measurements.
Line status and measurements	Line Line	A different icon shows the phase number of the utility Clicking on this icon brings up a popup of the utility's measurements
Output status and measurements	Output Output	A different icon shows the past number of the output Clicking on this icon brings up a popup of the output's measurements
Energy flow chart		The solid line with a green dot means there is energy flow The solid white line means there is no energy flow
System time	2024-01-12 12:12:12	This can be set in user settings
Menu icon		Clicking on this icon gives access to the menu screen

Alarm area		When the UPS enters fault mode, a fault ICON and the fault information will be displayed. If alarms exist, alarm information will scroll for up to 4 messages, each for 2 seconds
Para ID	UPS 1	The UPS ID number in parallel system (1-3)

4.3 Menu structure



PLEASE CONSULT YOUR LOCAL SUPPLIER FOR THE MAINTENANCE SETTINGS IN THE MENU SCREEN.

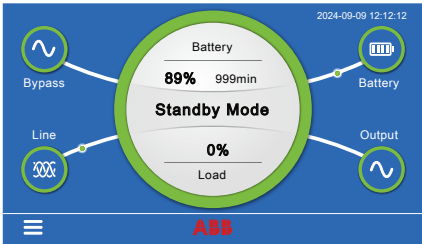
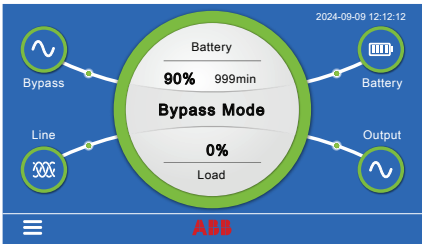
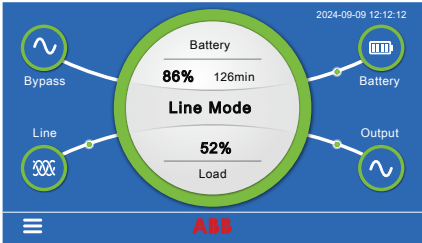
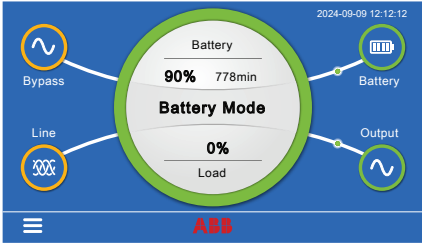
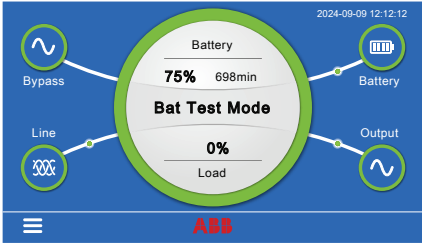
4.4 Operating mode

i

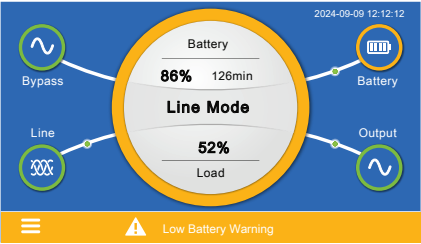
NOTE

THE SOLID LINE WITH A GREEN DOT MEANS THERE IS ENERGY FLOW. THE SOLID WHITE LINE MEANS THERE IS NOP ENERGY FLOW.

The following table describes the UPS status information:

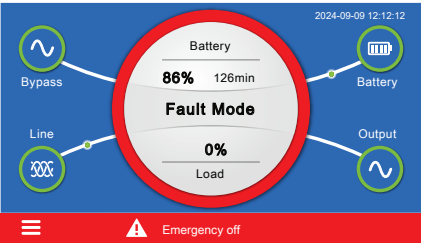
Status	LCD Screen	Description
Standby Mode		The UPS is powered off, and there is no output supply power, but the batteries can still be charged if the main input is normal.
Bypass Mode		When the input voltage is within an acceptable range, but the UPS is overloaded, the UPS will enter bypass mode, or bypass mode can be set from the front panel. (menu screen-> Setting-> Output->Auto Bypass, Enable)
Line Mode		When the input voltage is within an acceptable range, the UPS will provide pure and stable AC power to the output. The UPS will also charge the battery in line mode.
Batt Mode		When the input voltage is beyond the acceptable range or power failure, the UPS will back up the power from the battery.
Batt Test Mode		If the main input is normal, the UPS will regularly check the Battery status as the user setting or set the battery test on the LCD (menu screen-> Control-> Battery test)

Warning Mode



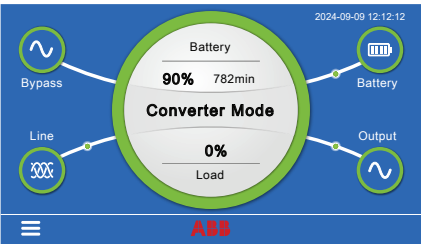
The UPS can provide pure and stable AC power to the output or charge the battery in this mode.

Fault Mode



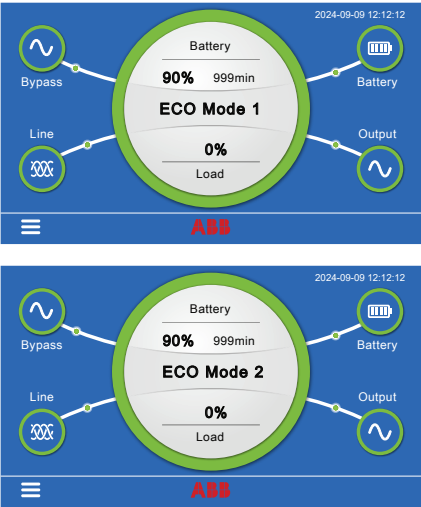
The UPS will not provide pure and stable AC power to the output.

CVCF Mode



When the input frequency is within 40 Hz to 70 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge the battery in this mode. In CVCF mode, the UPS needs to be de-rated to 60% capacity for 1-1 mode (rated output power and maximum charging current).

ECO Mode
(ECO Mode 1,
ECO Mode 2)



When the input voltage is within the voltage regulation range (Rated input voltage $\pm 10\%$), the UPS will bypass the voltage to output to save energy. The UPS will also charge the battery in ECO mode. ECO mode includes ECO mode1 and ECO mode2. The typical time of ECO mode2 output power translation is 2ms (ECO 2 to INV output). For ECO mode1, it is less than 10ms (ECO 1 to INV output). In ECO mode1 and ECO mode2, the bypass input only supplies power to the output, and the main input charges the batteries.

4.5 Starting the UPS on utility

4.5-1
Turn on the
input breakers

4.5-2
Bypass mode

4.5-3
Standby mode



BEFORE STARTING UP THE UPS, PLEASE MAKE SURE THAT THE WIRING IS SECURELY CONNECTED. OTHERWISE, THERE IS A DANGER OF ELECTRIC SHOCK.



THE 20KVA UPS DEFAULT INPUT/OUTPUT MODE IS THREE-INPUT AND THREE-OUT. THE 10KVA UPS DEFAULT INPUT/OUTPUT MODE IS THREE-INPUT AND SINGLE-OUT. IF IT IS INCONSISTENT WITH THE ACTUAL WIRING, IT NEEDS TO BE CHANGED TO THE ACTUAL WIRING MODE. FOR A PARALLEL SYSTEM, PLEASE REFER TO CHAPTER 4.8 TO CONNECT INPUT AND OUTPUT CABLES. THE FOLLOWING DESCRIPTION ALSO APPLIES TO THE PARALLEL SYSTEM.

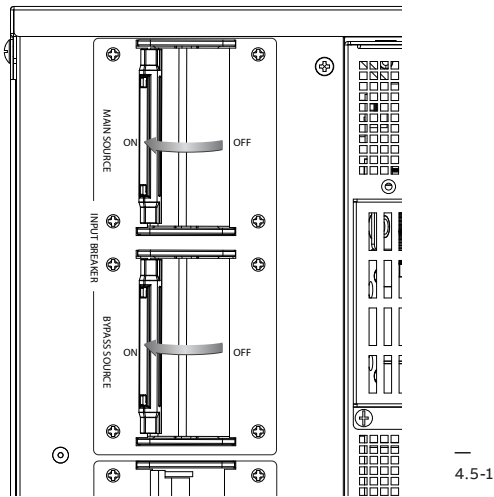


VERIFY THAT THE TOTAL UPS OUTPUT LOAD DOES NOT EXCEED THE RATED CAPACITY OF THE UPS.
THE WIRING OF THE UPS INPUT AND OUTPUT IS CORRECTLY CONNECTED ACCORDING TO THE REQUIRED MODE.
CONFIRM THAT THE UPS OUTPUT DEVICE IS NOT STARTED.
MAKE SURE THE UPS IS RELIABLY CONNECTED TO THE BATTERY.
CONNECT COMMUNICATION INTERFACES THAT NEED TO BE USED.

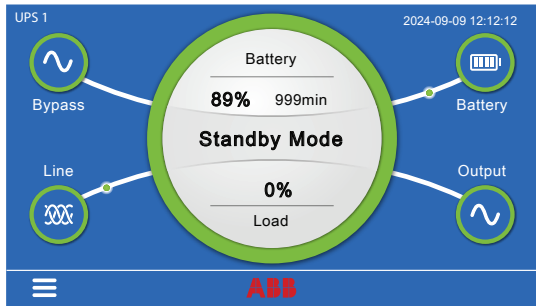
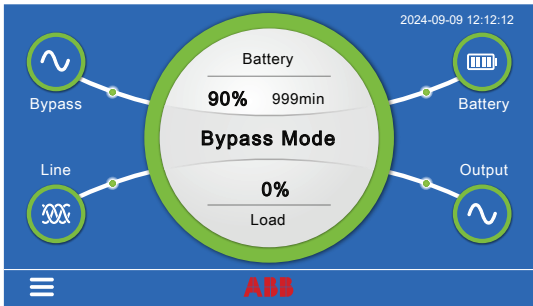


WHEN TURNING ON THE UPS FOR THE FIRST TIME, YOU NEED TO FIRST SET A PASSWORD. PLEASE REFER TO SECTION 4.10.6 FIRST-TIME PASSWORD SETTING INTERFACE.

1. First turn on the main input Breaker. Then turn on the bypass input Breaker. The UPS breaker is as shown below.



2. The fan starts to rotate. The LCD displays startup animation, then enters the main page.
3. When UPS default Bypass is enabled, the main page shows UPS working in bypass mode. If the bypass setting is disabled, the UPS will work in standby mode.



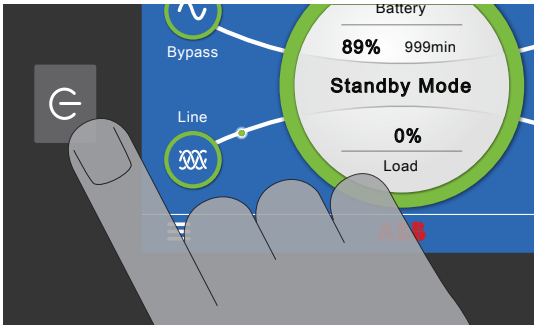
4.5-4
Press the button

4.5-5
Line mode

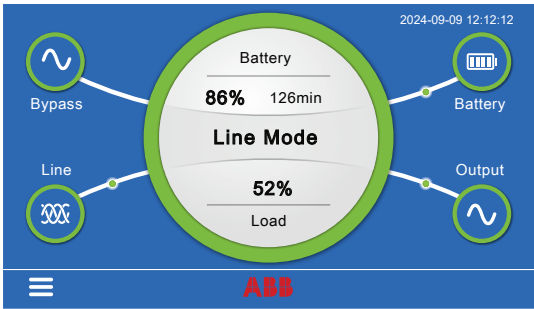
4.5-6
Battery mode

4.5-7
Line mode

4. Press the button for more than 1 second. The buzzer will beep, and the UPS will start up. After 6 seconds, the UPS will go into line mode.

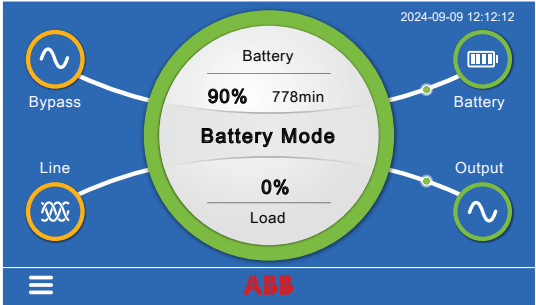


4.5-4



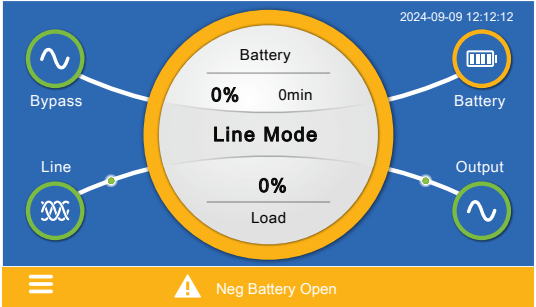
4.5-5

5. If the utility power is abnormal, the UPS will transfer to Battery mode.



4.5-6

6. When the battery is not connected, the UPS can still be started up. After the startup, there is an alarm if the battery is not connected. If the utility power is abnormal, the UPS load will not be protected.



4.5-7

7. When both the input and battery are normal, the load is powered by the UPS, and the LCD shows a charging sign indicating that the battery is charging.
8. Start up the output device.



IF YOU WANT TO CANCEL THE BYPASS ENABLE FUNCTION, PLEASE REFER TO THE "USER SETTING" CHAPTER.

4.6 Starting the UPS with the battery

4.6-1
Standby mode

4.6-2
Battery mode

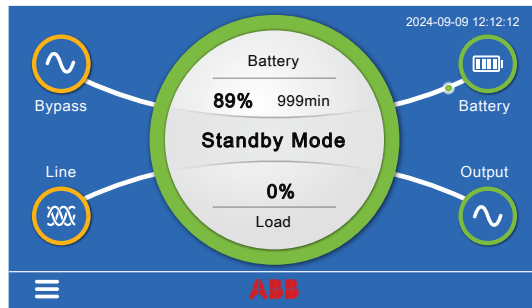


NOTE

BEFORE USING THIS FEATURE, THE UPS MUST HAVE BEEN POWERED BY UTILITY POWER WITH OUTPUT ENABLED AT LEAST ONCE.

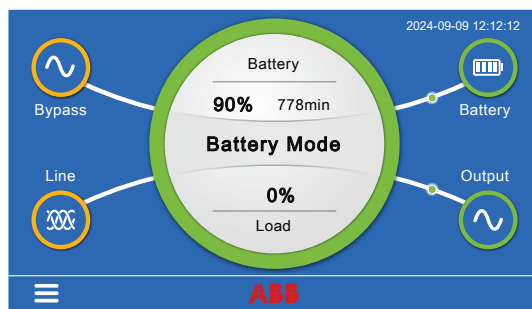
Battery start can be disabled. Please refer to chapter 4.10.4 "User settings--Battery--DC Start." If DC Start is enabled, the UPS can start up with only battery power. If DC Start is disabled, the UPS cannot be powered on with only battery power.

1. Press the button for more than 0.1 seconds. The UPS establishes the power, the fan starts to rotate, the LCD displays the startup animation and then enters the main page to display the standby mode. If the button is pressed for less than 0.1 seconds, there is no action from the UPS.



4.6-1

2. If there is no operation, the LCD is powered off after 10 seconds, and the UPS is powered down.
3. Press the button for more than 1 second. The buzzer will beep, and the UPS will start up. The UPS will go into battery mode after a few seconds.
4. If the utility power is connected at this time, the UPS will switch to the line mode, and the output will be uninterrupted.
5. The UPS works in battery mode, and the buzzer will beep for 4 seconds to remind you that the battery is discharged.



4.6-2

6. Since there is no utility power input, the Line and Bypass icons will appear in orange on the LCD.

4.7 UPS shutdown

4.7-1
Press the power button

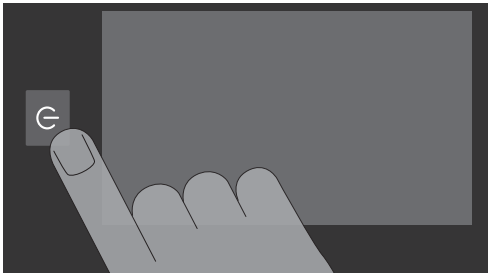
4.7-2
Line mode to bypass mode or standby mode

4.7-3
Battery mode to standby mode

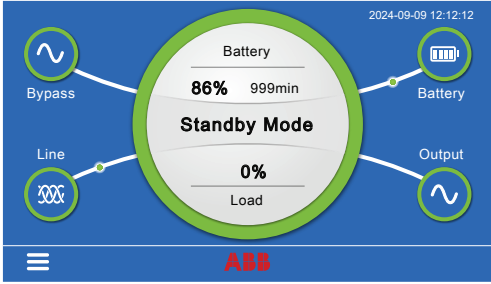
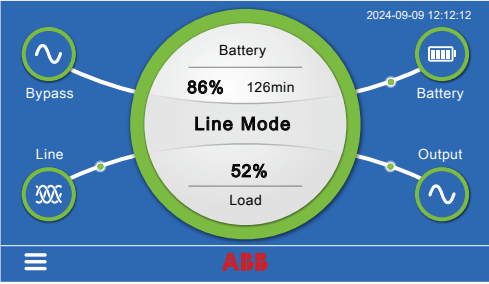
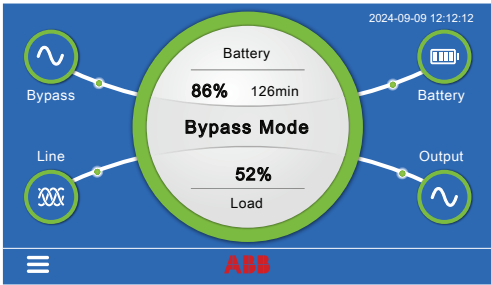
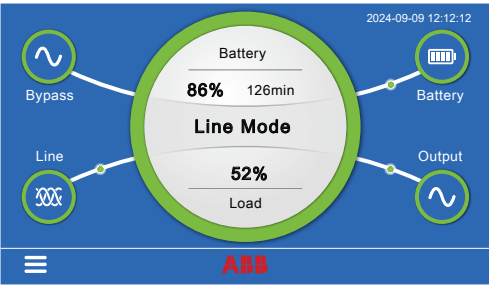


THE FOLLOWING DESCRIPTION ALSO APPLIES TO THE PARALLEL SYSTEM.

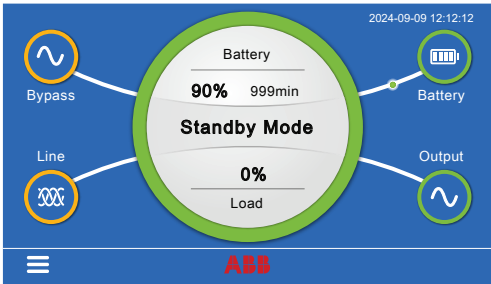
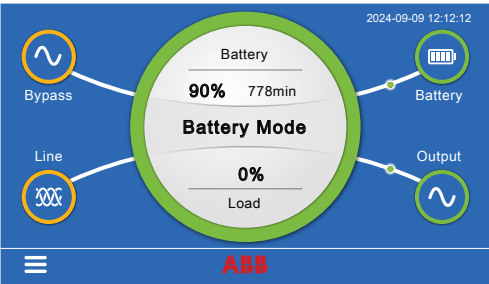
- 1. If the UPS is working in online mode or battery mode, press the power button for more than 3 seconds. The UPS will then switch to bypass mode if the bypass mode is enabled or standby mode if the bypass mode is disabled.



4.7-1



4.7-2



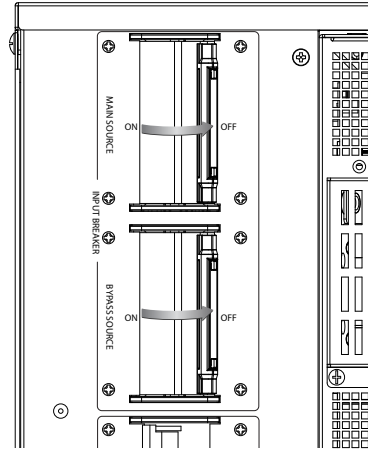
4.7-3

4.7-4
Turn off the input
breakers



THE OUTPUT IS STILL ENERGIZED WHEN THE UPS IS IN BYPASS MODE.

2. Turn off the main input breaker first. Then turn off the bypass input breaker. The UPS output will lose power. After a few seconds, the UPS automatically shuts down.



4.7-4



THE OUTPUT IS STILL ENERGIZED WHEN THE BYPASS BREAKER IS CONNECTED, EVEN THOUGH THE AC INPUT BREAKER IS DISCONNECTED.

4.8 Parallel system installation and operation

4.8-1:
Parallel sytem
installation

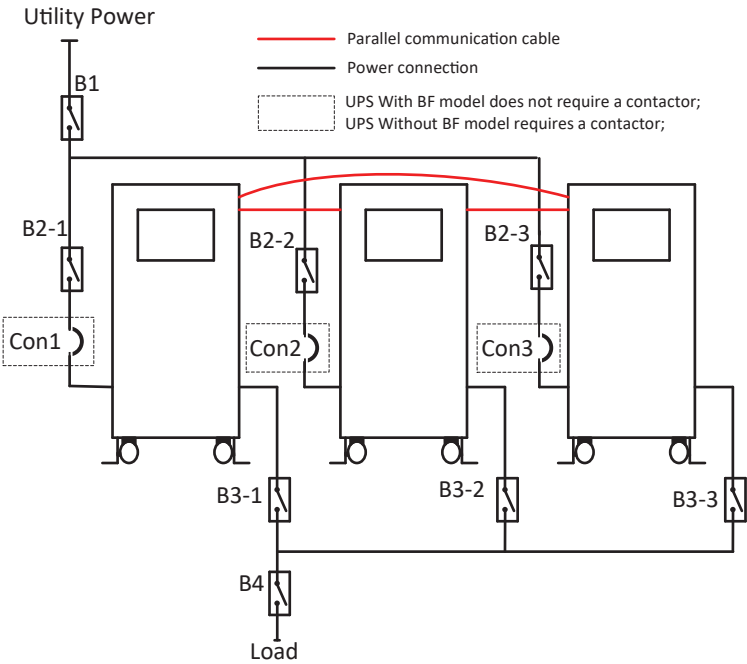


BEFORE REMOVING A UNIT, MAKE SURE THE TOTAL LOAD DEMAND IS WITHIN THE OUTPUT RATING OF THE PARALLEL SYSTEM AFTER THE OPERATION.
INSTALLATION OF PARALLEL CABLES MUST BE PERFORMED BY A QUALIFIED SERVICE ENGINEER.
LOAD SHARING CABLES ARE CONNECTED TO THE PRIMARY CIRCUIT. THEY MUST ALWAYS BE SECURED.



BEFORE PARALLEL CONNECTION, PLEASE CONFIRM THAT ALL UPS MODELS ARE CONSISTENT.

If your UPS is configured with the parallel function, up to 3 UPSs can be connected in parallel to configure a sharing and redundant output power.
In the parallel system, the mechanical installation for each modular is the same as for the single system. For details, please refer to Chapter 3.3. Parallel system AC cable diagram:



4.8-1

In Figure 4.8-1, B2-1, B2-2, B2-3 are UPS input breakers; Con1, Con2, Con3 are UPS input contactors (UPS With BF model does not require a contactor); B3-1, B3-2, B3-3 are UPS output breakers. Please select input/output breakers and contactors with the same rating according to Table 2 in Chapter 3.3.1.
For the upstream mains input breaker B1 and downstream output breaker B4, the rating should be the product of the single UPS input/output breaker rating and the quantity of parallel units. For example, if the number of UPS parallel connections is N (the maximum value of N is 3), the rating calculation formula is $B1= B2-1*N$ and $B4= B3-1*N$.

4.8.1 Wiring for AC/DC cable



WIRING LENGTH REQUIREMENT:

WHEN THE DISTANCE BETWEEN THE LOAD AND THE PARALLEL UPS IS LESS THAN 10 METRES, THE LENGTH DIFFERENCE BETWEEN THE INPUT/OUTPUT LINES BETWEEN THE UPSs IN THE PARALLEL SYSTEM IS LESS THAN 20%.

WHEN THE DISTANCE BETWEEN THE LOAD AND THE PARALLEL UPS IS GREATER THAN 20 METERS, THE LENGTH DIFFERENCE BETWEEN THE INPUT/OUTPUT LINES BETWEEN THE UPSs IN THE PARALLEL SYSTEM IS LESS THAN 5%.

PROFESSIONAL INSTALLATION IS REQUIRED. PLEASE SET THE PARALLEL SYSTEM IN THE RESTRICTED AREA!

THIS CHAPTER INTRODUCES HOW TO WIRE THE AC IN/OUT CABLE TO THE UPS IN THE PARALLEL SYSTEM, AND UPS CONNECTING WITH EBM.

4.8.1.1 Input/Output wiring specifications

Cable-selection table 5 and table 6 for the parallel system AC IN, AC OUT and Battery wire. For the cable table of a single UPS, refer to Table 3 in Section 3.3.1.

Cable-selection table for the parallel system AC IN, AC OUT and Battery wire:

Table 5: Cable-selection table for the 10kVA parallel system

Parallel system installed by 10kVA UPS (conductor cross-section, unit: mm ²)											
UPS number	Mode	Main input		Bypass input		Ground wire	Output			Battery wire	Battery ground
		L wire	N wire	L wire	N wire		L wire	N wire	Ground		
2 UPS	3-1	10	10	25	25	25	25	25	25	35	35
	1-1	50	50	25	25	50	25	25	25	35	35
3 UPS	3-1	16	16	50	50	50	50	50	50	70	70
	1-1	95	95	50	50	95	50	50	50	70	70

Table 6: Cable-selection table for the 20kVA parallel system

Parallel system installed by 20kVA UPS (conductor cross-section, unit: mm ²)											
UPS number	Mode	Main input		Bypass input		Ground wire	Output			Battery wire	Battery Ground
		L wire	N wire	L wire	N wire		L wire	N wire	Ground		
2 UPS	3-3	25	25	16	16	25	16	16	16	35	35
	3-1	25	25	70	70	70	70	70	70	35	35
	1-1	120	120	70	70	120	70	70	70	35	35
3 UPS	3-3	50	50	25	25	50	25	25	25	70	70
	3-1	50	50	150	150	150	150	150	150	70	70
	1-1	240	240	150	150	240	150	150	150	70	70



PLEASE SELECT THE LARGER CROSS-SECTION CONDUCTOR FOR THE "AC IN CABLE" PARALLEL SYSTEM IN THE SINGLE-SOURCE APPLICATION.
IN THE THREE-PHASE OUTPUT MODE, THE THREE-PHASE LOAD MUST BE BALANCED

4.8.1.2 Wiring for AC cable (AC source to UPS)



HIGH LEAKAGE CURRENT: EARTH CONNECTION ESSENTIAL BEFORE CONNECTING SUPPLY.



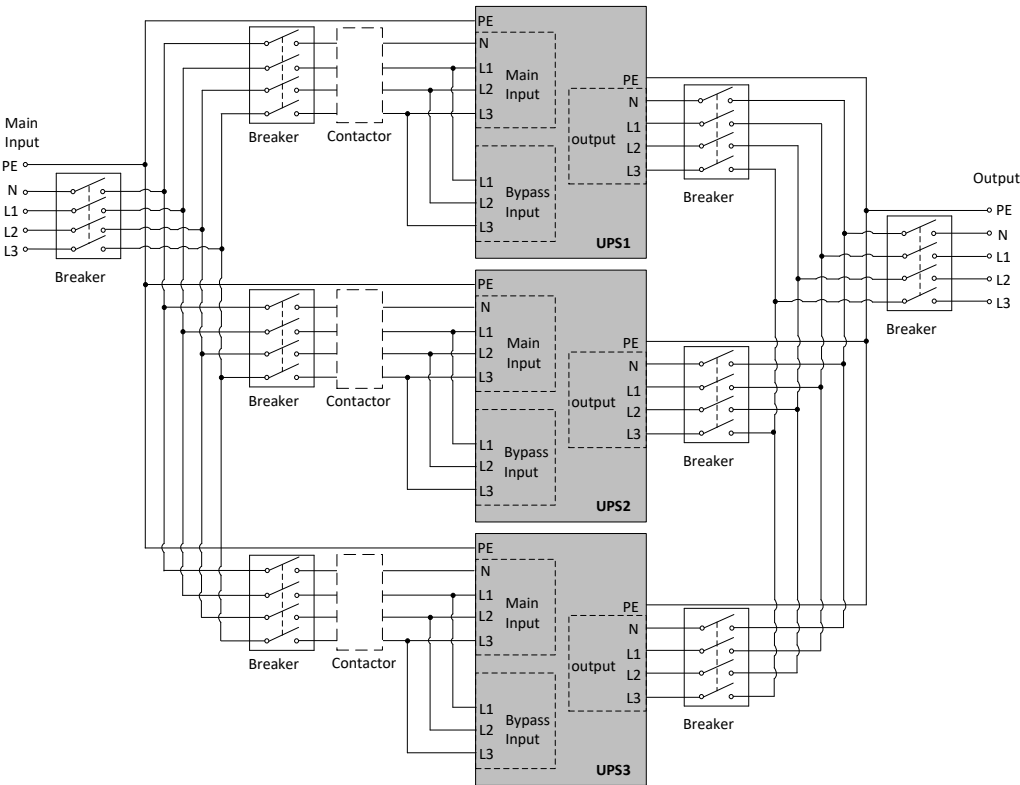
THIS TYPE OF CONNECTION MUST BE CARRIED OUT BY QUALIFIED ELECTRICAL PERSONNEL. BEFORE CARRYING OUT ANY CONNECTION, CHECK THAT THE UPSTREAM PROTECTION DEVICES (NORMAL AC SOURCE AND BYPASS AC SOURCE) ARE OPEN "O" (OFF). ALWAYS CONNECT THE GROUND WIRE FIRST.



UPS WITH BF PROTECTION DO NOT NEED CONTACTOR; UPS WITHOUT BF PROTECTION NEED A CONTACTOR. FOR CONTACTOR WIRING, PLEASE REFER TO SECTION 3.3.1. FOR THE SELECTION OF BREAKER AND CONTACTOR, PLEASE REFER TO TABLE 2 IN SECTION 3.3.1

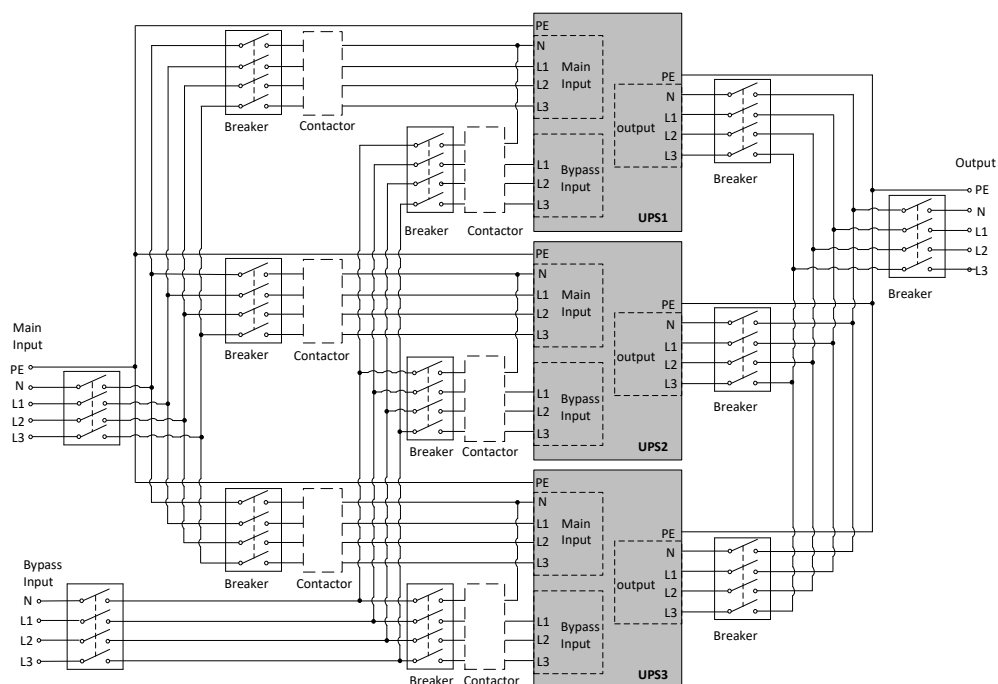
AC cable wiring is shown ing the diagrams below for different configurations.

- 3-3 configuration (single source) for 20kVA



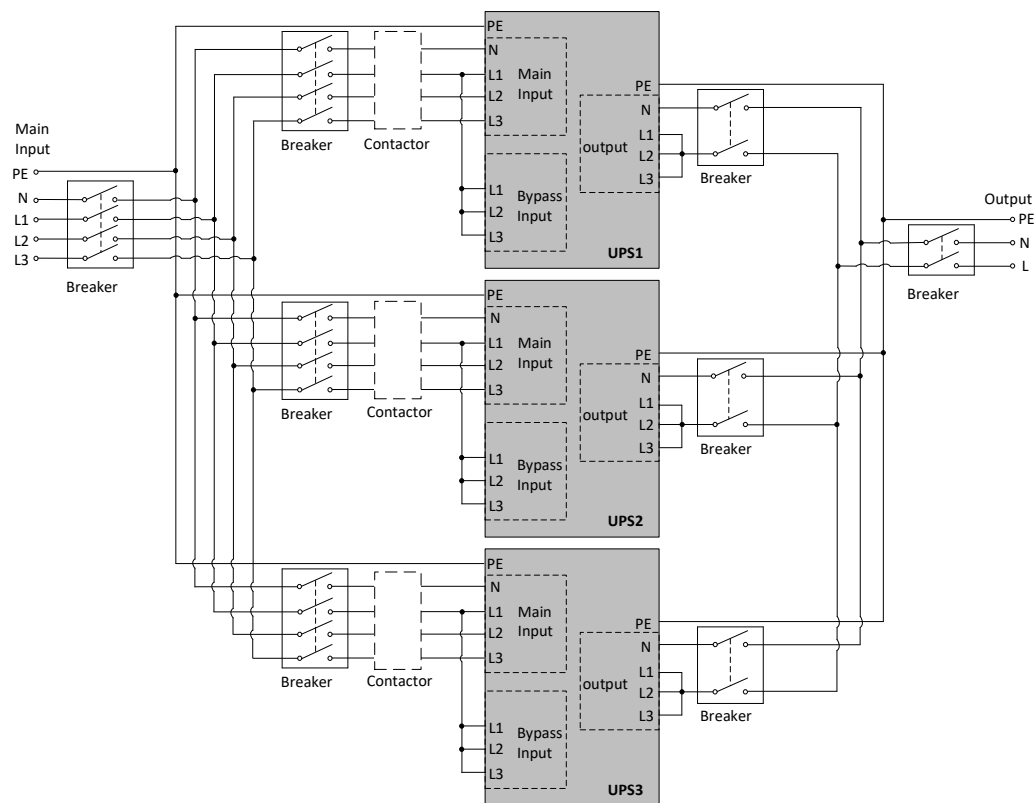
—
4.8.1.2-2
3-3 configuration
(dual-source) for 20kVA

• 3-3 configuration (dual-source) for 20kVA



—
4.8.1.2-2

• 3-1 configuration (single-source) for 10kVA/20kVA

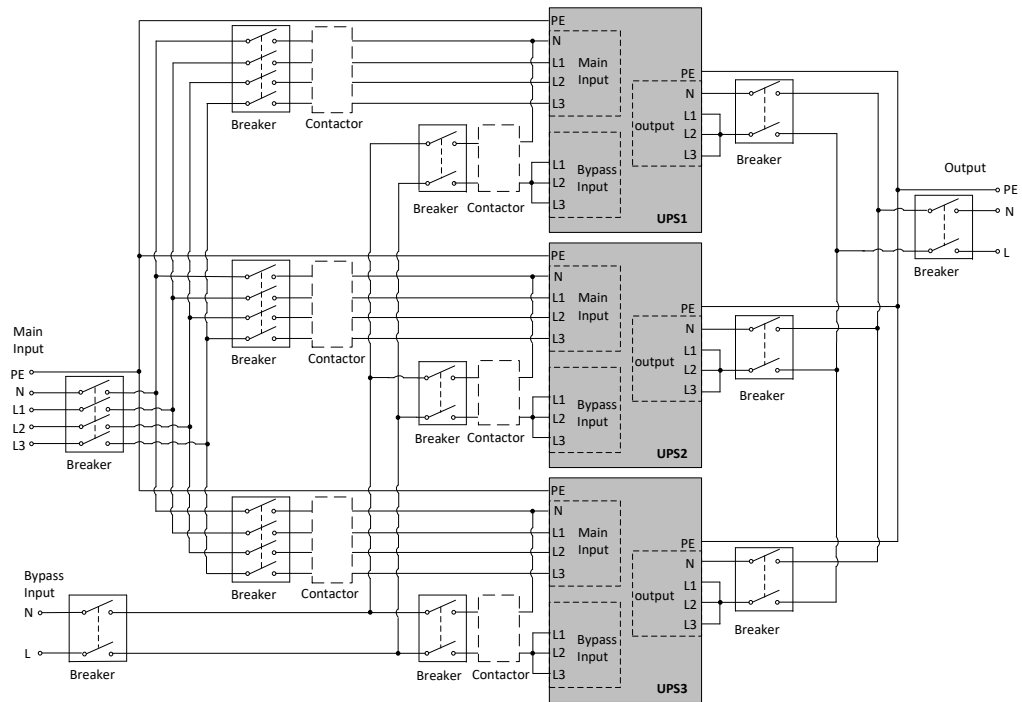


—
4.8.1.2-3

 4.8.1.2-4

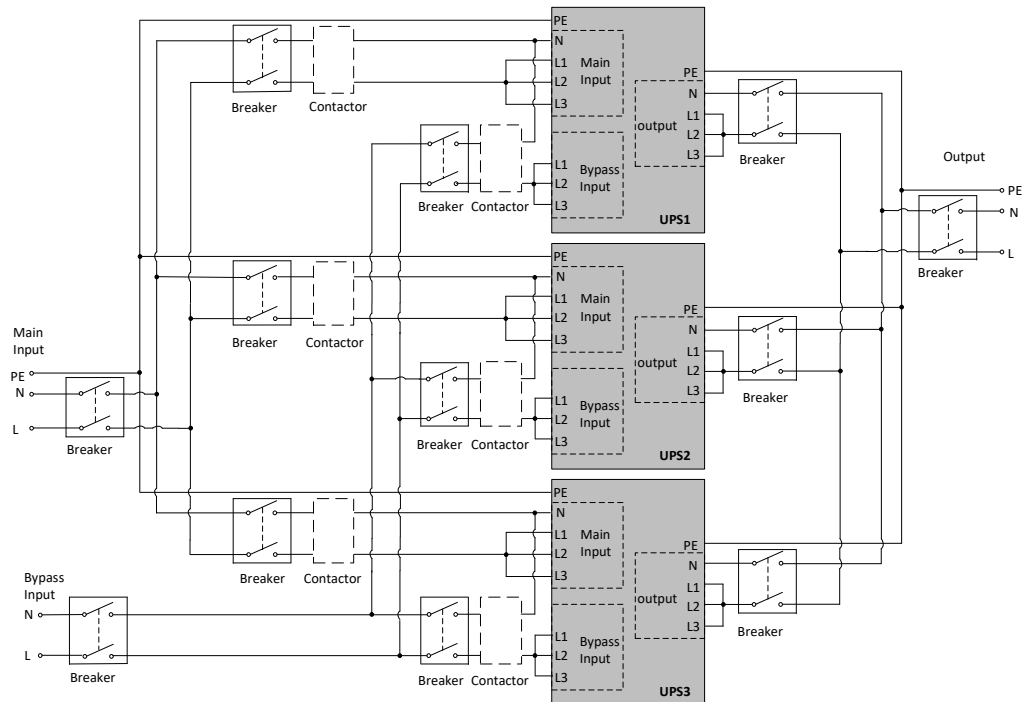
 3-1 configuration
(dual-source) for
10kVA/20kVA

• 3-1 configuration (dual-source) for 10kVA/20kVA



 4.8.1.2-4

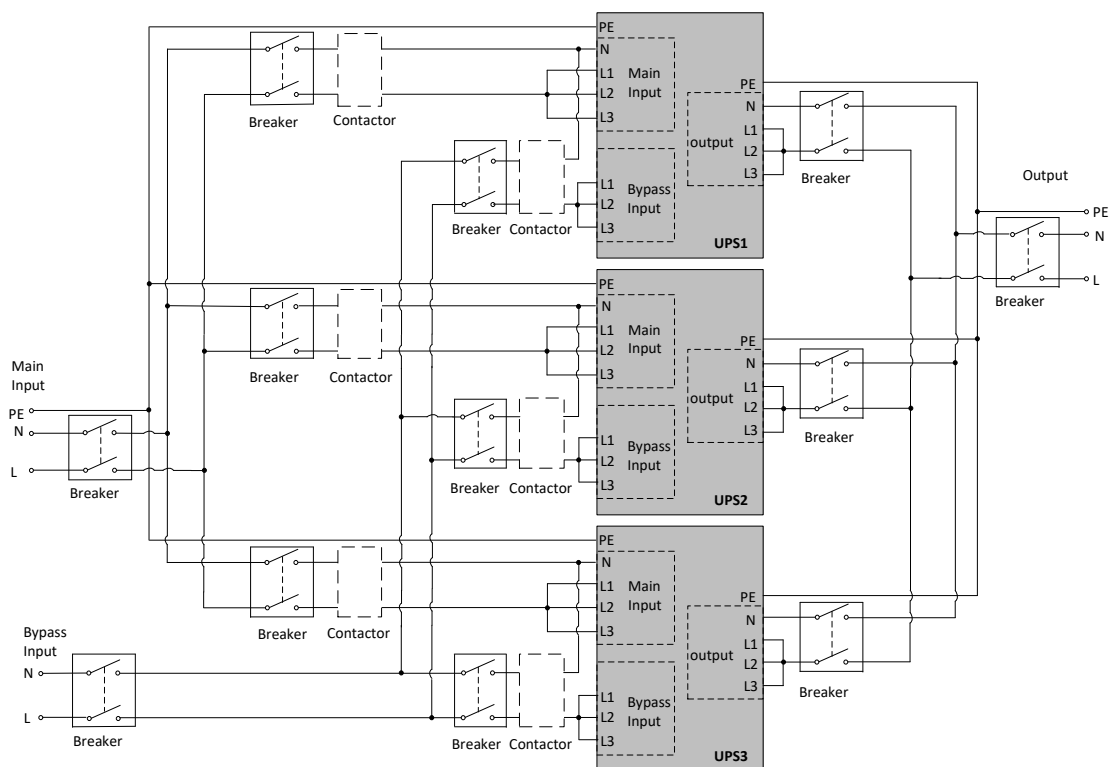
• 1-1 configuration (single-source) for 10kVA/20kVA



 4.8.1.2-5

4.8.1.2-6
1-1 configuration
(dual-source) for
10kVA/20kVA

- 1-1 configuration (dual-source) for 10kVA/20kVA



4.8.1.2-6

4.8.1.3 Wiring with external battery modular (EBM) (DC source to UPS)

- Parallel UPS connection with "independent battery"

In the parallel system, the EBM is independently connected to each UPS. Please refer to chapter 3.3.3.



WARNING

BE SURE TO DISCONNECT THE BATTERY CABLE FROM THE EBM BEFORE CONNECTING THE BATTERY TERMINALS OF THE UPS.

MAKE SURE THE UPS IS COMPLETELY OFF BEFORE CONNECTING OR DISCONNECTING THE EBM.

BEFORE CONNECTING THE EBM, MAKE SURE THAT THE EBM SPECIFICATIONS ARE COMPATIBLE WITH UPS CONFIGURATION.

DO NOT REVERSE THE POLARITY OF THE EXTERNAL BATTERY.

• Parallel UPS connection with "common battery"

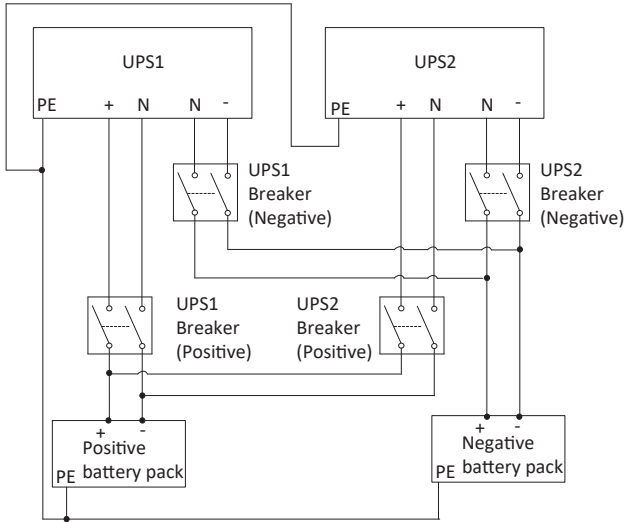


IT IS RECOMMENDED THAT USERS REFER TO TABLE 2 IN SECTION 3.3.1 TO SELECT THE APPROPRIATE BATTERY BREAKER AND FUSE.
IT IS RECOMMENDED THAT USERS REFER TO TABLE 5 AND TABLE 6 IN SECTION 4.8.1.1 TO SELECT THE APPROPRIATE CABLES.
ONLY SUPPORTS 2 UPS AND 1 EXTERNAL BATTERY MODULE.
EACH BATTERY CAPACITY MUST BE GREATER THAN 9AH.



FOR THE LONG-TERM OPERATION OF THE UPS, WE DO NOT RECOMMEND THIS METHOD. IF THE USER INSISTS ON USING A COMMON BATTERY, WE WILL BEAR NO RESPONSIBILITY FOR THE RESULTING RISKS.

In the parallel system, you can also set up "common battery" (user's own battery) for all UPSs. Please refer to the diagram below for battery wiring.



4.8.1.3-1



COMMON BATTERY CONFIGURATION IS NOT SUITABLE FOR STANDARD MODEL.
CONNECT THE 10kVA UPS TO THE ±120V BATTERY MODULE.
CONNECT THE 20kVA UPS TO THE ±240V BATTERY MODULE.

4.8.2.1-1:
UPS parallel port

4.8.2.1-2:
Parallel cable

4.8.2.1-3:
Connect the parallel
cables to UPS

4.8.2 Parallel system operation

4.8.2.1 Install a new parallel UPS system

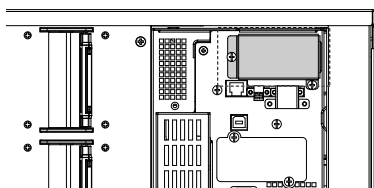


BEFORE REMOVING A UNIT, MAKE SURE THE TOTAL LOAD DEMAND WILL BE WITHIN THE OUTPUT RATING OF THE PARALLEL SYSTEM AFTER THE OPERATION.
THE INSTALLATION OF PARALLEL CABLES MUST BE PERFORMED BY A QUALIFIED SERVICE ENGINEER.
LOAD SHARING CABLES ARE CONNECTED TO THE PRIMARY CIRCUIT. THEY MUST ALWAYS BE SECURED.

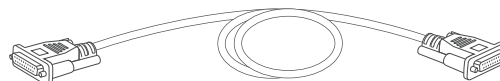


BEFORE THE PARALLEL UPS IS CONNECTED, CONFIRM THAT ALL UPS SOFTWARE VERSION ARE CONSISTENT. PLEASE REFER TO CHAPTER 4.9 PRODUCT INFORMATION

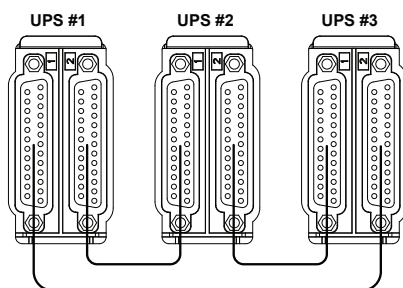
1. Before installing the new parallel UPS system, prepare the input/output Wire, circuit breakers
2. Provide an independent EBM for each UPS.
3. Connect all the inputs and outputs of the parallel UPS together. Each UPS must have an I/P breaker and an O/P breaker for individual electric protection. Please refer to Table 2 in Chapter 3.3.1. For the upstream mains input breaker and downstream output breaker, the rating should be the product of the single UPS input/output breaker rating and the quantity of parallel units.
4. Remove the cover of the parallel ports on the UPS (Figure 4.8.2.1-1), and take out the parallel cable (Figure 4.8.2.1-2), parallel system "parallel cable" diagram (Figure 4.8.2.1-3):



4.8.2.1-1



4.8.2.1-2



Parallel cable connection

4.8.2.1-3

5. Connect each UPS one by one to the "parallel cable." Make sure the cable is screwed to parallel port tightly.

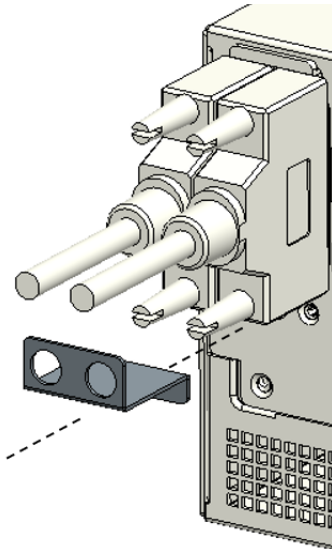
—
4.8.2.1-4:
Step 1

—
4.8.2.1-5:
Step 2

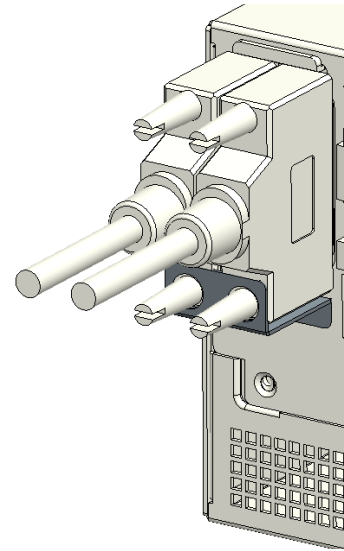
—
4.8.2.1-6:
Turn on the input breakers

—
4.8.2.1-7:
LCD display standby mode

—
4.8.2.1-8:
Power button



4.8.2.1-4

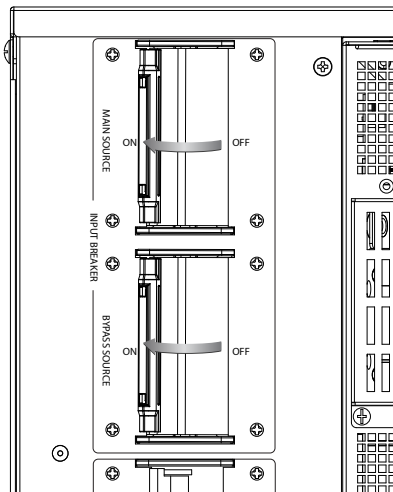


4.8.2.1-5

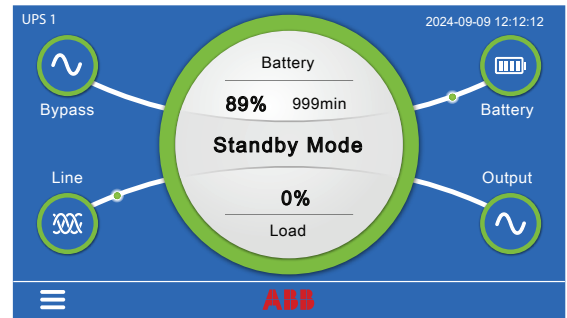


IT IS RECOMMENDED TO LOCK THE "PARALLEL CABLE" (AS ABOVE) TO PREVENT THE PARALLEL PORTS SUFFERING AN UNEXPECTED PULLING-FORCE AND CAUSING A PARALLEL SYSTEM FAULT.

6. First turn on the main input Breaker and bypass input Breaker of the main UPS. Then turn on the main input Breaker and bypass input Breaker of the parallel UPS. The UPS will enter standby mode.

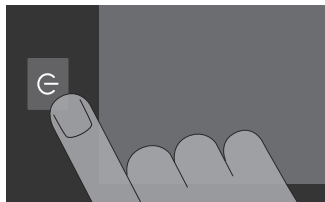


4.8.2.1-6



4.8.2.1-7

7. Ensure that the UPS output mode of the parallel system is consistent. For the LCD setting, please refer to Section 4.10.3.
8. Press the  button continuously for one UPS of the system. The system will then start to turn on and enter line mode.

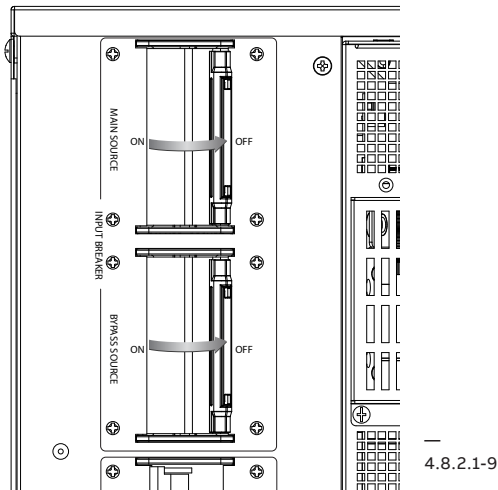


4.8.2.1-8

9. Regulate the output voltage of each UPS separately and check if the output voltage difference is less than 0.5V in the parallel system. If the difference is more than 0.5V, the UPS needs to be regulated. Please contact your local distributor for details.

4.8.2.1-9:
Turn off the input breakers

10. If the output voltage difference is less than 0.5V, press the ϕ button continuously for one UPS of the system to turn off the system. The UPS will then enter standby mode or bypass mode. Turn off the main input breaker first, then turn off the bypass input breaker to allow the UPS to shut down.



11. Connect 10% load at least and then turn on the output breakers for all the UPSs.
12. Repeat step 6 and turn on the input breakers for the parallel UPS. Press the ϕ button continuously for one UPS of the system. The system will then start to turn on and enter line mode, and the system will work normally in parallel.

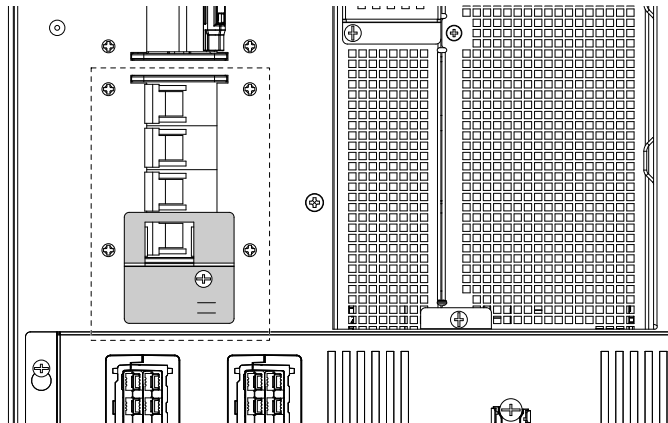
4.8.2.2-1:
Maintenance bypass

4.8.2.2 Remove one unit from the parallel system



BEFORE REMOVING A UNIT, MAKE SURE THE TOTAL LOAD DEMAND IS WITHIN THE OUTPUT RATING OF THE PARALLEL SYSTEM AFTER THE OPERATION. MAKE SURE THE NUMBER OF THE UPS IS CONSISTENT WITH THE REDUNDANCY SETTING.

1. Remove the cover of the MBS switch on one UPS, which will stay in the parallel system, then switch the MBS from "UPS" to "BYPASS." Confirm all the units are working in bypass mode.



4.8.2.2-1

2. Shut down the UPS that needs maintenance. Turn off the according input and output breakers.
3. Disconnect the UPS that needs maintenance.



WARNING: THE ABOVE REMOVE AND RE-ENTER METHOD CANNOT BE USED WHEN THE BYPASS INPUT VOLTAGE IS ABNORMAL.

4.8.2.3 Re-enter the unit into the parallel system

1. Remove the cover of the MBS switch on one UPS, which stays in the parallel system. Then switch the MBS from "UPS" to "BYPASS." Confirm all the units are working in bypass mode.
2. Install the UPS according to 4.8.1.
3. Put the maintenance bypass covers back.

4.9 Control and product information

Main menu	Submenu	Menu function
Control	Battery test	Starts a manual battery test in stand-alone mode
	Battery test (Parallel)	Starts a single battery test in parallel mode
	Reset fault	Clear active fault
	Reset factory setting	Restore to default factory settings
	Single UPS shutdown	Operate this machine to exit parallel connection
Product Info	UPS model	Model name & input/output phase
	Serial number	Serial number of UPS
	UPS firmware version	Version of UPS firmware
	LCD firmware	Version of UI
	JHD-APP version	Version of LCD driver

4.10 User setting

Setting		Options on the display	Default
General	Audible Alarm	[Enabled], [Disabled]	Enabled
	Date/Time	YYYY-MM-DD HH:MM	2020-1-1
	Language	English, Italiano, Français, Deutsch, Español, Polski, 简体中文	English
	LCD brightness	[0%~100%]	100%
	LCD saving mode	[Enabled], [Disabled]	Enabled
	Screen rotation	[AutoSense], [Horizontal], [Vertical]	Horizontal
Input	Site wiring fault ⁽¹⁾	[Enabled], [Disabled]	Disabled
	Bypass voltage low limit	110 ~ (V_inverter - 15V)	187V
	Bypass voltage high limit	(V_inverter + 15V) ~ 276V	264V
	Bypass frequency low limit	-10%~-5%	45.0Hz
	Bypass frequency high limit	5%~10%	55.0Hz
	ECO voltage low limit	-15%~-5%	10%
	ECO voltage high limit	5%~20%	10%
	ECO frequency low limit	-10%~-5%	5%
	ECO frequency high limit	5%~10%	5%
	Dual input function	[Enabled], [Disabled]	Disabled
Output	UPS Mode	[Normal mode], [ECO Mode 1], [CVCF mode]	Normal mode
	Output voltage	[220V], [230V], [240V]	230V
	Output frequency	[Auto detection], [50Hz], [60Hz]	Auto detection
	ECO Mode 2	[Enabled], [Disabled]	Disabled
	Auto bypass	[Enabled], [Disabled]	Enabled
	Auto restart	[Enabled], [Disabled]	Enabled
	Short circuit auto clear	[Enabled], [Disabled]	Disabled
	Overload pre-alarm	50%~105%	105%
Battery	DC Start	[Enabled], [Disabled]	Enabled
	Battery Auto Test	[Every cycle] [Disabled]	Every cycle
	Deep discharge protection	[Enabled], [Disabled]	Enabled
	Low bat warning	0%~100%	0%
	Low remaining time warning	0~999min	0min
	Restart battery level	0~100%	0%
	Charger current ⁽²⁾	[1~13A]	[4A] for 10~20KS [2A] for 10K/20K
	External battery setting	[Auto detection], [Manual AH setting] Manual AH setting: [Max 300AH]	[Auto detection] /

Communication	Dry in	[No function] [Start UPS] [Shut down] [Maintenance bypass]	No function
	Dry out	[load powered] [on battery] [Low battery] [No Battery] [Bypass] [ups OK]	load powered
Password	Control Menu password	[Enabled], [Disabled]	Enabled
	Setting Menu password	[Enabled], [Disabled]	Disabled
	Change Password	Old password New password Confirm password	Forgotten password— contact your local supplier

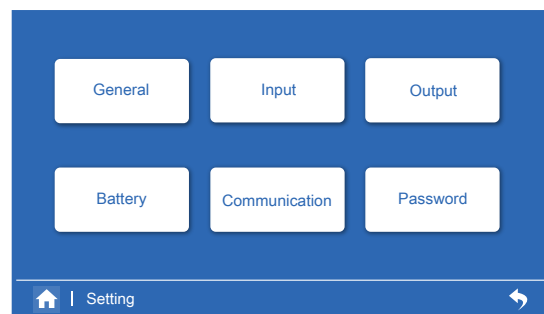
- (1) Site wiring fault function is only for single-phase bypass input. If the utility power is an IT system, the site wiring fault function should be disabled.
- (2) After the USP is completely powered off and restarted, the charger current will return to less than 4A. (A charger current of less than 4A will maintain the original value. A charger current greater than 4A will return to 2A.)

4.10.1 General setting

Click on "☰" icon to enter the main menu screen. Click on the "Setting" icon to enter the submenu, as shown in Figure 4.10.1-2

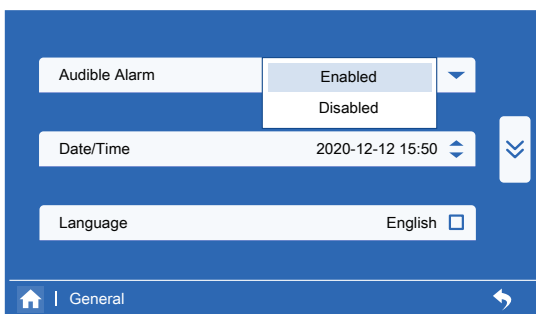


4.10.1-1

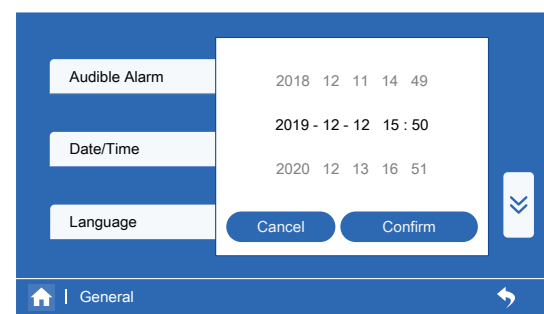


4.10.1-2

Click on the "General" icon to enter the submenu. This can modify the Audible Alarm, Date/Time, Language, LCD brightness, LCD saving mode and Screen rotation status.



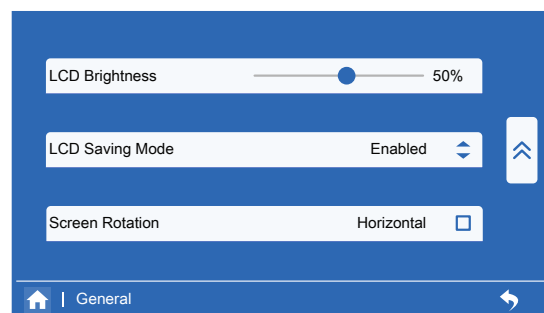
4.10.1-3



4.10.1-4



4.10.1-5



4.10.1-6

4.10.1-1
menu screen

4.10.1-2
The submenu
of "setting"

4.10.1-3
The setting of
Audible Alarm

4.10.1-4
The setting of
Date/Time

4.10.1-5
The setting of Language

4.10.1-6
The setting of LCD
brightness

4.10.1-7
The setting of LCD saving mode

4.10.1-8
The setting of Screen rotation

4.10.2-1
The setting of Site wiring fault

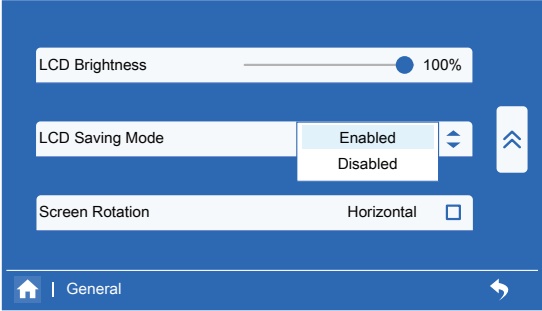
4.10.2-2
The setting of input page 1

4.10.3-1
The setting of UPS Mode

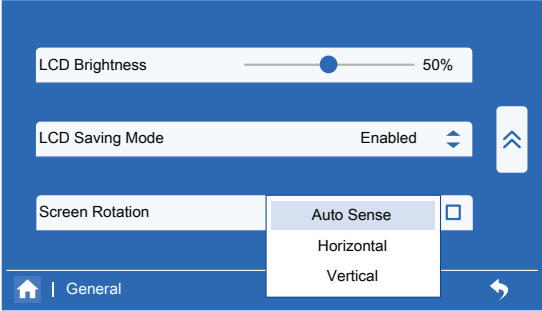
4.10.3-2
The setting of Output voltage

4.10.3-3
The setting of Output frequency

4.10.3-4
The setting of ECO Mode 2



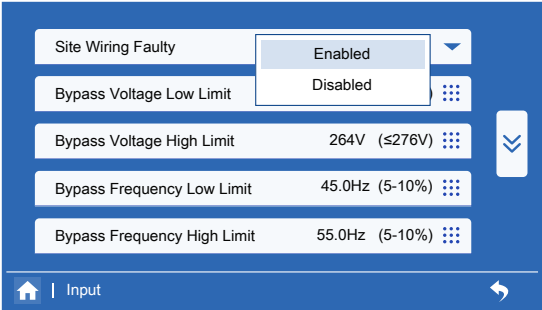
4.10.1-7



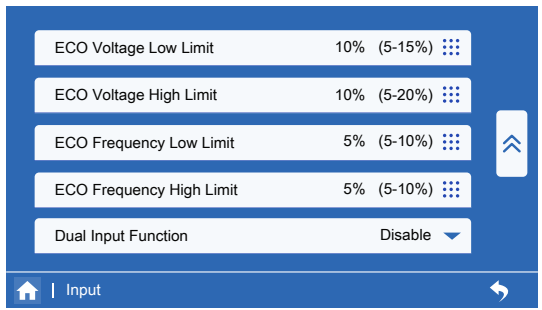
4.10.1-8

4.10.2 Input setting

Clicking on 'Input' icon brings up the submenu where you can modify the Site wiring fault, Bypass voltage low limit, Bypass voltage high limit, Bypass frequency low limit, Bypass frequency high limit, HE voltage low limit, HE voltage high limit, HE frequency low limit, HE frequency high limit and Dual input function.



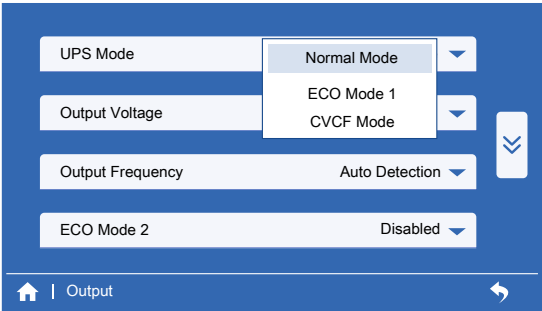
4.10.2-1



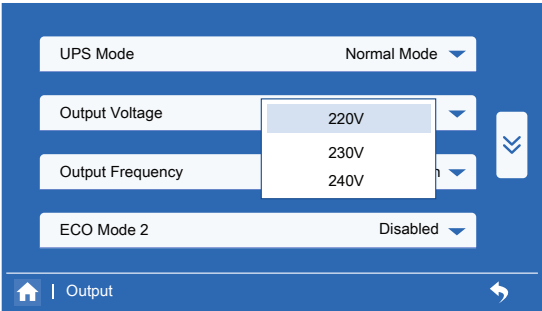
4.10.2-2

4.10.3 Output setting

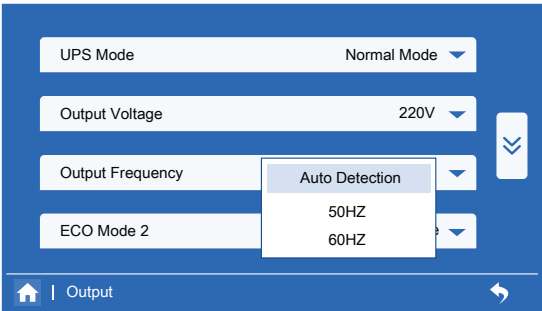
Clicking on "Output" icon brings up the submenu where you can modify the UPS Mode, Output voltage, Output frequency, ECO Mode 2, Auto bypass, Auto restart, Short circuit auto clear and Overload pre-alarm status.



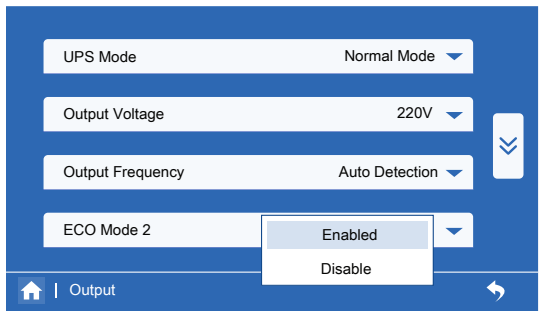
4.10.3-1



4.10.3-2



4.10.3-3



4.10.3-4

4.10.3-5
The setting of output page 1

4.10.4-1
The setting of battery auto test

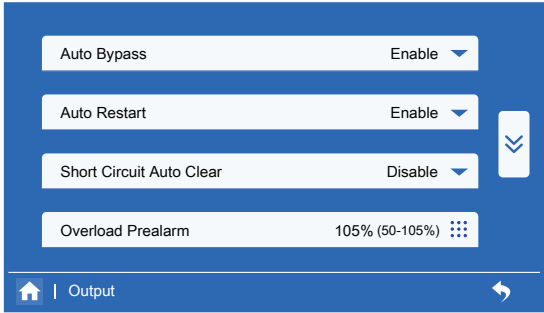
4.10.4-2
The setting of battery page 1

4.10.4-3
The setting of external battery setting page 1

4.10.4-4
The setting of external battery setting page 2

4.10.5-1
The setting of dry in

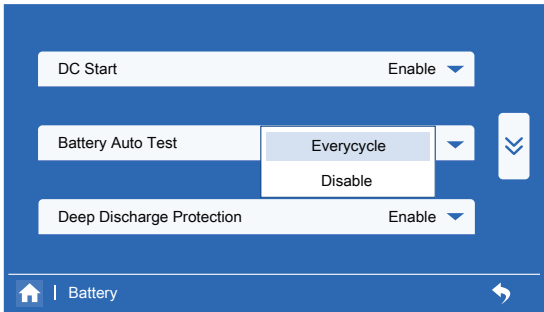
4.10.5-2
The setting of dry out



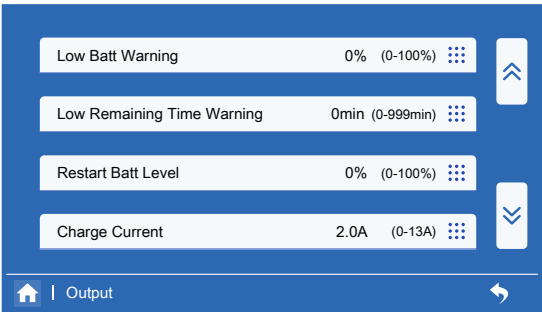
4.10.3-5

4.10.4 Battery setting

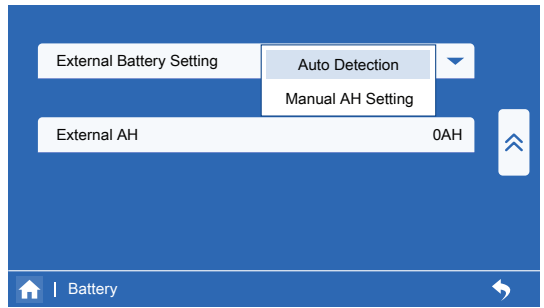
Clicking on "Battery" icon brings up the submenu where you can modify the DC Start, Battery Auto Test, Deep discharge protection, Low bat warning, Low remaining time warning, Restart battery level, Charger current and External battery setting status.



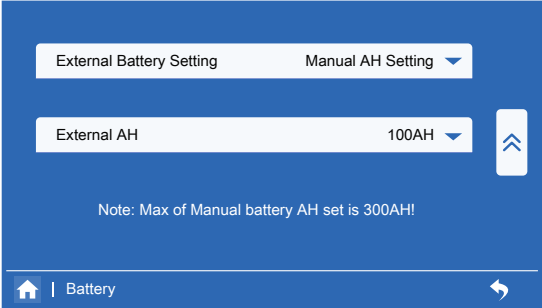
4.10.4-1



4.10.4-2



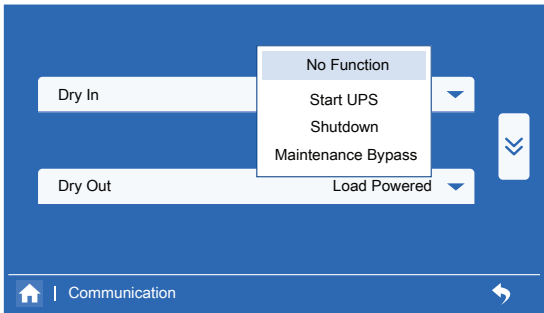
4.10.4-3



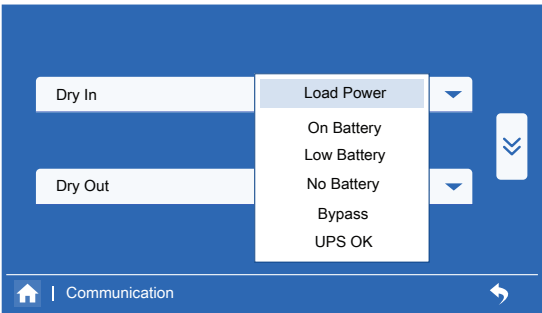
4.10.4-4

4.10.5 Communication setting

Clicking on "Communication" icon brings up the submenu where you can modify the Dry in, Dry out status.



4.10.5-1



4.10.5-2

4.10.6-1
The setting of
password page 1

4.10.6-2
The setting of
change password

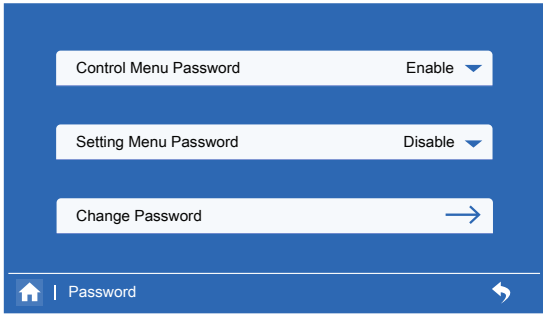
4.10.6-3
Step 1

4.10.6-4
Step 2

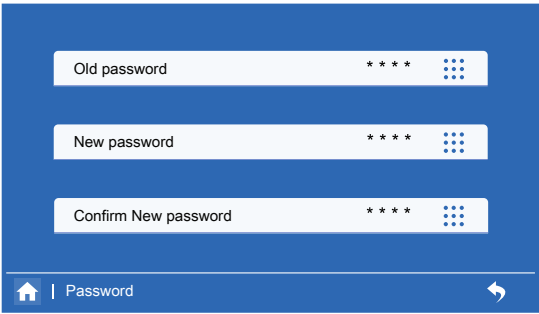
4.10.6-5
Step 3

4.10.6 Password setting

Clicking on "Password" icon brings up the submenu where you can modify the Control Menu password, Setting menu password and Change password status.



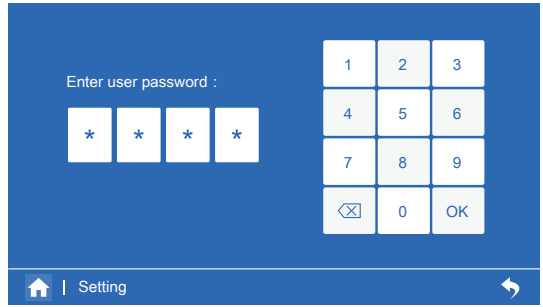
4.10.6-1



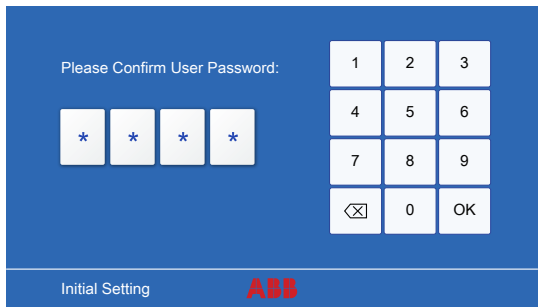
4.10.6-2

When turning on the UPS for the first time, a password needs to be set up.

1. Enter the user password in the following interface.
2. Enter the user setting password again. Confirm user password.

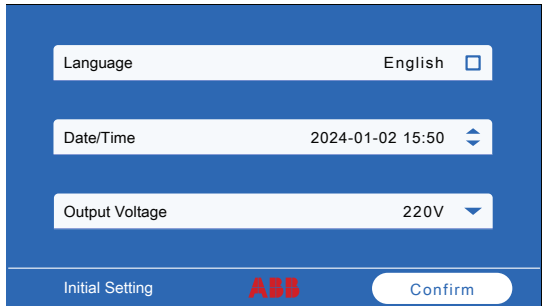


4.10.6-3



4.10.6-4

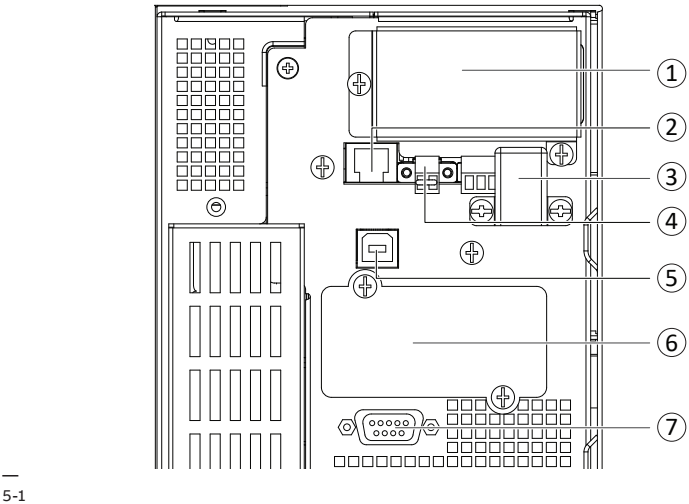
3. Confirm initial setting.



4.10.6-5

5. Communication

5-1:
Communication ports



No	Item
1	Parallel port
2	RJ45 (for EBM detection)
3	DRY in/out (With anti-electric shock cover)
4	RPO
5	USB
6	Intelligent slot
7	RS232

5.1 RS232 and USB

1. Communication cable to the serial or USB port on the computer.
2. Connect the other end of the communication cable to the RS232 or USB communication port on the UPS.

5.1.1-1:
RS-232 Communication
Port (DB-9 Connector)

5.1.1 S232 port

The UPS has an RS232 port for UPS monitoring, control and firmware updates. To establish communication between the UPS and a computer, connect one end of the serial communication cable to the RS232 port on the UPS and the other end to the RS232 port of a computer. The cable pins for the RS232 communication port are described in Figure 5.1.1-1 and Table 7.

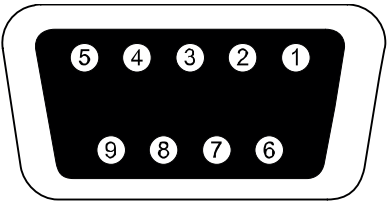


Table 7: Communication port pin assignment

PIN	Signal Name	Function	Direction from UPS
2	TxD	Transmit to external device	Out
3	RxD	Receive from external device	In
5	GND	Signal common	--

5.1.2 USB port

The UPS can communicate with USB-compliant computers that run power management software. To establish communication between the UPS and a computer, connect the USB cable to the USB port on the UPS. Connect the other end of the cable to the USB port on a computer.

5.2 UPS remote control functions

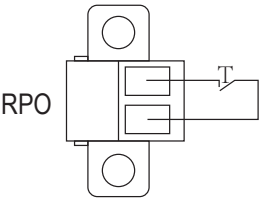
5.2-1:
RPO terminal

5.2-2:
Dry in terminal

- Remote Power Off (RPO)
- Remote Power Off. When RPO is activated, the UPS will cut off the output immediately and continue to alarm.
- The RPO connector can be used to block the output of the UPS in an emergency. The RPO connector is Normally Closed (NC) by a jumper in the rear panel. If the jumper is removed, the UPS output will not supply power to the load until the RPO status is changed.

RPO	Comments
Connector type	16 AWG Maximum wires
External breaker specification	60 V DC/30 V AC 20 mA max

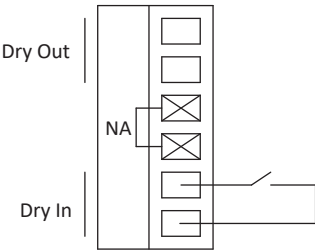
- Reset:
- Check the RPO connector status;
 - Clear fault state through LCD.



5.2-1

- Dry in
- Dry in function can be configured. (see 4.10 User setting > Communication > Dry in)

Dry in	Comments
Connector type	16 AWG Maximum wires
External breaker specification	60 V DC/30 V AC 20 mA max



5.2-2

5.2-3:
Dry out terminal

• Dry out

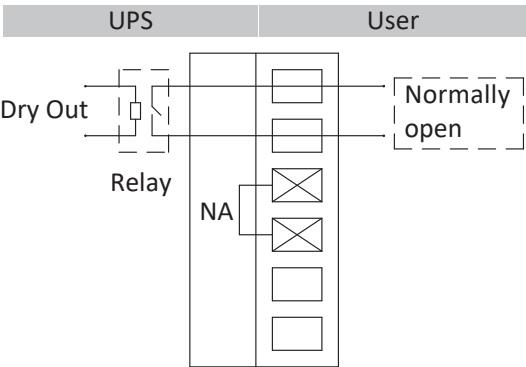
i

NOTE

THE VOLTAGE OF THE DRY OUT PORT IS DETERMINED BY THE USER'S ACCESS VOLTAGE, AND THE MAXIMUM SUPPORTED RATED VOLTAGE IS 230VAC/1A 48VDC/1A

Dry out is the relay out. The dry out function can be configured. (See 4.10 User setting > Communication > Dry out)

Dry out	Comments
Connector type	16 AWG Maximum wires
Inner Relay specification	230Vac/1A 48Vdc/1A



5.2-3

5.3 Intelligent card (optional)

The Intelligent Card allows the UPS to communicate with different types of devices in a variety of networking environments. The UPS can use the following connectivity cards. Please contact your local distributor for details.

- **Network Management Card (NMC)**—Ideal monitoring solution, enables the user to monitor and control the status of the UPS on a web browser via the internet.
- **Modbus Card**—Provides a connection to the Modbus protocol with a standard RS485 signal.
- **AS400 card**—Provides voltage-free dry-contact signals for a programmable controller and management system.

Connectivity card	Article number
NMC Card	4NWP100110R0001
Modbus Card	4NWP104039R0001
AS400 card	4NWP100120R0001

5.3.1 Installation and connection of Network Management Card (NMC)

Each UPS has a communication slot for an optional serial network management protocol (NMC) card. After installing an NMC card, an environmental monitoring probe can be connected.

i

NOTE

THE UPS DOES NOT HAVE TO BE SHUT DOWN BEFORE INSTALLING A COMMUNICATION CARD.

- Follow the steps below to install and connect the NMC web card:
1. Insert the card into the slot provided by the UPS. Insert the screws and tighten them.

2. Procure a Windows computer.
3. Use the RJ45 to DB9 female serial cable provided in the package to connect between the NMC COM port and the COM port on the workstation.

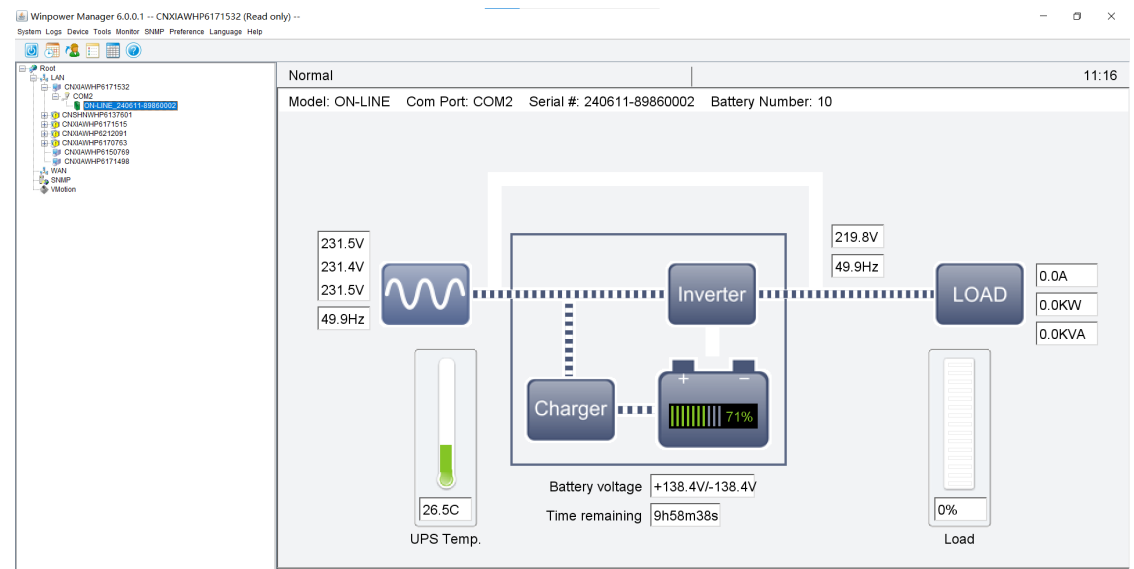
For more information about the NMC Card, see the NMC user's manual.

5.3.2 Monitoring software

The UPS can be monitored using software. The software provides a remote and safe shutdown for multi-client systems in the event of an absence of power at the UPS output. Instructions on how to install the software are provided with the network management cards.

For more information, contact your local supplier.

For example, WinPower provides a user-friendly interface to monitor and control your UPS.



5.3.2-1

6. Troubleshooting

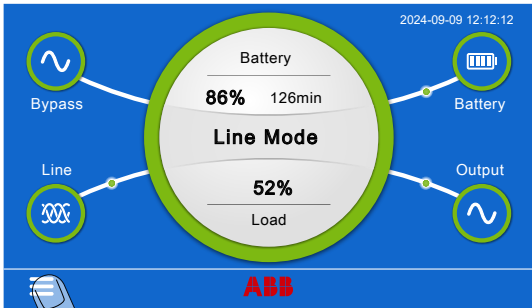
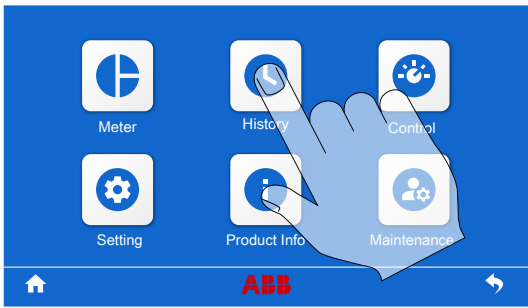
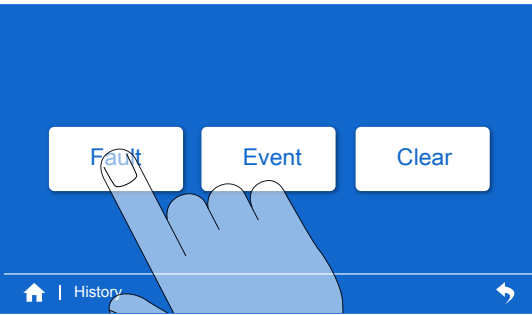
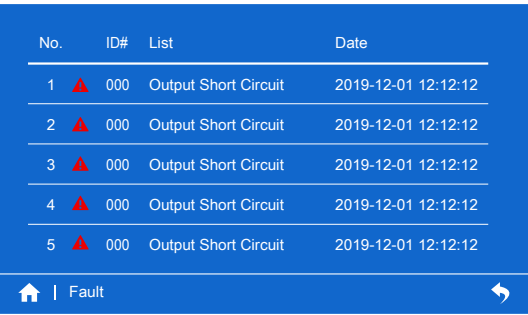
The UPS is designed for durable, automatic operation and to alert you whenever potential operating problems occur. Usually, the alarms shown by the control panel do not mean that the output power is affected. Instead, they are preventive alarms intended to alert the user.

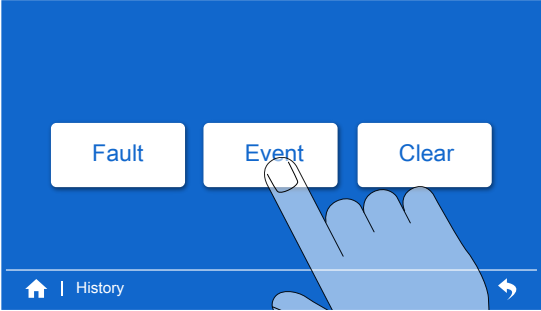
- Events are silent status information that are record in the Event log. Example = "Battery charging."
- Alarms are recorded in the Event log and displayed on the LCD status screen with the logo blinking. Some alarms may be announced by a beep every 1 second. Example = "Battery low."
- Faults are announced by a continuous beep and red LED recorded in the Event log. Example = Output short circuit.

Use the following troubleshooting chart to determine the UPS alarm condition.

6.1 Typical alarms and faults

To check the fault log or event log:

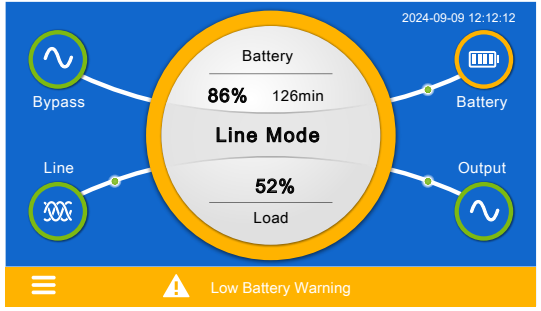
To check the fault log or event log: 																									
Click on "Menu" icon	Click on "History" icon																								
	 <table border="1"> <thead> <tr> <th>No.</th> <th>ID#</th> <th>List</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>▲ 000</td> <td>Output Short Circuit</td> <td>2019-12-01 12:12:12</td> </tr> <tr> <td>2</td> <td>▲ 000</td> <td>Output Short Circuit</td> <td>2019-12-01 12:12:12</td> </tr> <tr> <td>3</td> <td>▲ 000</td> <td>Output Short Circuit</td> <td>2019-12-01 12:12:12</td> </tr> <tr> <td>4</td> <td>▲ 000</td> <td>Output Short Circuit</td> <td>2019-12-01 12:12:12</td> </tr> <tr> <td>5</td> <td>▲ 000</td> <td>Output Short Circuit</td> <td>2019-12-01 12:12:12</td> </tr> </tbody> </table>	No.	ID#	List	Date	1	▲ 000	Output Short Circuit	2019-12-01 12:12:12	2	▲ 000	Output Short Circuit	2019-12-01 12:12:12	3	▲ 000	Output Short Circuit	2019-12-01 12:12:12	4	▲ 000	Output Short Circuit	2019-12-01 12:12:12	5	▲ 000	Output Short Circuit	2019-12-01 12:12:12
No.	ID#	List	Date																						
1	▲ 000	Output Short Circuit	2019-12-01 12:12:12																						
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3	▲ 000	Output Short Circuit	2019-12-01 12:12:12																						
4	▲ 000	Output Short Circuit	2019-12-01 12:12:12																						
5	▲ 000	Output Short Circuit	2019-12-01 12:12:12																						
Click on "Fault" icon	Last 5 faults, blank list if no fault																								

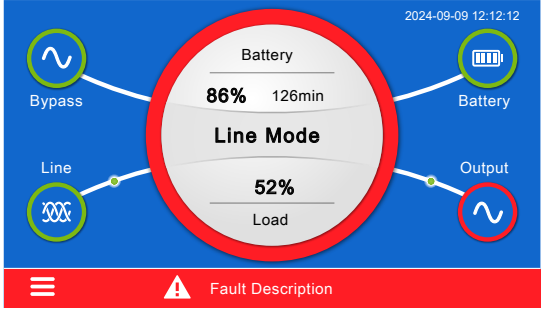


No.	ID#	List	Date
1	▲ 001	Byp SCR Over Temp Fault	2019-12-01 12:12:12
2	▲ 002	Overload Prealarm	2019-12-01 12:12:12
3	■ 003	Line Volt Unbalance	2019-12-01 12:12:12
4	■ 004	Line Volt Unbalance	2019-12-01 12:12:12
5	■ 005	Line Volt Unbalance	2019-12-01 12:12:12
6	▲ 006	Byp SCR Over Temp Fault	2019-12-01 12:12:12
7	▲ 007	Overload Prealarm	2019-12-01 12:12:12
8	■ 008	Line Volt Unbalance	2019-12-01 12:12:12

Click on "Event" icon

Last 100 events





If there is an alarm, it shows here. 4 messages for high-priority alarm

Problem Displayed	Possible cause	Remedy
Site wiring fault	Phase and neutral conductor at input of UPS system are reversed	Reverse utility power wiring
Neutral wire missed	Neutral abnormal	Confirm the connection of the input wires
Pos Batt open	Battery pack is not connected correctly	Do the battery test to confirm; Check the battery bank is properly connected to the UPS; Check the battery breaker is turned on, or the fuse is OK.
Neg Batt open	Battery pack is not connected correctly	Do the battery test to confirm; Check the battery bank is properly connected to the UPS; Check the battery breaker is turned on, or the fuse is OK.
Pos Batt Low	Battery voltage is low	When an alarm is audible every second, the battery is almost empty.
Neg Batt Low	Battery voltage is low	When an alarm is audible every second, the battery is almost empty.
Pos Over Charge	Battery voltage is high	Consult dealer
Neg Over Charge	Battery voltage is high	Consult dealer
Pos Charger Failure	UPS internal fault	Consult dealer
Neg Charger Failure	UPS internal fault	Consult dealer
Bad Battery Count	Unreasonable battery number	Check whether the actual battery cell number is consistent with the set value
Pos Bus Over Volt	UPS internal fault, the + DC BUS voltage is too high	Consult dealer
Neg Bus Over Volt	UPS internal fault, the -DC BUS voltage is too high	Consult dealer
Pos Bus Under Volt	UPS internal fault, the + DC BUS voltage is too low	Consult dealer
Neg Bus Under Volt	UPS internal fault, the -DC BUS voltage is too low	Consult dealer
Bus Unbalance	UPS internal fault, the voltage difference between DC Bus+ and DC bus- is too large	Consult dealer
Bus Short	UPS internal fault	Consult dealer
Bus Soft Start Fail	UPS internal fault	Consult dealer

Output Short circuit		
L1 Output Short circuit	abnormally low impedance placed on its output and considers it a short circuit	Remove all the loads. Turn off the UPS; Check if UPS output and loads are short circuited; Ensure the short circuit is removed before turning on again
L2 Output Short circuit		
L3 Output Short circuit		
Inverter Over Volt	UPS internal fault, the inverter voltage is too high	Consult dealer
Inverter Under Volt	UPS internal fault, the inverter voltage is too low	Consult dealer
Inverter Soft start Fail	UPS internal fault	Consult dealer
Inverter Overload Fault	Overload	Check the loads and remove some noncritical loads; Check if some loads have failed
Output Overload Fault		
Byp Overload Fault		
Inverter Capacity Open	UPS internal fault	Consult dealer
Primary SPS Fail	UPS internal fault	Consult dealer
Assist SPS Fail		
Emergency Off	Perform emergency shutdown	Check the status of RPO terminal
Internal Over Temp Fault	Inside temperature of UPS is too high	Check the ventilation of the UPS and the ambient temperature
Byp SCR Over Temp		
Charger Over Temp Fault		
UPS Ambient Over Temp	The ambient temperature is too high	Check the environment ventilation
Fan Lock	Fan abnormal	Check if the fan is running normally, or the fan detection cable is disconnected
Bypass Fan lock		
Model Setting Wrong	Wrong work mode	Consult dealer
Neg Power Fault	Negative power fault	Consult dealer
Para. Cable Lost	The cable is not connected	Please confirm the connection status of the parallel cable
Para. Incompatible	Para setting different	Please check the parallel settings. If it still alarms, please consult a dealer.
Byp Device Fault	UPS internal fault	Consult dealer
Main relay stick	UPS internal fault	Consult dealer

7. Cybersecurity Legal Disclaimer

The product is designed to be connected to and to communicate information and data via a network interface. It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be). You must establish and maintain any appropriate measures (such as but not limited to the installation firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information. ABB Ltd. and its affiliates are not liable for damages and/or losses related to such security breaches and any unauthorized access, interference, intrusion, leakage, and/or theft of data or information. Although ABB provides functionality testing on the products and updates that we release, you should institute your own testing program for any product updates or other major system updates (to include but not limited to code changes, configuration file changes, third-party software updates or patches, hardware change out, etc.) to ensure that the security measures that you have implemented have not been compromised, and the system functionality in your environment is as expected.



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