PowerValue 11 RT 6-10 kVA
User Manual

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Power and productivity
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FOREWORD

The UPS system operates with mains, battery or bypass power. It contains components that carry high currents and voltages. The properly installed UPS system is grounded to earth and IP 20 rated against electrical shock and foreign objects.

OPERATIONS INSIDE THE UPS MUST BE PERFORMED BY A SERVICE ENGINEER FROM THE SUPPLIER OR FROM AN AGENT AUTHORIZED BY THE SUPPLIER.

This user manual contains guidelines to check delivery, installing and commissioning of the UPS and is intended for people who install, commission and use or service the UPS. The reader is expected to know the fundamentals of electricity, wiring, electrical components and electrical schematic symbols.

THE INSTRUCTIONS IN THIS MANUAL SHOULD BE FOLLOWED DURING INSTALLATION, OPERATION AND MAINTENANCE OF THE UPS AND BATTERIES.

Read carefully all instructions and save this manual for future reference.

SYMBOLS

The following symbols are used in this manual, the list below describes each symbol.

	WARNING: DANGER OF ELECTRICAL IMPACT
	NOTE: READ THE INFORMATION, IN ORDER TO AVOID EQUIPMENT DAMAGES
	PROTECTIVE GROUNDING TERMINAL: A terminal which must be connected to earth ground prior to making any other connection to the equipment
	A terminal to which or from which an alternating current or voltage (AC) may be applied or supplied
	A terminal to which or from which a direct current or voltage (DC) may be applied or supplied
	Battery
	Power On, Idle or shutdown the UPS
	Overload indication
	Recycle
	Do not dispose with ordinary trash

CONTENTS

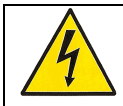
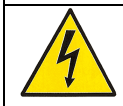
1 SAFETY INSTRUCTIONS

1.1 Operator precautions

The user must follow the precautions and only perform the described operations. Also in these measures the operator of the UPS system must adhere to the instructions in this manual. Any deviations from the instructions could be dangerous to the user or cause accidental load loss.

The only user operations permitted are:
- Use of the LCD control panel (LCD Display) and Maintenance Bypass (if present)
- Start up and shut down of the UPS (excluding the commissioning start up)
- Operation of additional connectivity devices

THE SUPPLIER DOES NOT TAKE ANY RESPONSIBILITY FOR DAMAGES CAUSED THROUGH WRONG MANIPULATIONS OF THE UPS SYSTEM.

 WARNING!	IT IS PROHIBITED TO REMOVE ANY SCREWS FROM THE UPS SYSTEM OR FROM THE BATTERY CABINET: DANGER OF ELECTRICAL SHOCK.
 WARNING!	HIGH FAULT CURRENTS (LEAKAGE CURRENTS): BEFORE CONNECTING THE MAINS YOU MUST ENSURE THAT THERE IS A PROPER EARTH CONNECTION!
 WARNING!	THE USER MUST DISPLAY A WARNING SHIELD ON ALL PRIMARY UPS CIRCUIT BREAKERS. THE SERVICE PERSONNEL HAS TO BE INFORMED ABOUT DANGEROUS VOLTAGES. THE WARNING PANELS MUST CONTAIN THE FOLLOWING TEXT: “BEFORE STARTING WITH THE MAINTENANCE WORK ON THE CIRCUIT BREAKERS, MAKE SURE THE UPS IS ISOLATED.”

1.2 Environmental Considerations

To operate the UPS at its best efficiency point, your installation site should meet the environmental parameters outlined in this manual. Excessive amount of dust or moisture in the operating environment may cause damage or lead to malfunction. The UPS should be always protected from the outside weather and sunshine. The operating environment must meet the weight, airflow, size and clearance requirements specified in the technical datasheet.
Under no circumstances the UPS should be installed in an airtight room, in the presence of flammable gases, or in an environment exceeding environmental requirements here below.
An ambient temperature of +20°C to +25°C is recommended to achieve a long life of the UPS and batteries. The cooling air entering the UPS must not exceed +40°C and the humidity should be below 95% (non-condensing).

1.3 Declaration of Safety conformity and CE marking

PowerValue 11 RT is designed, manufactured and commercialized in accordance with the standard of Quality Management Systems **EN ISO 9001**. The marking shows the conformity to the EEC Directive by means of the application of the following standards in accordance with the specifications of the harmonized standards:
• **2006/95/EC** Low voltage directive.
• **2004/108/EC** Electromagnetic Compatibility directive (EMC).
Standards as reference:
• **EN-IEC 62040-1**. Uninterruptible power supply (UPS). Part 1-1: General and safety requirements for UPS’s used in accessible areas by end users.

• **EN-IEC 60950-1**. IT equipment. Safety. Part 1: General requirements.
• **EN-IEC 62040-2**. Uninterruptible power supply (UPS). Part 2: EMC requirements.

The supplier's responsibility is excluded in the event of any modification or intervention in the product by the customer's side.

	Product Standards	Standards
Safety	IEC/EN 62040-1	IEC/EN 60950-1
Electromagnetic Compatibility (EMC)	IEC/EN 62040-2 (C3)	IEC/EN 61000-4-2 IEC/EN 61000-4-3 IEC/EN 61000-4-4 IEC/EN 61000-4-5 IEC/EN 61000-4-6 IEC/EN 61000-4-8 IEC/EN 61000-2-2

Figure 1: Standards

1.4 Inquiries

Address inquiries about the UPS to the local office or agent authorized by the supplier. Please note the type code and the serial number of the equipment and contact your nearest agent authorized by the supplier. The serial number is shown in the nameplate of the product. For further information on troubleshooting, go to Section 6.

1.5 Operation

Do not remove the enclosure of the UPS. This system is to be serviced by qualified service personnel only.

Do not disconnect the mains cable from the UPS or the building wiring socket during operation as this would remove the ground to the UPS and of all connected loads.

In order to fully disconnect the UPS, press the OFF-button. Only after the UPS is shutdown, disconnect the mains load.

To reduce the risk of fire, connect only 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.

UPS	Breaker
6kVA	40 A 2-pole circuit breaker
10kVA	63 A 2-pole circuit breaker

Indiscriminate operation of switches may cause output loss or damage to equipment.

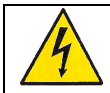
This UPS may be connected to a maximum of four External battery enclosures.

Do not dispose batteries on fire as they may explode.

Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes.

1.6 Maintenance, servicing and faults

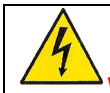
Repairs may be carried out only by qualified maintenance personnel as the UPS operates with hazardous voltages.



WARNING!

EVEN AFTER THE UNIT IS DISCONNECTED FROM THE MAINS POWER SUPPLY, COMPONENTS INSIDE THE UPS ARE STILL CONNECTED TO THE BATTERY.

Before carrying out any kind of service and/or maintenance, disconnect the batteries. Verify that no current is present and no hazardous voltage exists in the capacitor or BUS capacitor terminals. Batteries must be replaced only by qualified personnel.



WARNING!

THE BATTERY CIRCUIT IS NOT ISOLATED FROM THE INPUT VOLTAGE. HAZARDOUS VOLTAGES MAY OCCUR BETWEEN THE BATTERY TERMINALS AND THE GROUND. VERIFY THAT NO VOLTAGE IS PRESENT BEFORE SERVICING.

When changing the batteries, replace with the same quantity and the same type of batteries.

Replace the fuses only by fuses of the same type and amperage in order to avoid fire hazards.

2 Installation

2.1 Delivery, Transportation, Positioning and Storage

2.1.1 Receipt of the UPS and visual inspection

Upon receiving the UPS, carefully examine the packing container and the UPS for any sign of physical damage. In case of damage, notify immediately the carrier.

The packing container of the UPS protects it from mechanical and environmental damage. To increase its protection, the UPS is wrapped with a plastic sheet. Preserve the packaging for later re-use.

2.1.2 Unpacking

After examining the package, open the carton box and remove the accessories.

- 1 x User manual
- 2 x UPS stands (support)
- 4 x M4 round screw (UPS stands)
- 1 x IEC Cable
- 1 x Monitoring Software CD
- 1 x 15-pin communication cable (for parallel systems)
- 1 x USB cable

Rack mounting kit (optional)
- 1 x 'L' metal slides
- 1 x 'R' metal slides
- 2 x 90º metal support ("ears")
- 6 x M4 flat screw
- 14 x M6 round screw
- 4 x M6 clip nut
- 1 x User manual

Examine the UPS for any sign of damage and ensure that the received UPS corresponds to the material indicated in the delivery note. Notify your carrier or supplier immediately if damage is apparent.

2.1.3 Storage of UPS

If you plan to store the UPS prior to use, keep the UPS in a dry, clean and cool storage room with an ambient temperature between (-15 °C to +60°C) and humidity of less than 95% non-condensing. If the packing container has been removed protect the UPS from dust. Keep the UPS always in upright position and do not drop the equipment.

2.2 Site Planning and Positioning

2.2.1 Planning before the installation

The appropriate place of installation for the unit is to be selected in such a way that the danger of damage to the UPS is minimized and a long service life of the device is thus ensured. Please observe the following instructions:

- Install the UPS in an indoor area.
- Leave 50cm of space on each side of the cabinet to enable cooling airflow and ensure that the circulation of air to the ventilation slits is not obstructed.
- Avoid excessively high temperature and excessive moisture.
- Make sure that the surface is solid and flat.

2.2.2 Positioning

PowerValue 11 RT can be mounted in a rack or in a standalone configuration. Follow the instructions in this section accordingly to the installation requirements.

Note that water condensing may occur if the UPS is unpacked in a very low temperature environment. In this case it is necessary to wait until the UPS is fully dried inside out before proceeding installation and use to avoid hazards and electric shock.

2.2.2.1 Rack Mount Installation

1. Identify the rail holes in the rack for positioning the cabinet. Position the rails in the bottom of the 3U space for 6kVA units and 5U space for 10kVA units.
2. Slide the cabinet into the rack as indicated in Figure 2.

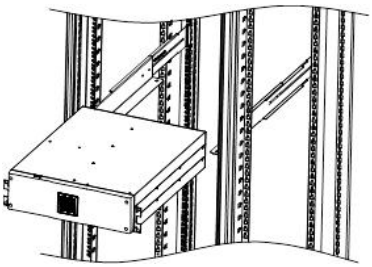


Figure 2: Rack mount installation

If installing additional UPS, repeat procedures 1 and 2 for each cabinet.

Connecting the External Battery Modules

PowerValue 11 RT 6kVA

WARNING!	THIS TYPE OF CONNECTION MUST BE CARRIED OUT BY QUALIFIED ELECTRICAL PERSONNEL. CONNECT AN APPROPRIATE BREAKER BETWEEN UPS AND BATTERIES.

1. Remove the front panel of the UPS and of the external battery modules.
2. Plug the External Battery Enclosure cable into the UPS battery connector as indicated in
3. Figure **3**.

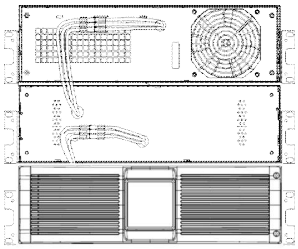


Figure 3: Battery Module Connections

4. Position and screw the UPS and the Battery Module front panel.

PowerValue 11 RT 10kVA

WARNING!	THIS TYPE OF CONNECTION MUST BE CARRIED OUT BY QUALIFIED ELECTRICAL PERSONNEL. CONNECT AN APPROPRIATE BREAKER BETWEEN UPS AND BATTERIES.

1. Plug the battery module cable into the UPS battery connector in the rear of the UPS as indicated in Figure 4.

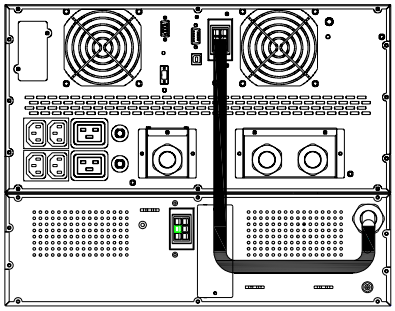


Figure 4: Battery Module Connections

2.2.2.2 Standalone / Tower Installation

PowerValue 11 RT 6 kVA

1. Carefully rotate the LCD control panel of 90º to the right in the UPS and in the battery modules.

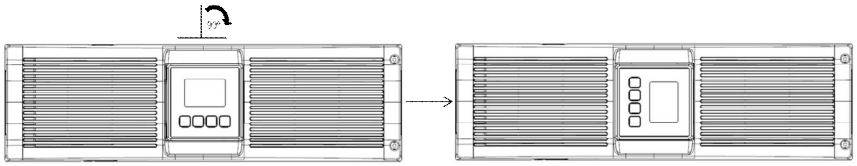


Figure 5: Display rotation

2. Rotate the units to the vertical position
3. Screw the supports to the sides of the unit.

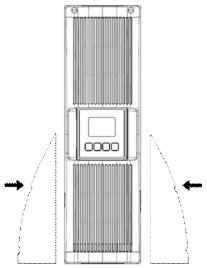


Figure 6: Support positioning

PowerValue 11 RT 10 kVA

1. Carefully rotate the LCD control panel of 90º to the right in top and bottom front panels.

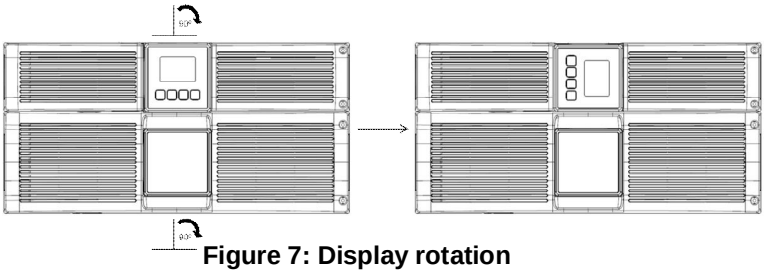


Figure 7: Display rotation

2. Rotate the units to the vertical position
3. Screw the supports to the sides of the unit.

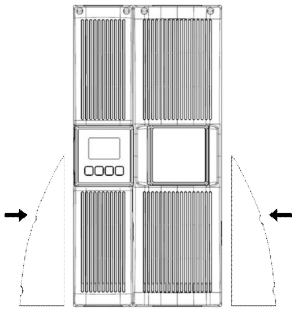
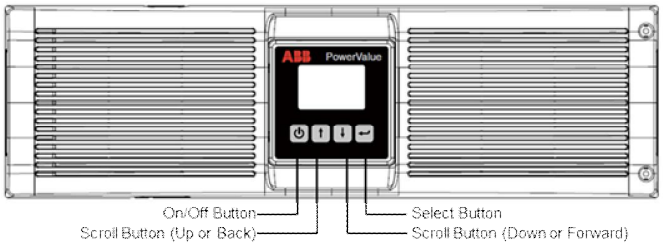


Figure 8: Support positioning

2.3 General Characteristics

2.3.1 Front View



2.3.2 Rear View

The UPS rear panel's description table and pictures are shown below:

Number	Description
1	AC output
2	AC input
3	Bypass
4	RS-232
5	SNMP/ AS400 slot
6	Output circuit breaker

Number	Description
7	USB port
8	Parallel port
9	EPO
10	Battery connector
11	Ground contact

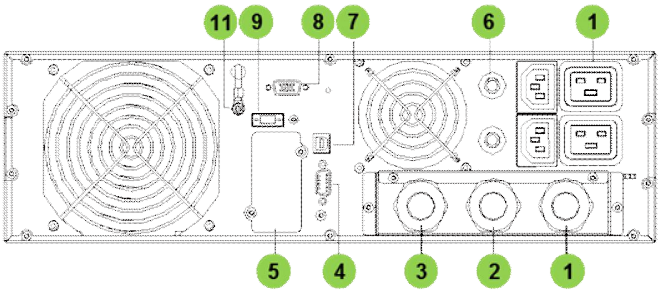


Figure 9: PowerValue 11 RT 6 kVA rear view

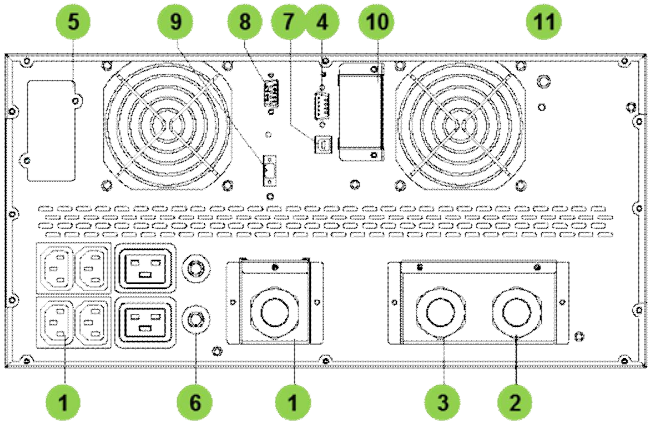
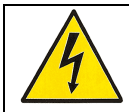


Figure 10: PowerValue 11 RT 10 kVA rear view

2.4 Electrical Installation

2.4.1 Commissioning

The UPS must be commissioned by a fully trained and authorized field service engineer before being put into use. The commissioning of the UPS involves the connection of the UPS and batteries, the verification of the electrical installation and operating environment of the UPS, the controlled start-up and testing of the UPS and customer training.



WARNING!

OPERATIONS INSIDE THE UPS MUST BE PERFORMED BY A SERVICE ENGINEER FROM THE SUPPLIER OR FROM AN AGENT AUTHORIZED BY THE SUPPLIER.

DO NOT OPERATE IN CASE OF PRESENCE OF WATER OR MOISTURE.

BY OPENING OR REMOVING THE UPS-COVERS YOU ARE EXPOSED TO DANGEROUS VOLTAGES.

PHYSICAL INJURY OR DEATH MAY FOLLOW, OR DAMAGE MAY OCCUR TO THE UPS, OR THE LOAD EQUIPMENT IF THESE INSTRUCTIONS ARE IGNORED

To ensure correct operation of the UPS and batteries, it is necessary to provide the mains cables with appropriate fuse protection.

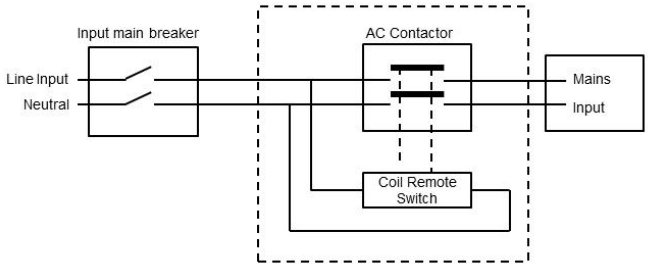
2.4.2 Recommended Cable Sections and Fuse Ratings

To select the cable cross sections and the protective devices, follow the recommendations in Figure 11 or respect the local standards.

Model	6 kVA	10 kVA
Protective Earth (PE) conductor (Minimum cross section)	6mm2 (8 AWG)	10mm2 (6 AWG)
Input L, N, G (Minimum cross section)	6mm2 (8 AWG)	10mm2 (6 AWG)
Input fuse	60A	80A
Output L,N, G (Minimum cross section)	6mm2 (8 AWG)	10mm2(6AWG)
External Battery Cabinet Positive Pole(+), Negative Pole(-), Neutral Pole (Minimum cross section)	4mm2 (10 AWG)	2.5mm2*2 (12 AWG*2)
External Battery Cabinet Fuse in Positive Pole(+), Negative Pole (-), Neutral Pole	60A	80A

Figure 11: Recommended Cables and Fuses

It is suggested to install an external isolating device against back-feed currents between mains input and UPS as indicated in Figure 12.



AC Contactor: 208-240V, 50A (PowerValue 11 RT 6 kVA)
208-240V, 70A (PowerValue 11 RT 10 kVA)

Figure 12: External Backfeed Isolation

WARNING!

AFTER THE DEVICE IS INSTALLED, ADD A LABEL WITH THE FOLLOWING WARNING ON THE EXTERNAL AC CONTACTOR: "**RISK OF BACKFEED VOLTAGE. ISOLATE THE UPS BEFORE OPERATING ON THIS CIRCUIT AND CHECK FOR HAZARDOUS VOLTAGE**"

2.4.3 Connections

To access the terminal blocks, remove the 2 screws from the terminal block cover.

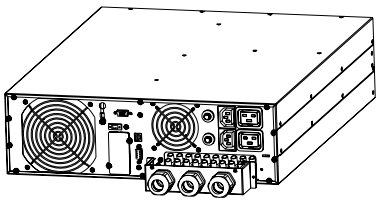


Figure 13: PowerValue 11 RT 6 kVA Terminal block

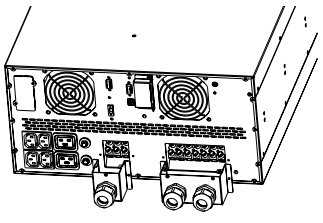


Figure 14: PowerValue 11 RT 10 kVA Terminal block

WARNING!

THE CABLING CONNECTIONS MUST BE CARRIED OUT BY QUALIFIED ELECTRICAL PERSONNEL.

Single Input Feed Connections

In the single input feed configuration, there is a single AC input to the UPS (inverter and bypass).

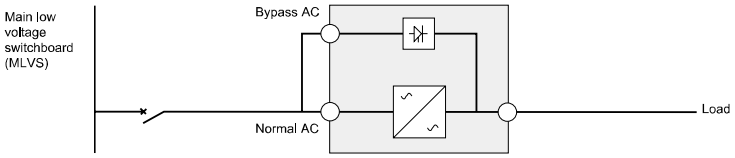


Figure 15: UPS Diagram with Single Input Feed

Follow the steps below for cabling the UPS:

1. IMPORTANT: Connect the earth wire
2. Connect a jumper between terminals JP and L.
3. Connect the input and output cables

Use appropriate tools and terminal splices to guarantee a reliable contact between the wires and the terminal blocks.

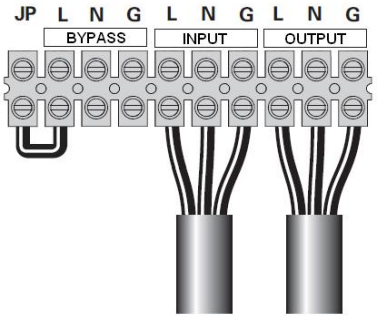


Figure 16: Single Input Feed connections for 6kVA units

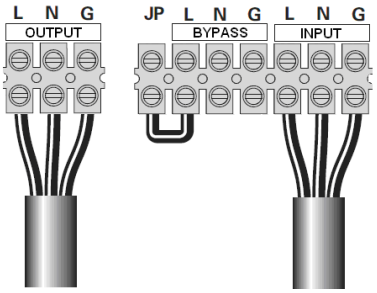


Figure 17: Single Input Feed connections for 10 kVA units

Dual Input Feed Connections

In the dual input feed configuration, two separate AC inputs are connected to the UPS (one for the inverter and one for the bypass).

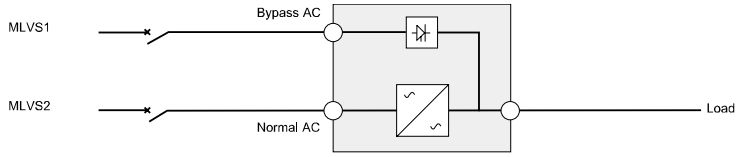


Figure 18: UPS Diagram with Dual Input Feed

When the Earth system of the inputs are different, a transformer should be connected to the inputs. Figure 19, Figure 20, and Figure 21 show the possible ways of connecting the inputs to the transformers.

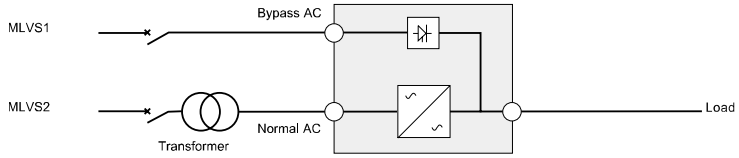


Figure 19: UPS with transformer in the normal AC input

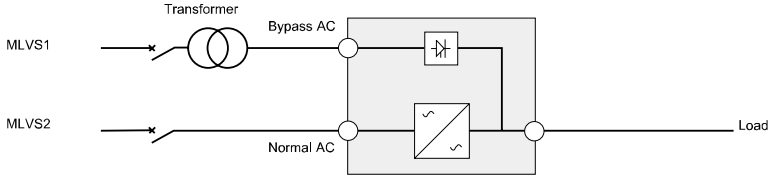


Figure 20: UPS with transformer in the bypass input

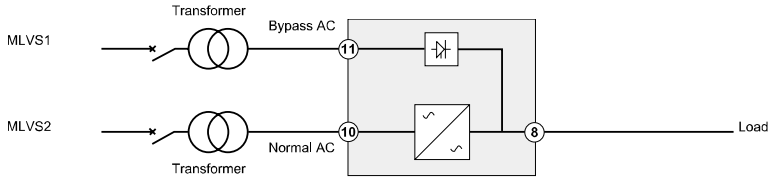


Figure 21: UPS with transformer in normal and bypass inputs

Follow the steps below for cabling the UPS:

1. IMPORTANT: Connect the Earth wire
2. Ensure that the jumper JP is disconnected
3. Connect the input, output and bypass cables

Use appropriate tools and terminal splices to guarantee a reliable contact between the wires and the terminal blocks.

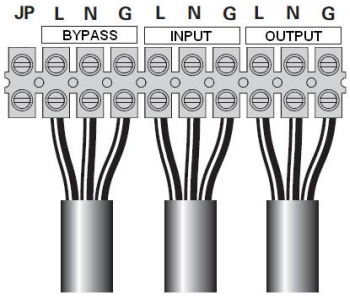


Figure 22: Dual Input Feed connections for 6kVA units

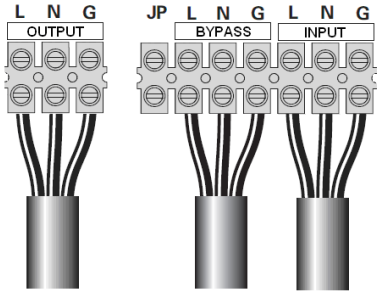


Figure 23: Dual Input Feed connections for 10kVA units

Frequency Converter Connections

PowerValue 11 RT can work as a frequency converter. In such configuration, only the input and output should be connected as indicated as indicated in Figure 24, Figure 25 and Figure 26.

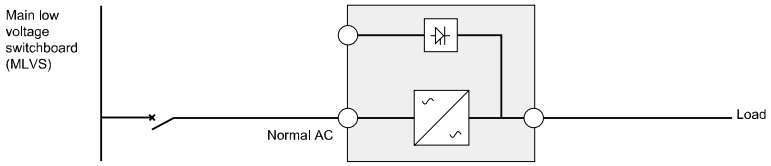


Figure 24: UPS Diagram as a frequency converter

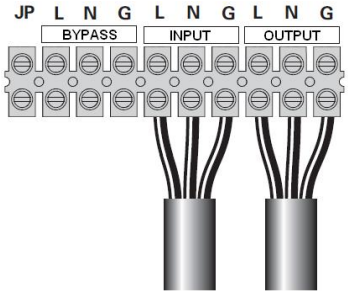


Figure 25: Frequency converter connections for 6kVA units

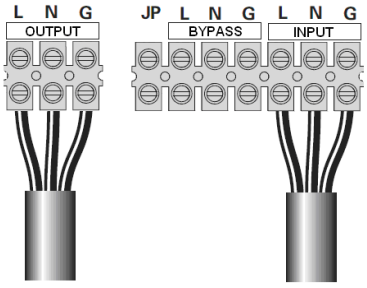


Figure 26: Frequency converter connections for 10kVA units

Note: The power consumption in the start-up of inductive loads (such as monitors and laser printers) is very high. If such loads are connected to the UPS, the start-up power consumed by these devices should be considered when calculating the capacity of the UPS. If this is not taken into consideration, the UPS goes often in overload and may turn off easily depending on its dimensioning.

2.5 Initial Startup

WARNING! SWITCH OFF THE CONNECTED LOADS BEFORE TURNING ON THE UPS. SWITCH ON THE LOADS ONE BY ONE AFTER THE UPS IS TURNED ON.

1. Verify that the total equipment ratings does not exceed the UPS capacity to prevent an overload alarm.
2. Check that all cables are connected correctly and well-fixed mechanically.
3. Set the upstream circuit breaker (not included) to the “power-On” position (ON). The UPS LCD panel will illuminate and show a welcome screen.
4. The UPS will transfers to bypass-mode.
5. Press the Power-on button on the UPS LCD panel for at least three seconds.
6. Check the UPS display for active alarms or notices. Recognize and solve any active alarm before continuing. See “Troubleshooting” in Section 6.
7. Verify that the UPS is operating normally and that the loads are powered.
8. Adjust the date and time settings. See Section 3.4.2.5

Note: At the initial startup, the UPS sets the system frequency according to the frequency in the input line (input frequency auto-sensing is enabled by default). After initial startup, auto-sensing is disabled until manually re-enabled through the output frequency settings.

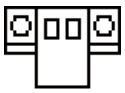
Note: At initial startup, the input voltage auto-sensing is disabled by default. After manually enabled in the voltage settings, the UPS output voltage will be set accordingly to the input voltage. After a subsequent startup, auto-sensing will be disabled until manually re-enabled in the output voltage settings.

9. If you connect the REPO port, test this function by activating the external REPO switch and verifying that its status change on the UPS display.

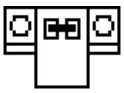
2.6 Emergency Power Off (EPO)

The EPO connector gives the user the possibility to block the output of the UPS in case of an emergency. This connector can be configured as Normally Closed (NC) of Normally Opened (NO) through the USB or RS232 port.

As a default the EPO is Normally Closed (NC) by a jumper in the rear panel. If the jumper is removed, the UPS output will not supply energy to the load until the EPO status is again modified.



Enable the EPO status



Disable the EPO status

To recover to normal status, the EPO connector should first be closed. Then, enter the LCD menu (refer to Section 3.4.2.3) to clear the EPO status. The UPS alarm will stop and the bypass-mode will be recovered. To have the UPS in inverter-mode, the selection has to be made by manual operation.

2.7 Paralleling the units

With PowerValue 11 RT, up to 2 UPS can be connected in parallel to obtain output power sharing and power redundancy.

2.7.1 Output wiring requirements

- When the distance between the UPS in parallel and the breaker panel is lower than 10 meters, the length difference between input and output cable of the UPS is required to be lower than 20%.

- When the distance between the UPS in parallel and the breaker panel is more than 10 meters, the length difference between input and output cable of the UPS is required to be lower than 5%.

2.7.2 Installing a new parallel system

1. Before installing a new parallel UPS system, prepare the input and output wires, the input and output breakers and the parallel cable. Follow the instructions in Section 2.4.2
2. Use the 15-pin communication cable provided with the UPS to parallel the units. 3 – Connect the External Battery modules independently to each UPS.
3. Connect the input and output wires according to Figure 27. Note that all breakers should be opened.

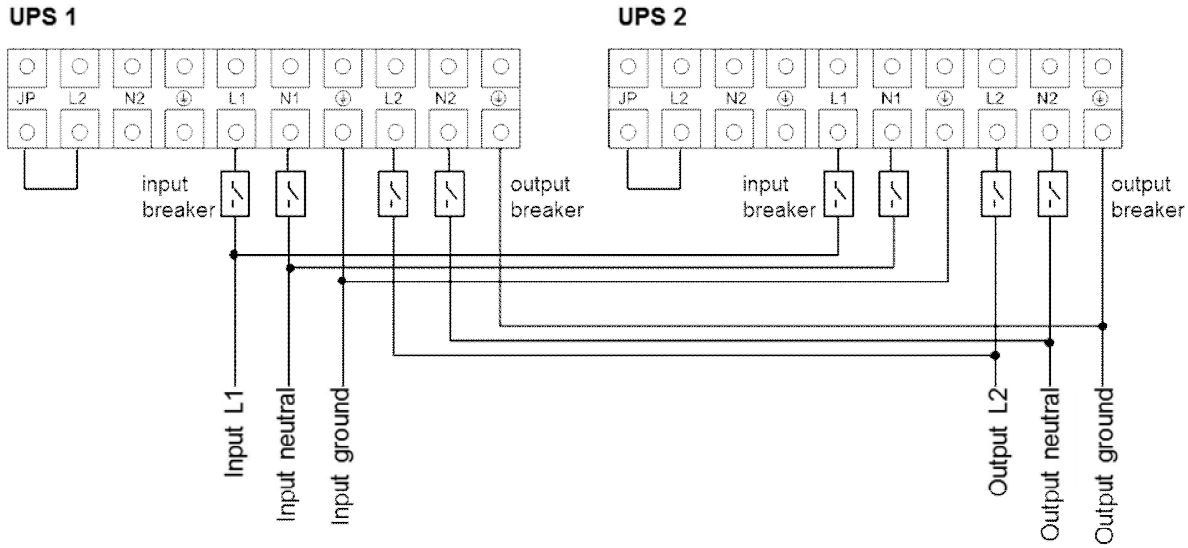


Figure 27: Parallel system wiring diagram – PowerValue 11 RT 6kVA and 10kVA

4. Turn on the mains breakers and the input (I/P) breakers for the two parallel UPS.
5. Press the Power-on button continuously for more than 1 second in one UPS. The system will start up and go to online-mode.
6. Regulate the output voltage of the each UPS separately and check if the output voltage difference between the two UPS is lower than 0.5V. If the difference is higher than 0.5V, the UPS voltage needs to be regulated.
7. If the difference output voltage is lower than 0.5V, switch on the output breakers for both UPS separately and switch on the main output (O/P) breakers.
8. Transfer the mains mechanical or static switch to the UPS. The system will then run in parallel.

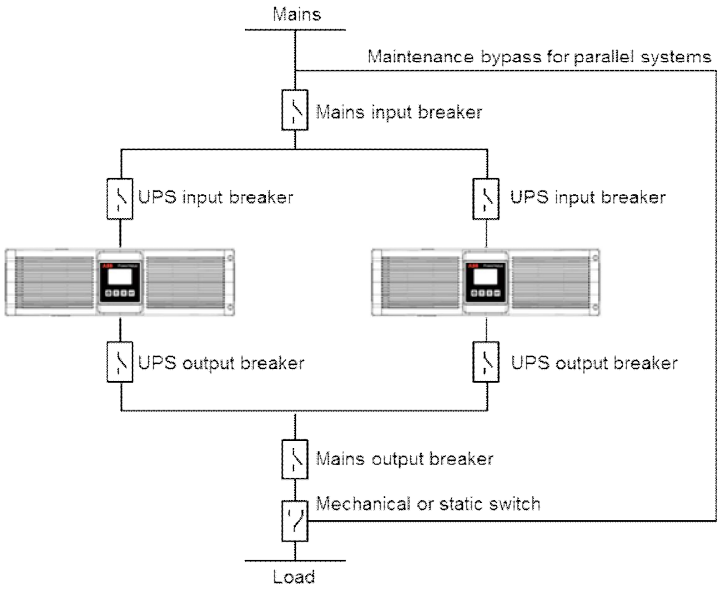


Figure 28: Parallel System Installation Diagram

2.7.3 Adding an UPS to an existing parallel system

1. Install a main maintenance mechanical switch or static switch for the parallel system.
2. Regulate the output voltage of the new UPS. Check if the output voltage difference between the new UPS and the parallel system is lower than 0.5V.
3. Ensure that the bypass of the parallel system is normal and the bypass setting is “enabled”, then press the Power-on button to turn off the UPS. The UPS will work in bypass-mode.
4. Set the main maintenance switch or static switch from “UPS” to “BPS”.
5. Switch off the main output breaker and the input breaker and mains breaker. The UPS will shut down.
6. Connect the cable and wire of the added UPS according to Figure 27 and Figure 28.
7. Switch on the input and mains breaker and check that every UPS works in Bypass-mode.
8. Switch on the output (O/P) breakers and Main output (Main O/P) breaker.
9. Transfer the main maintenance switch or static switch from “BPS” to “UPS”.
10. Press the Power-on button of one UPS and each UPS will start the shutdown process. Both UPS will then work in parallel in online-mode.

2.7.4 Removing a Single UPS from a parallel system

1. A main maintenance mechanical switch or static switch should be installed for the parallel system.
2. Ensure the bypass is normal and the bypass setting is “enabled”.
3. Press the Power-on button to turn off the UPS system. The UPS system will work in bypass-mode.
4. Transfer the main maintenance switch or static switch from “UPS” to “BPS”
5. Switch off the output, the input and the mains breaker for both UPS. The UPS will shut down.
6. Switch off the main output (O/P) breaker and the output breaker of the UPS system.
7. Remove the chosen UPS, cables and wires.
8. Switch on the mains breaker and input breaker of the reserved UPS, make sure the UPS work in bypass-mode.
9. Switch on the O/P breaker and main O/P breaker.
10. Transfer the main maintenance switch or static switch from “BPS” to “UPS”
11. Press the Power-on button to turn on the UPS. The UPS will start up and run in online-mode.

2.8 Installation Checklist

- ☐ All packing materials and restraints have been removed from each UPS.
- ☐ Each unit in the UPS system is placed in the installed location.
- ☐ All conduits and cables are properly routed to the UPS and auxiliary cabinets.
- ☐ All power cables are properly sized and terminated.
- ☐ A ground conductor is properly installed.
- ☐ Battery enclosure installation instructions have been completed.
- ☐ Air conditioning equipment is installed and operating properly.
- ☐ The area around the installed UPS system is clean and dust-free.
- ☐ Adequate workspace exists around the UPS and other cabinets.
- ☐ Adequate lighting is provided around all UPS equipment.
- ☐ Any optional accessories are mounted in their installed location and properly wired.
- ☐ Start-up and operational checks performed by authorized service personnel.
- ☐ All network connections are completed.

3 OPERATION

This chapter describes how to operate the UPS through the LCD display.

WARNING!	ONLY PERSONS WHICH HAVE BEEN TRAINED BY SERVICE TECHNICIANS OF THE SUPPLIER OR HIS AUTHORIZED SERVICE PARTNERS ARE ALLOWED TO OPERATE THE CONTROL PANEL OF THE UPS. ALL OTHER INTERVENTIONS ON THE UPS SYSTEM HAVE TO BE DONE ONLY BY SERVICE TECHNICIANS OF THE SUPPLIER.

The only user permitted operations are:

- Operate the LCD display
- Start up and shut down of the UPS of the user field (excluding the commissioning start up)
- Operation of additional SNMP adapters and their software

3.1 Control Panel

The user-friendly control panel is composed of two parts:

- Selection Keys
- Power Management LCD Display (PMD)

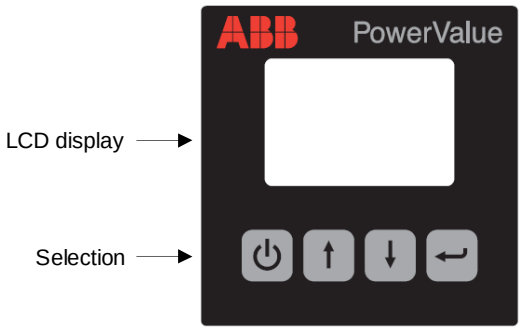


Figure 29: Control Panel

3.1.1 Selection Keys

The Button	Function	Illustration
	Power On/Off	Turn on and off the UPS or change operating-mode.
	Scroll up	Enter/Exit the menus and scroll across the screens.
	Scroll down	Scroll down the menu
	Select / Edit	Select and confirm settings.

3.1.2 LCD Display

The LCD display gives the user a complete overview on the status of the UPS. It shows information on the input, output, battery, load parameters, working-mode and also the settings on voltage, frequency and bypass presence.

It has two main backlight colors. The standard color is a blue background with white texts. In case of a critical alarm, the backlight color changes to orange with dark text. The buzzer also indicates different UPS status. Figure 30 indicates the buzzer status meanings.

UPS condition	Buzzer status
Active fault	Continuous
Active Warning	Beep every second
Battery	UPS on battery: Beep every 4 seconds Low battery: buzzer beeps every second
Bypass	Beep every 2 minutes
Overload	Beep twice every second

Figure 30: Definition of Alarms

When powering on, after a few seconds the UPS enters the default screen that shows the UPS status. From any screen, if the user does not press any button for more than 15 minutes, the default screen is displayed.

The status screen provides the following information:
- Status summary, including operating-mode and load information
- Alarm status, if present (including fault and warning information)
- Battery and charger status (including battery voltage, charge level and charger status)
- Current runtime information

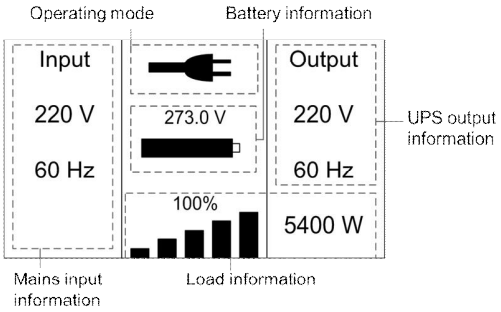


Figure 31: The default LCD display

For detailed information on how to operate the LCD, see Section 3.4.

3.2 Operating-mode

Different symbols indicate the status and the operating-mode of the UPS. Such symbols appear always in the position indicated in Figure 32.

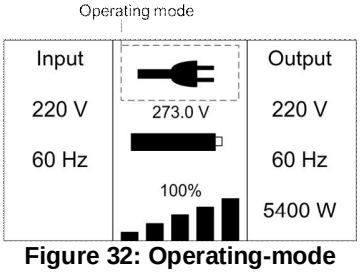


Figure 32: Operating-mode

Status	Symbol	Description
Online-mode		UPS is running through the inverter (Online-mode)
Battery-mode		UPS running on battery. (The alarm buzzer sounds every 4 seconds.)
Bypass-mode		The power used by the load is supplied from the mains power via internal filter. Note that if there is a power failure and the UPS in on bypass, it will not transfer back to mains or to battery-mode. (This is not the case if the UPS is in ECO-mode). In bypass-mode the alarm buzzer will sound every 2 minutes.
Bypass without output		UPS is running through bypass but there is no power in the output
ECO-mode (HE: High efficiency-mode)		After the UPS is turned on, the power used by the load is supplied from the mains via internal filter if its power is in an acceptable range. This guarantees higher efficiency of the UPS. In case of mains failure, the UPS transfers to Online-mode or Battery-mode and the load is supplied continuously. **Note**: ECO-mode can be enabled through the LCD settings or through the monitoring software. **Warning**: The transfer time of UPS output from ECO-mode to battery-mode is 10ms and not recommended for sensitive loads.
Converter-mode		In converter-mode, the UPS runs with fixed output frequency (50Hz or 60Hz). In case of mains power failure, the UPS transfers to battery-mode and the load is supplied continuously. **Note:** - Converter-mode function can be enabled through the LCD settings or the monitoring software. - The load is de-rated to 70% in converter-mode.
Warning		Warnings indicate abnormal situations that does not stop the UPS from working. In this case the UPS continues running but the user should do corrective actions. See Section 6 for details.
Fault		In situations of failure, the UPS may disconnect the load or transfer to bypass. This depends on the cause of the failure. In all cases there will be a constant alarm and the backlight of the UPS becomes red. See Section 6 for details.
Overload		When the UPS is in overload, an alarm sounds twice every second. Some unnecessary loads should be disconnected one by one to decrease the load. The load should be lower than 90% of its nominal power capacity in order to stop alarming.
Battery test		UPS is performing a battery test.
Battery disconnected		The battery is disconnected or defective. The UPS alarm sounds.

3.3 UPS Start-up and Shutdown

Important:

- The first time the UPS is started up, it must be connected to the utility.
- Switch off the connected loads before turning on the UPS. Then switch on the loads one by one after the UPS is turned on. Switch off all of the connected loads before turning off the UPS.

3.3.1 UPS start-up

With mains supply

1. Check that all cables are connected correctly and well-fixed mechanically.
2. Press the power-on button continuously for more than 1 second. The fans will be activated and the UPS will load for a few seconds.
3. The UPS will perform a self-test and the LCD will then show the default UPS status summary screen.

Note*:* The bypass-mode is enabled by default and this can be configured through the User's Settings (see Table 1.

Without mains supply (Cold start)

1. Check that all cables are connected correctly and well-fixed mechanically.
2. Press the power-on button continuously for more than 100ms. The UPS is powered on, the fans are activated and the LCD is lightened. The UPS then performs a self-test and finally displays the UPS status screen.
3. Press the power-on button continuously for more than 1s, the alarm buzzer will sound for 1s and the UPS start-up takes place.
4. After a few seconds, the UPS transfers to Battery-mode. When the UPS is again supplied with power from the mains, the UPS transfers to Online-mode without interruption in the output of the UPS.

3.3.2 UPS Shutdown

With mains supply

1. If the UPS is working on bypass-mode, go to step 3.
2. If the UPS is on online-mode, press the power-on button continuously for more than 3s. The alarm buzzer will sound and the UPS will transfer to Bypass-mode. Note: the output is still energized.
3. Disconnect the mains power supply. A few seconds later, the display will shut down and the output voltage will be removed from the UPS output terminal.

In case the bypass has been disabled through the Settings menu, press the power-on button for more than 3s to shut down the UPS. The unit will change from online to stand-by-mode. Then, simply disconnect the input power cable and a few seconds later the display will shut down.

Without mains supply

1. To power off the UPS, press the power on/off button continuously for more than 3s. The alarm buzzer will sound for 3s and the output power will be immediately cut-off.
2. After a few seconds, the display will shut down and the output voltage will be removed from the UPS output terminal.

3.4 Display Operation

Information regarding the status of the UPS, measurements, events and general information on the UPS are available through the LCD display. This chapter describes how to navigate through the display and how to adjust the user's settings.

3.4.1 Changing the operating-mode

To change the operating-mode, the power-on button is used as follows:

- From online-mode to bypass-mode: Press the power-on button for 3s.
- From bypass-mode to online-mode: Press the power-on button for 3s.
- From bypass-mode to battery: Disconnect the power supply cable and press the power-on button for 3s.
- From battery-mode to online-mode: Connect the power supply to the UPS and it will transfer automatically to online-mode.

Note: If the bypass is disabled in the settings menu, when pressing the power-on button for 3s, the UPS goes from online-mode to stand-by-mode.

3.4.2 Navigation

To navigate through the UPS screens, the scroll buttons are used. From the main screen, press ↑ or ↓ for information on alarm, parallel system and battery.
From the main screen, press ↑ for more than 1s to enter the main menu. The main menu includes the following submenus: UPS status, event log, measurements, control, identification, settings. Figure 33 shows details on how to navigate through the menus and submenus.

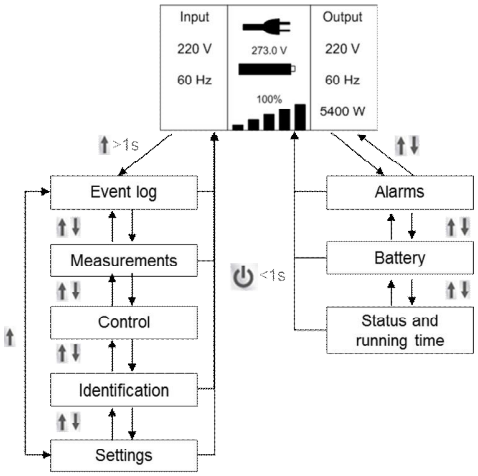


Figure 33: Main menu tree

3.4.2.1 Event log

To enter this menu, press ↵. In this menu, the last 50 events, alarms and faults occurred in the UPS are displayed. The alarms are indicated by the corresponding illustration, event code and operating time of UPS when the event occurred. To navigate through the events and alarms, press ↑ or ↓.

3.4.2.2 Measurements

To enter this menu, press ↵. Several measurements are displayed in the menu such as output voltage, frequency, current, load capacity, input voltage and frequency. To navigate through the measurements, press ↑ or ↓. To return to the last menu (event log), press ↑ for more than 1s.

3.4.2.3 Control

From this menu, the user can control some features of the UPS. To modify the parameters, press ↵. Then scroll up or down to modify the parameters. To confirm the selection, press ↵ for more than 1s. The possible operations are indicated below:

Control	Description	Possible Values	Default Values
Buzzer mute	Mute the UPS sound	No/Yes	No
Single UPS turn off	Turn off one UPS in a parallel system	No/Yes	No
Single UPS battery test	Initiate test of the batteries of a single UPS	Battery test running / passed / failed / interrupted / aborted	Battery not tested
Parallel UPS battery test	Initiate test of the batteries of a group of UPSs		
Clear EPO status	Remove UPS from emergency power off status	No/Yes	No
Reset fault state	Reset warning, alarming status and buzzer	No/Yes	No
Clear event log	Reset all the events from the log file	No/Yes	No
Restore factory settings	Recover all settings in the LCD menu and the EPO polarity and locks the DC start-up (can be executed only when UPS is in bypass mode)	No/Yes	No

Note 1: When the clear EPO status is enabled, the UPS will stop alarming and will recover in bypass-mode. In this case, the UPS needs be turned on by manual operation.

Example: Clearing the EPO status

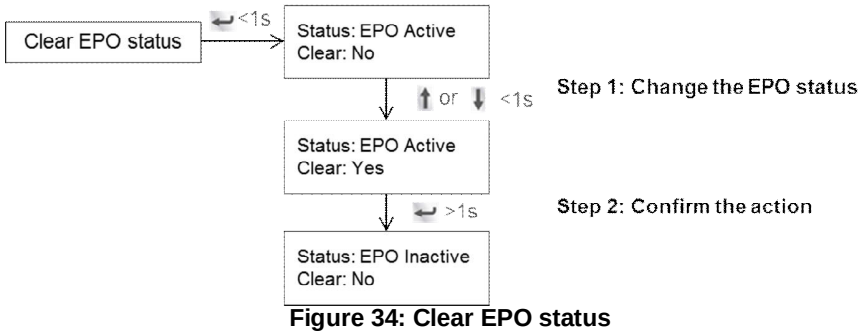


Figure 34: Clear EPO status

Note: First make sure the EPO signal is inactive or the LCD will show that the EPO active status couldn't be cleared.

Note 2: Reset fault status: When a failure occurs, the UPS goes to Fault-mode and the buzzer alarm sounds. After checking the reason of the failure and taking the appropriate corrective actions, enter this menu to reset the error status and recover the normal status. The alarm will stop and the UPS will transfer to bypass-mode.

Figure 35 gives an overview on how to navigate on the control menu.

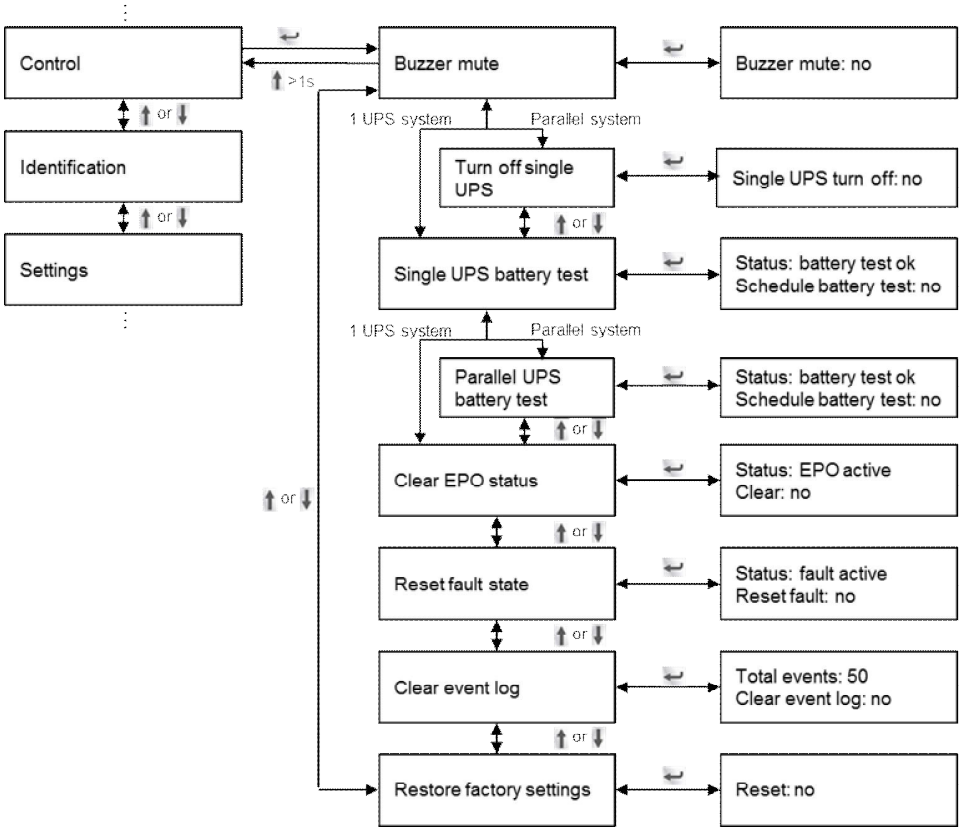


Figure 35: Control menu tree

3.4.2.4 Identification

Press ↵ on the Identification menu to navigate through its data. The identification information includes UPS serial number, firmware serial number and-model type.
Press ↑ >1s to return to the last main menu.

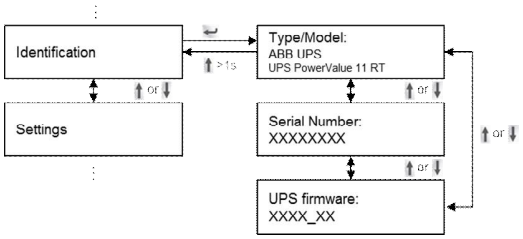


Figure 36: Identification menu tree

3.4.2.5 User's Settings

Contact your local distributor for further information before using the settings. Some settings can impact on the performance of the UPS and others can enable and disable functions within the UPS. Failures and reduced protection can occur if the equipment is not set in an adequate way. Note that most settings should be done only with the UPS in *bypass-mode*.

If the password is enabled, the user must enter the password **USER** by pressing the buttons ↑, ↓ and ↵. It is used mainly to protect against modifications in the Settings menu. The possible operations are indicated in Table 1.

Submenu item	Description	Optional Values	Default value
Language	Select menu language	Chinese/English	English
User password*	Protects against settings modifications	enabled/disabled	disabled
Audio alarm	Enable/disable alarm sounds	enabled/disabled	enabled
Output voltage	Define local rated output voltage	208/220/230/240V	230V
Output frequency	Define local rated output frequency	autosensing/50/60Hz	autosensing
Power strategy** or Running mode	Define the UPS running mode to normal, ECO-mode (or HE high efficiency) and converter mode	normal/high efficiency/ converter	normal
DC start	Start the UPS from the batteries (without mains power)	enabled/disabled	enabled
Site wiring fault alarm	Phase and neutral cables are connected in reversed positions.	enabled/disabled	enabled
Ambient temperature warning	Temperature is over the limit supported by the UPS	enabled/disabled	enabled
Automatic battery tests period	Define the frequency of the battery tests	0-31 days	7days
Auto restart	After power outage, the loads restart automatically when mains power is recovered.	enabled/disabled	enabled
Automatic overload restart	The UPS is automatically restarted if it shut downs for overload.	enabled/disabled	enabled
Auto bypass	The automatic bypass can be disabled for countries where the power supply is very unstable. UPS runs only online or on battery.	enabled/disabled	enabled
Short circuit clearance	- When enabled, short circuit will last for 4s before cutting off the output. If short circuit is removed during this time, the UPS will continue to run normally. - When disabled, short circuit will only last for 100ms before UPS output is cut off.	enabled/disabled	disabled
Redundancy lost (in parallel UPS systems)	One of the parallel units have been disconnected from the system	enable/disabled	enabled
Bypass voltage low limit	When the voltage in the bypass is below this limit, the UPS changes running mode.	120~215V	184V
Bypass voltage high limit	When the voltage in the bypass is above this limit, the UPS changes running mode.	245~276V	264V
Bypass frequency low limit	When the frequency in the bypass is below this limit, the UPS changes running mode.	1%~10%	10%
Bypass frequency high limit	When the frequency in the bypass is above this limit, the UPS changes running mode.	1%~10%	10%

Submenu item	Description	Optional Values	Default value
ECO mode (HE) voltage low limit	When the voltage in the bypass is below this limit, the UPS changes running mode.	5%~10%	5%
ECO mode (HE) voltage high limit	When the voltage in the bypass is above this limit, the UPS changes running mode.	5%~10%	5%
ECO mode (HE) frequency low limit	When the frequency in the bypass is below this limit, the UPS changes running mode.	1%~10%	5%
ECO mode (HE) frequency high limit	When the frequency in the bypass is above this limit, the UPS changes running mode.	1%~10%	5%
External Battery module***	Define the number of battery modules. If number is higher than 4, it should be configured through the monitoring software	0-4	0
Set running time	Set the UPS running time mainly used for test purposes	Day:hour:minute:second 0000:0000:00~9999 23:59:59	Running time
LCD contrast	Changes the light contrast in the LCD panel	-5~+5	0

Table 1: Settings menu information

**Read Section 3.2, before using ECO-mode (HE mode) or converter function.
***Ensure the real battery quantity is same as the settings not to damage the batteries.

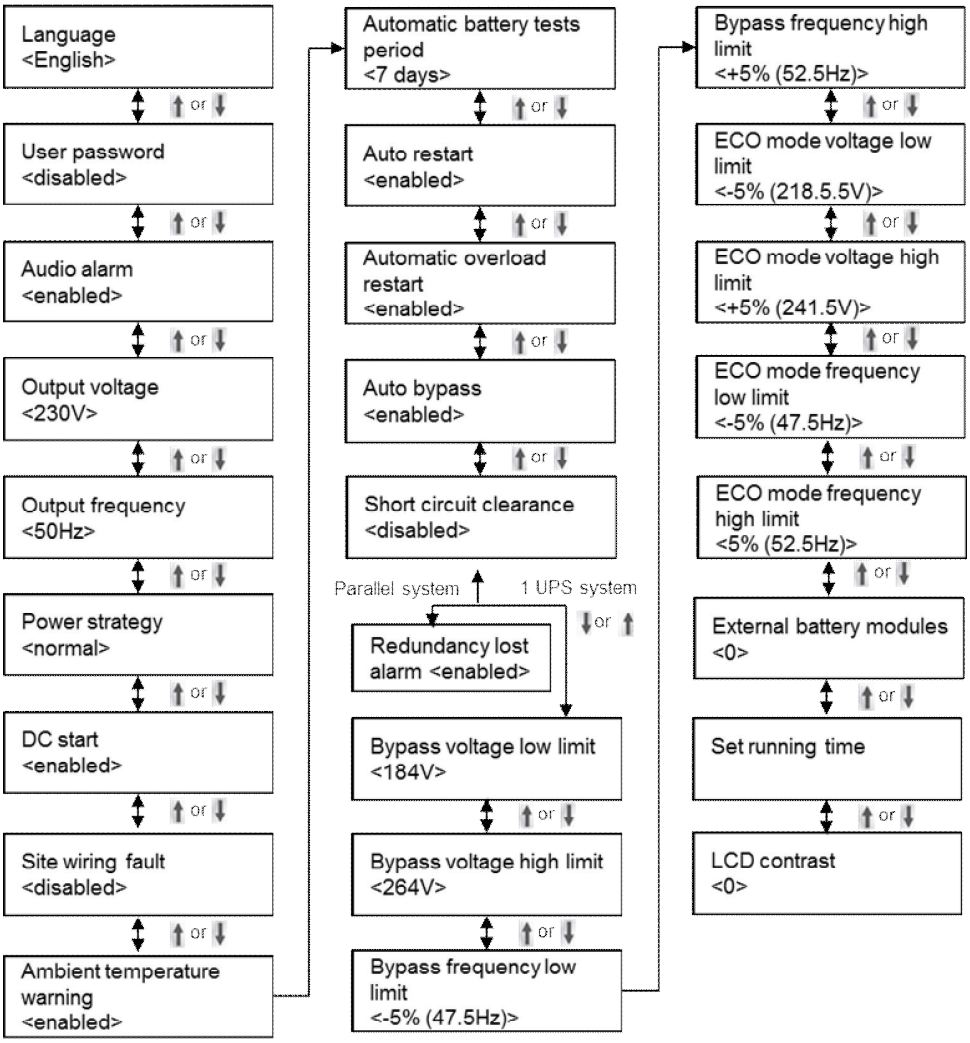


Figure 37: Setting menu tree

Example: Setting the rated output voltage value (Figure 38). Note: The UPS must be in bypass to change this parameter.

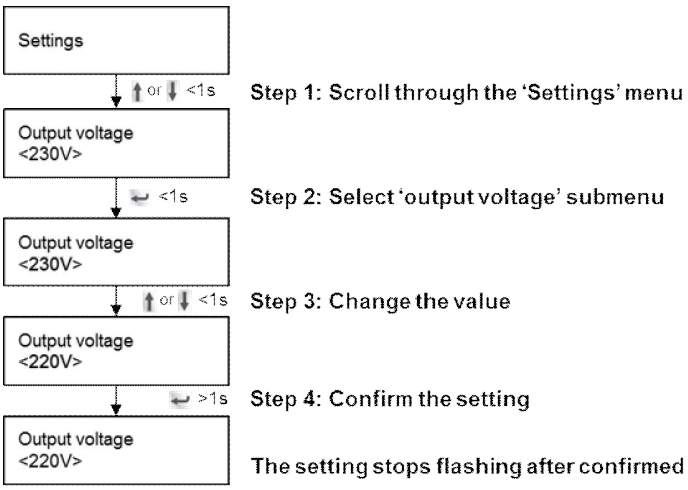


Figure 38: Setting rated output voltage value

4 COMMUNICATION

A USB and an RS-232 port are available to enable the communication between the UPS and a remote computer/station. Only one communication port can be active at a time and the priority is given to the USB port.

Once the communication cable is installed, the power management software can exchange information with the UPS. The software collects information from the UPS and indicates the status of the device, the power quality of the mains and the battery autonomy of the units.

In case of a power failure and a predicted shutdown of the UPS due to low battery autonomies, the monitoring system is capable of saving the data in the load and of initiating the shutdown of the equipment connected to the UPS.

4.1 RS-232 port

An RS-232 port is available for UPS monitoring, control and firmware updates. To establish communication between the UPS and a computer, connect one end of the serial communication cable that comes with the UPS to the RS-232 port on the UPS and the other end of the serial cable to the RS-232 port on a computer.

The cable pins for the RS-232 communication port are described in Figure 39 and in Table 2.

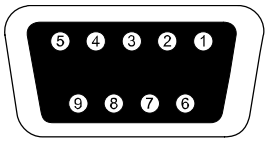


Figure 39: RS-232 Communication Port

Pin	Signal Name	Function	Direction from UPS
1	DCD	Battery Low signal	Out
2	RxD	Transmit to external device	Out
3	TxD	Receive from external device	In
4	DTR	PnP from external device	In
5	GND	Signal common	--
6	DSR	To external device	Out
7	RTS	No connection	In
8	CTS	On Battery signal	Out
9	RI	V_{DC} Power	Out

Table 2: Communication Port Pin Assignment

4.2 USB port

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

4.3 Network Management Card (Optional)

PowerValue 11 RT is equipped with an intelligent slot for other optional cards for remote management of the UPS through internet / intranet. Please contact your local supplier for further information.

SNMP Card - SNMP, HTTP and monitoring capabilities through a Web browser interface.

AS400 Card - AS400 card for AS400 communication protocol.

4.3.1 Installing a Serial Network Management Card (optional)

Each UPS has a communication slot for an optional Serial Network Management (SNMP) Card. After installing an SNMP card, an environmental monitoring probe can be connected to the UPS.

Note: The UPS does not have to be shut down before installing a communication card.

To install the Network Management Card, go through the following steps:

1. Remove the two screws that protect the communication slot of the UPS.
2. Insert the SNMP card into the communication slot.
3. Screw the SNMP card onto the slot using the screws removed in step 1.

For more information on the SNMP Cards, see the SNMP User's Manual.

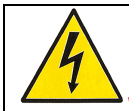
4.3.2 Monitoring Software

ABB UPS can be monitored through a software that allows the user to monitor the UPS. The software provides a remote and safe shutdown for multi-client systems in case of absence of power in the output of the UPS.

Instructions on how to install the software are provided with the network management cards. For more information, contact your local supplier.

5 MAINTENANCE

PowerValue 11 (6-10 kVA) RT UPS only requires minimal maintenance. The only requirement is to charge the UPS regularly in order to maximize the expected life of the battery. When being connected to the mains power, whether the UPS is turned on or not, the UPS keeps charging the batteries and also offers the protective function of overcharging and over-discharging.



WARNING!

BATTERY REPLACEMENT SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONNEL

- If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case please contact your dealer.
- The UPS should be charged once every 4 to 6 months if it has not been used for a long time.
- In high temperature regions, the battery should be charged and discharged every 2 months. The standard charging time should be of at least 12 hours.
- Under normal conditions, the battery life lasts 3 to 5 years. In case the battery is not in good conditions, earlier replacement should be made.
- Replace batteries with the same number and same type of batteries.
- Do not replace the batteries individually. All the batteries should be replaced at the same time following the instructions of the battery supplier.

6 TROUBLESHOOTING

6.1 Fault identification and rectification

Alarm and events identify warning situations and notify errors or potential failures of the system. The output of the UPS is not necessarily affected in case of an alarm but taking the correct actions may prevent loss of power to the load.

6.2 Accessing Alarms

The control panel provides troubleshooting information from two main menus:

- UPS status menu: Access to all active alarms
- Event Log menu: Access to the most recent 50 events, which may include active and closed alarms

UPS status menu

From the UPS Status menu, you can access the following screens for troubleshooting information:

- *Status summary:* The status summary screen provides information on both operation-mode and load. When there is a critical alarm, the status summary screen changes from its normal white text on a blue background to dark amber text on an amber background.

- *Alarm:* A separate screen appears for each active notice or alarm.

- *Battery status:* The battery status screen indicates the battery charge-mode, the percentage of the battery that is charged and the runtime with the present load.

To access troubleshooting information using the UPS status menu screen:

1. Press button for one second or longer to go to the UPS status menu screen.
2. Press button to access the UPS Status main screen.
3. Press button to access the notice and alarm screens.
4. The UPS Status main screen provides load information. The status icon indicates the UPS operating-mode.
5. Use button to scroll through the notice and alarm information.
6. After scrolling through all alarms, press button to access the battery status screen.

Event log menu

From the Event Log menu, you can access the latest 50 alarms, events and notices, arranged from newest to oldest. Events and alarms are logged in the Event Log when they occur and, if applicable, when they were cleared as follows:

- Events are silent conditions that are recorded in the Event Log as status information. Events do not require a response.

- Alarms, including active alarms, are recoded in the Event Log. Active alarms are typically announced by either an intermittent beep or a continuous audible alarm. Examples are “Fan locked” and “Heat sink temperature high.” Active alarms require a response.

To access troubleshooting information using the Event Log menu:

1. Press button for one second to go to the main menu selection and scroll down to the Event Log menu using button .
2. Click button to enter the Event Log list.
3. Scroll through the listed events, notices, and alarms using buttons or .

Note: The most recent events are displayed on top of the list (eg. 1/50)

Alarm or Event	Possible cause	Remedy
Utility Abnormal Alarm Code: 02	The input mains is out of the UPS tolerance range	Check input mains condition
Site Wiring Fault Alarm Code: 04	Site Fault detection is supported on all-models when a Grounding Neutral connection is present. Alarm will trigger when the difference between ground and neutral voltage is >15V.	Site Fault detection should be enabled by default. It can still be enabled / disabled from the LCD settings menu. Reconnect all input wires
Battery Disconnect Alarm Code:11	Battery voltage is lower than the batteries disconnected level defined for this UPS. There could be a blown fuse, intermittent battery connection or disconnected battery cable.	Verify that all batteries are properly connected. If the condition persists, contact your service representative.
Battery low Alarm Code:12	The UPS is in Battery-mode and the battery autonomy is running low.	This warning is approximate and the actual time to shut down may vary. Depending on the UPS load and the number of External Battery Modules (EXBAT), the "Battery Low" warning may occur before the batteries reach 25% capacity
Service Battery Alarm Code:13	A battery string failure has been detected and the battery charger has been disabled until its replacement	Contact your service representative
Charger Fail Alarm Code:15	Indicates a charger failure	The UPS charger is turned off until the next startup. Contact your service representative
Battery Over Voltage Alarm Code:16	Indicates that the battery voltage is too high	The UPS will turn off the charger until the battery voltage is normal
BUS Over Voltage Alarm Code:21	Indicates an over voltage in the BUS of the UPS.	The UPS transfers to Bypass-mode if supporting the load
BUS Under Voltage Alarm Code:22	Indicates an under voltage in the BUS of the UPS.	The UPS transfers to Bypass-mode if supporting the load
BUS Unbalance Alarm Code:23	Indicates that the positive BUS voltage and negative BUS voltage are not symmetric	The UPS transfers to Bypass-mode if supporting the load
BUS Short Alarm Code:24	Indicates that the BUS voltage decreases very fast	Contact your service representative
BUS Softstart Fail Alarm Code:25	Indicates that the BUS could not perform a soft start successfully	Contact your service representative
Output Short Circuit Alarm Code:31	Indicates that the UPS has detected abnormally low impedance placed on its output (considered as a short circuit)	Remove all the loads. Turn off the UPS. Check if UPS output and loads are short circuited. Ensure short circuits are removed before turning the UPS on again.
Inv Over Voltage Alarm Code:32	Indicates an inverter over voltage	The UPS transfers to Bypass-mode if supporting the load
Inv Under Voltage Alarm Code:33	Indicates an inverter under voltage	The UPS transfers to Bypass-mode if supporting the load
Inv Softstart Fail Alarm Code:34	Indicates that the inverter could not perform a soft start successfully	Contact your service representative
Output Overload Alarm Code:41	Output is in overload.	Remove some of the load from the UPS. The UPS continues to operate, but may switch to Bypass-mode or shutdown if the load increases. The alarm resets when the condition becomes inactive.
Inv Overload Fault Alarm Code:42	UPS has been transferred to bypass or fault-mode caused by a high overload in inverter-mode	The UPS transfers to Battery-mode if supporting the load. Remove some of the load from the UPS
Byp Overload Fault Alarm Code:43	UPS has cut off the output and transferred to fault-mode because of overload in bypass-mode or HE-mode.	Remove some of the load from the UPS
Battery-mode Alarm Code: 62	A utility failure has occurred and the UPS is on Battery-mode.	The UPS is running in battery-mode. Prepare your equipment for shutdown.
Eco-mode Alarm Code: 63	The UPS is on bypass while operating on the High Efficiency setting.	The equipment operated in bypass as standard when in High Efficiency operation. Battery-mode is available and your equipment is protected.
EPO Active Alarm Code: 71	The external contacts in the rear of the UPS are configured for EPO operation and they have been activated.	Check the EPO connector status

Alarm or Event	Possible cause	Remedy
ON Maintenance Bypass Alarm Code: 72	UPS was manually switched to bypass and will remain in bypass until manually transferred out of bypass	Check the maintain bypass switch status
Heat sink Over Temperature Alarm Code: 81	Indicates that the temperature of heat sink is too high indicating an over temperature of the UPS.	Transfer the UPS to Bypass-mode. If the condition persists, shut down the UPS. Clear vents and remove any heat sources. Allow the UPS to cool. Ensure the airflow around the UPS is not obstructed. Restart the UPS.
Ambient Over Temperature Alarm Code:82	Indicates that the ambient temperature is higher than the operation temperature on specification	Change the positioning of the UPS or use an adequate air conditioning system.
Fan Failure Alarm Code:84	Indicates that the fan is not working properly.	Check fans of UPS
Back feed Alarm Code:93	UPS has a unexpected bypass current on battery-mode	Transfer to maintenance bypass and call service.
Fatal Eeprom Fault Alarm Code:A3	Indicates that the UPS could not read the Eeprom successfully	Contact your service representative
Negative power Fault Alarm Code: E1	Parallel system: power from one UPS flows from the parallel output into the other UPS in the system (negative power)	If the parallel system is in redundant-mode, only the UPS with the failure will transfer to fault-mode without output. Other UPS will still support the load. If the parallel system is not redundant and the load cannot be supported by the other UPS, all units in the parallel system will transfer to fault-mode.
Parallel cable loss Alarm Code: E2	Parallel system: Parallel cable disconnected	Connect the parallel cable
Parallel system battery status Alarm Code: E6	UPS1 batteries connected, UPS2 batteries disconnected	Check battery connections
Line input different Alarm Code: E7	Parallel system: UPS1 line ok, UPS2 line lost	Check the input line

Please have the following information at hand before calling the After-Sales Service Department:

1. Model number, serial number
2. Date on which the problem occurred
3. LCD/LED display information, Buzzer alarm status
4. Mains power condition, load type and capacity, environment temperature, ventilation condition
5. Information on external battery pack (battery capacity, quantity)

7 TECHNICAL SPECIFICATION

GENERAL DATA	6000 VA	10000 VA
Output rated power [W]	5400 W	9000 W
Output power factor	0.9	
Topology	True online double conversion	
Parallel configuration	Up to 2 units	
Inbuilt batteries	yes	
INPUT		
Nominal input voltage	208/220/230/240 V_{AC}	
Input voltage tolerance	110-276 V_{AC} (depends on load level)	
Input current THD	<5% with full resistive load	
Frequency range	45-55 Hz / 54-66 Hz	
Power factor	≥0.99	
OUTPUT		
Rated output voltage	208 / 220 / 230 / 240 V_{AC}	
Voltage tolerance (referred to 230V)	±1%	
Voltage distortion	≤2% linear load, ≤5% non-linear load	
Overload capability	2mins.: 102%-130% load / 30s.: 130%-150% load / 100ms.: >150% load (Inverter) 10s:. 102-130% load / 100ms.: >130% load (battery)	
Nominal frequency	50 or 60 Hz ± 0.2 Hz	
Crest Factor	3:1	
TRANFER TIME		
Battery ←→ inverter	0 ms	
Inverter to Eco-mode	1 ms	
Eco-mode to inverter	<10 ms	
EFFICIENCY		
AC-AC	> 92%	> 93%
In eco-mode	> 96%	>97%
ENVIRONMENT		
Protection rating	IP 20	
Storage temperature	-15 – +60°C for UPS, 0~35°C for battery	
Operating temperature	0 – 40°C	
Relative humidity	0-95% (Non-condensing)	
Altitude (above sea level)	1000m without de-rating	
BATTERIES		
Type	VRLA, vented lead-acid	
Number of batteries	No internal batteries	
Charging current	>8 A	
Recharge time	External battery dependent	
COMMUNICATIONS		
User interface	LCD display	
Communication cards (option)	SNMP, AS400 RS485 card	
STANDARDS		
Safety	IEC/EN 62040-1	
EMC	IEC/EN 62040-2	
Performance	IEC/EN 62040-3	
Manufacturing	ISO 9001:2008, ISO 14001:2004	
WEIGHT, DIMENSIONS		
Weight	20.1	28.1
Dimensions WxHxD	438x129x594	438x215.5x594

*Technical specifications are subject to change without notice.

614-00798-00