

USER MANUAL

PowerValue 11T IN

1-3 kVA



Safety symbols and warnings



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 do 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 instruction 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.

ABB does not take any responsibility for damages caused through 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.



High fault currents (leakage currents). Before connecting the mains ensure that the UPS is earthed!



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 that 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 the weather and sunshine.

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 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 percent (non-condensing).

1.3 Declaration of safety conformity and CE marking

The PowerValue 11T 1-3 kVA is designed, manufactured and commercialized in accordance with the EN ISO 9001 standard relating 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 c2 ups product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional Measures.

These products also meet the following product standards:

Table 1: Standards

	Product standards
ESD	IEC 61000-4-2 Level 3
Low frequency signals	IEC 61000-2-2 Disturbing Voltage:10V
RS	IEC61000-4-3 Level 3
EFT	IEC 61000-4-4 Level 4
Surge	IEC 61000-4-5 Level 4
CS	IEC 61000-4-6 Level 3
Power frequency magnetic field immunity	IEC 61000-4-8 Level 4
Conducted	IEC 62040-2 Category C2
Radiated	IEC 62040-2 Category C2

Performance classification	VFI-SS-III
Safety	IEC 62040-1:2008+A1+2013
Transportation	IEC 60068-2-31
	IEC 60068-2-64
	IEC 60068-2-27

1.4 Inquiries

Inquiries regarding the UPS should be addressed to the local ABB office or agent authorized by ABB. Note the type code and the serial number of the equipment before contacting ABB or authorized agent. The serial number is shown on the nameplate of the product. For further information on troubleshooting, see Chapter 6.

1.5 Operation

WARNING!



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.

NOTE!



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.

NOTE!



To reduce the risk of fire, connect the UPS to a circuit provided with branch circuit protection with an ampere rating in accordance with the IEC/EN 60934 standard or your local electrical code.



See technical specifications for recommendations.

WARNING!



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

WARNING!



Never dispose of batteries in a fire as they may explode.

WARNING!



Released electrolyte is harmful to the skin and eyes.

2. Maintenance

DANGER!



To prevent risk of electric shock, only qualified personnel may remove the UPS cover

DANGER!



To prevent risk of shocks and risk of failure do not cut, rework or manipulate the material delivered with the UPS

PowerValue 11T 1-3 kVA UPS requires only minimal maintenance.

Charge the UPS regularly to maximize the expected life of the battery. When connected to mains power, the UPS charges the batteries and prevents the batteries from overcharging and over-discharging.

- Replace the batteries when the battery service life has been exceeded (around three to five years at 25 °C ambient temperature). Contact your local ABB or an agent authorized by ABB for replacements.
- Charge the UPS once every four to six months if it is not used regularly.
- In high-temperature regions, charge and discharge the battery every two months. The standard charging time should be at least 12 hours.
- Replace the battery when the discharge time is less than 50 percent of specified after fully charging. Check the battery connection or contact your local dealer to order a new battery.

DANGER!



Servicing of batteries involves energy and shock hazard and should be performed by personnel knowledgeable about batteries and required precautions

WARNING!



Do not dispose of batteries in a fire. the batteries may explode

WARNING!



Do not open or mutilate batteries. released electrolyte is harmful to the skin and eyes. it may be toxic

DANGER!



Components inside the UPS are connected to the battery even when the UPS is disconnected from the mains power supply.

DANGER!



Disconnect the batteries before carrying out any kind of service and/or maintenance. Verify that no current is present, and no hazardous voltage exists in the capacitor or bus capacitor terminals.

DANGER!



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.

DANGER!



A battery can present a risk of Electrical shock and high short-circuit Current. The following Precautions should be observed When working on batteries:

- Remove watches, rings or other metal objects
- Make use of proper ppe (personal protection equipment) as per local policies and rules
 - Wear flame/arc resistant Whole body clothing
 - Wear suitable voltage rated gloves
 - Use safety dielectric footwear
 - Wear arc flash face shield
 - Use voltage rated tools
- Do not lay tools or metal parts on top of batteries
- Disconnect the charging source prior to connecting or disconnecting battery terminals.

WARNING!



When replacing batteries, replace with the same type and number of batteries or battery packs.

WARNING!



Replace fuses only with fuses of the same type and of the same amperage to avoid fire hazards.

2.1 UPS disposal and recycling

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, which could otherwise arise from inappropriate waste handling.

2.1.2 For disposal in countries outside of 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, which could otherwise arise from inappropriate waste handling.

3. Installation

3.1 Delivery, transportation, positioning and storage

3.1.1 Receipt of the UPS and visual inspection

When receiving the UPS, carefully examine the packing container and the UPS for any signs of physical damage.

WARNING!	
	In case of recognizable damage: Do not connect any voltage to the unit / Do not put the unit into operation

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 re-use.

3.1.2 Unpacking list

After examining the package, open the box and check the following items are included:

- 1 x PowerValue 11T UPS
- 1 X USB with complete documentation in 5 languages
- Multi-language quick installation guide
- 1 x India-IEC C13 cable (only for 1KB/1KS)
- 1 x India-IEC C19 cable (only for 2KB/2KS/3KB/3KS)
- 1 x external battery cable (only for S models)
- 1 x USB cable
- 1 x fixing plate for battery cable

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

3.1.3 Operation of UPS

The UPS system contains no user-serviceable parts. 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.

	Be sure to deliver the spent battery to a recycling facility or ship it to your dealer in the replacement battery packing material.
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3.1.4 Storage of UPS

Before storing, charge the UPS 5 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage temperature	Recharge frequency	Charging duration
-25°C - 40°C	Every 3 months	1-2 hours
40°C - 45°C	Every 2 months	1-2 hours

3.2 Site planning and positioning

WARNING!



- Make sure the mains supply and the total load demand are within UPS specifications
- The UPS must be powered from a single-phase grounded wall outlet, protected by overcurrent devices according to local wiring rules
- The plug on the power supply cord is intended to serve as the disconnect device, the mains socket outlet that supplies the UPS shall be installed near the UPS and shall be easily accessible
- After removing covers over battery terminal, store them safely for future need. Remove such covers only if it is intended to attach a connector to a terminal

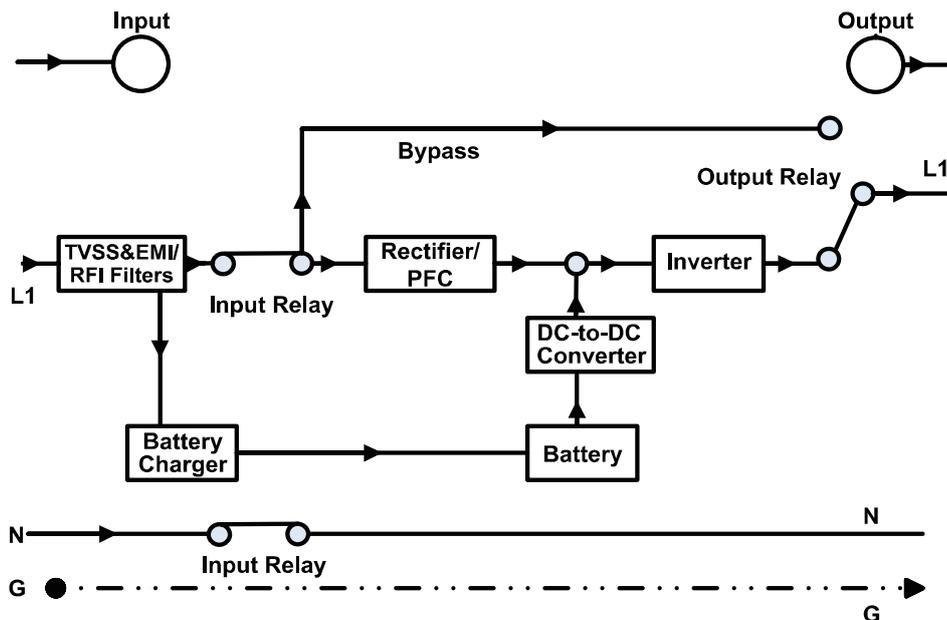
3.2.1 Preparation and positioning

Please comply with all warnings and operating instructions in this manual strictly. Save this manual properly and carefully read the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating instructions carefully.

- Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heater.
- Do not block ventilation holes in the UPS housing.

3.2.2 Operating principle

The operating principle of the UPS is shown as below. (figure 3.2.1-1)

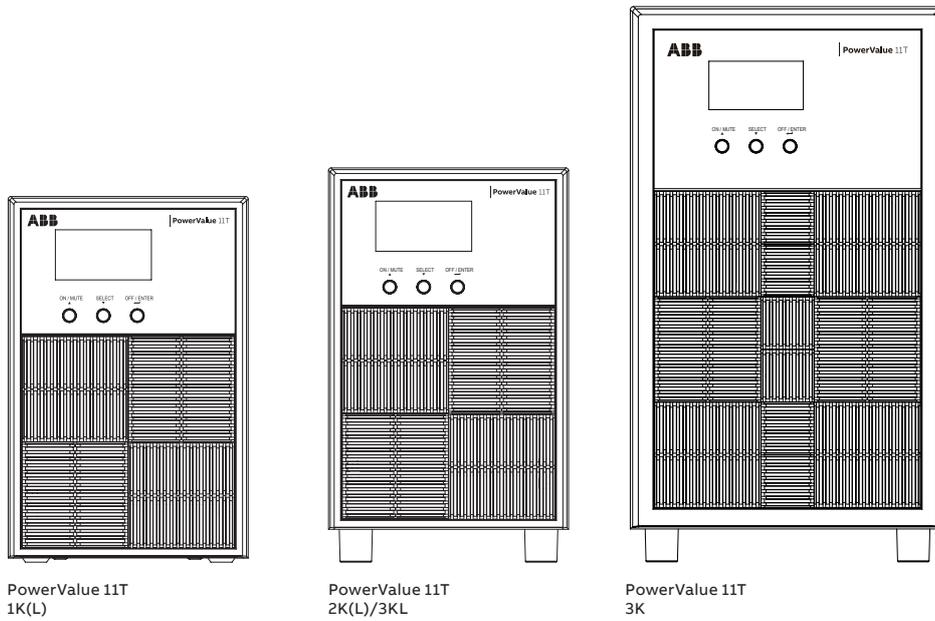


3.2.1-1:
Operating principle

3.3 General characteristics

3.3.1 Front panel

Figure 3.3.1-1 shows the front panel of the UPS.



PowerValue 11T
1K(L)

PowerValue 11T
2K(L)/3KL

PowerValue 11T
3K

3.3.1-1
PowerValue 11T - UPS front panel



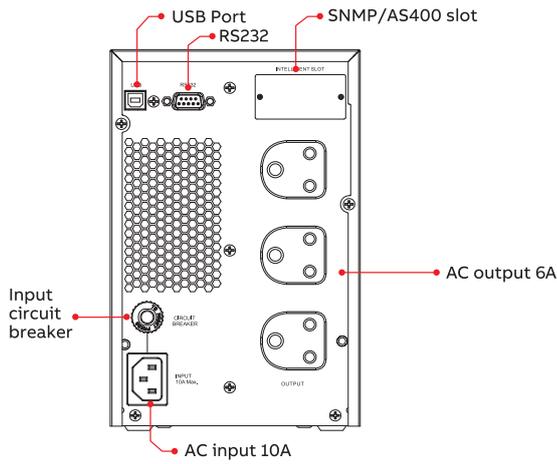
PowerValue 11T
External battery 1K

PowerValue 11T
External battery 2K/3K

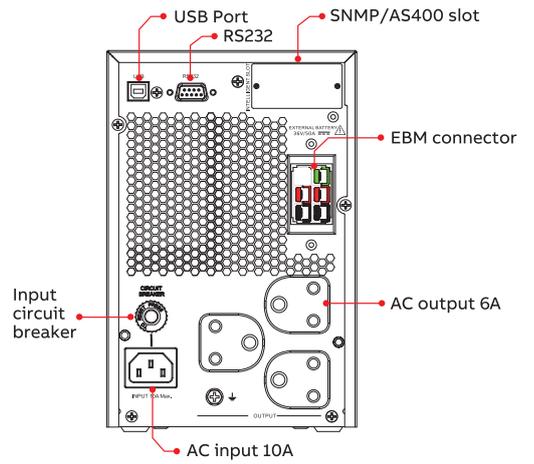
3.3.1-2
PowerValue 11T
External battery front panel

3.3.2 Rear panel

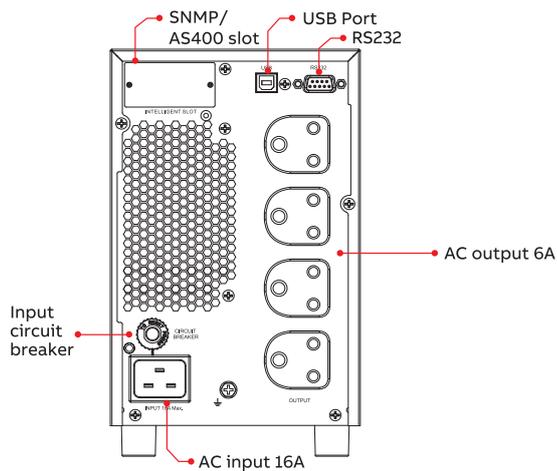
The figures below show the connectors and ports in the UPS and external battery module rear panel.



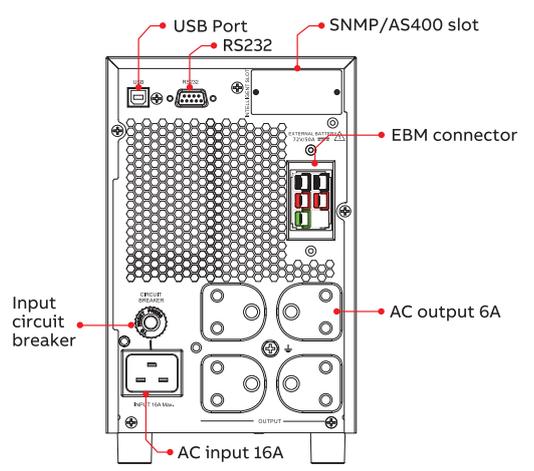
3.3.2-3
PowerValue 11T 1kVA rear view



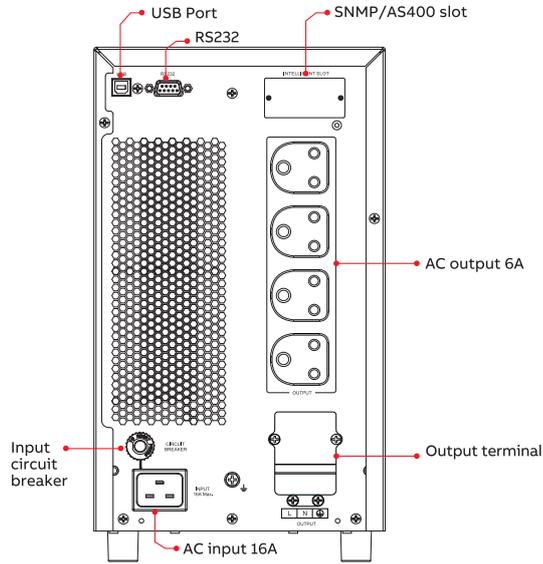
3.3.2-4
PowerValue 11T 1kVA B rear view



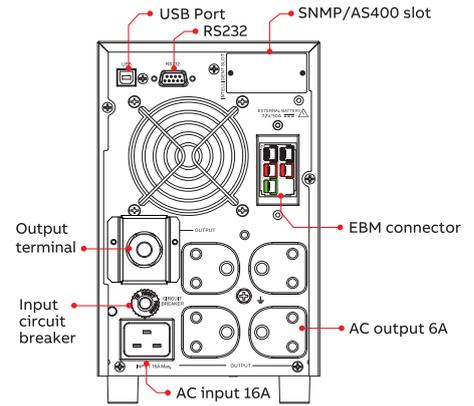
3.3.2-5
PowerValue 11T 2kVA rear view



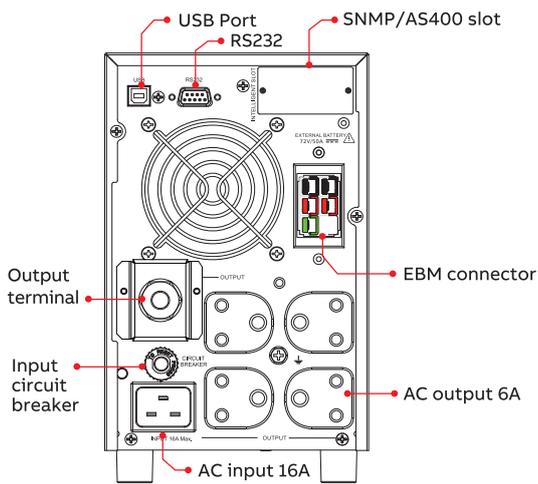
3.3.2-6
PowerValue 11T 2kVA B rear view



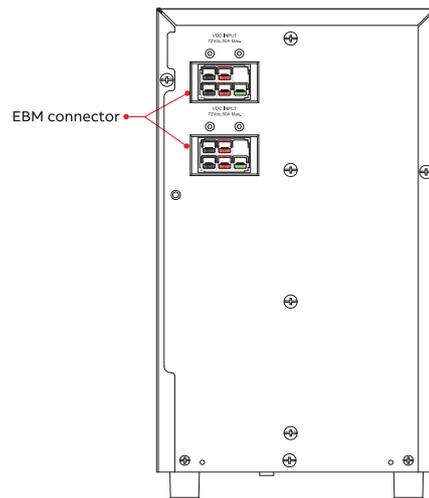
3.3.2-7 PowerValue 11T - 3kVA rear view



3.3.2-8 PowerValue 11T - 3kVA B rear view



3.3.2-9 External battery 1K - module rear view

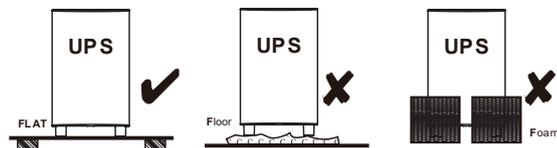


3.3.2-10 External battery 2K-3K module rear view

3.4 UPS installation

Before installing the UPS, please read below to select proper location to install UPS.

1. UPS should be placed on the flat and clean surface. Place it in an area away from vibration, dust, humidity, high temperature, flammable liquids, gases, corrosive and conductive contaminants. Install the UPS indoors in a clean environment, where it is away from window and door. Maintain minimum clearance of 100mm in the bottom of the UPS to avoid dust and high temperature.



3.4.1-1
Setup the UPS

2. Maintain an ambient temperature range of 0°C to 45°C for UPS optimal operation. For every 5°C above 45°C, the UPS will derate 12% of nominal capacity at full load. The highest working temperature requirement for UPS operation is 50°C.
3. It's required to maintain maximum altitude of 1000m to keep UPS normal operation at full load UPS. If it's used in high altitude area, please reduce connected load. Altitude derating power with connected loads for UPS normal operation is listed as below:

Table 4

Altitude m	Derating factor ¹⁾
1,000	IEC 61000-4-2 Level 3
1,500	IEC 61000-2-2 Disturbing Voltage:10V
2,000	IEC61000-4-3 Level 3
2,500	IEC 61000-4-4 Level 4
3,000	IEC 61000-4-5 Level 4
3,500	IEC 61000-4-6 Level 3
4,000	IEC 61000-4-8 Level 4
4,500	IEC 62040-2 Category C2
5,000	IEC 62040-2 Category C2

NOTE: Note to table 1

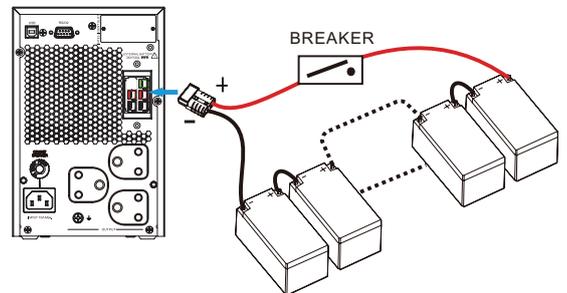
Based on density of dry air=1.225 kg/m³
at sea-level, +15°C

¹⁾ Since fans lose efficiency with altitude, forced air-cooled equipment will have a smaller derating

4. Place UPS:

It's equipped with fan for cooling. Therefore, place the UPS in a well-ventilated area. It's required to maintain minimum clearance of 100mm in the front of the UPS and 300mm in the back and two sides of the UPS for heat dissipation and easy-maintenance.

5. Connect to external battery pack's surface



3.4.1-2
Connect to
External battery pack

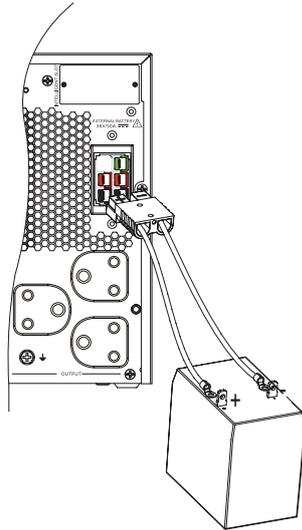
When connecting external battery packs, please be sure to connect polarity correctly. Connect positive pole of battery pack to positive pole of external battery connector in UPS and negative pole of battery pack to negative pole of external battery connector in UPS. Polarity misconnection will cause UPS internal fault. It's recommended to add one breaker between positive pole of battery pack and positive pole of external battery connector in UPS to prevent damage to battery packs from internal fault.

The required specification of breaker:
voltage ≥ 1.25 x battery voltage/set;
current ≤ 50A.

Please choose battery size and connected numbers according to backup time requirement and UPS specifications. To extend battery lifecycle, it's recommended to use them in the temperature range of 15°C to 25°C.

Step 1: External battery connection

Follow the right chart to make external battery connection.



3.4.1-3
External battery connection

Step 2: UPS input connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.

- **For 200/208/220/230/240VAC models:**
The power cord is supplied in the UPS package.
- **For 100/110/115/120/127VAC models:**
The power cord is attached to the UPS. The input plug is a NEMA 5-15P for 1K and 1.5K models, NEMA 5-20P for 2K model and NEMA 5-30P for 3K model.

NOTE!

i Check if the site wiring fault indicator lights up in LCD panel. It will be illuminated when the UPS is plugged into an improperly wired utility power outlet (refer to troubleshooting section). Please also check if there is a circuit breaker against overcurrent and short-circuit between the mains and AC input of the UPS for safety operation.

The recommended protection value as following:

- **For 200/208/220/230/240VAC models:**
10A for the 1K and 1.5K models, 16A for the 2K and 3K models.
- **For 100/110/115/120/127VAC models:**
15A for the 1K and 1.5K models, 20A for 2K model and 30A for 3K model.

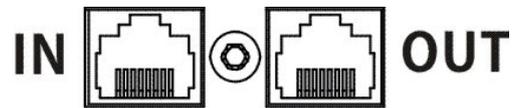
Step 3: UPS output connection

There two kinds of outputs: programmable outlets and general outlets.

Please connect non-critical devices to the programmable outlets and critical devices to the general outlets. During power failure, you may extend the backup time to critical devices by setting shorter backup time for non-critical devices.

Step 4: Network connection

Network/Fax/Phone surge port



3.4.1-4
Network/Fax/ Phone surge port

Connect a single modem/phone/fax line into surge-protected “IN” outlet on the back panel of the UPS unit. Connect from “OUT” outlet to the equipment with another modem/fax/phone line cable.

Step 5: Turn on the UPS

Press the ON/Mute button on the front panel for two seconds to power on the UPS.

NOTE!

i The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

4. Operation

This chapter describes how the UPS is operated through the LCD.

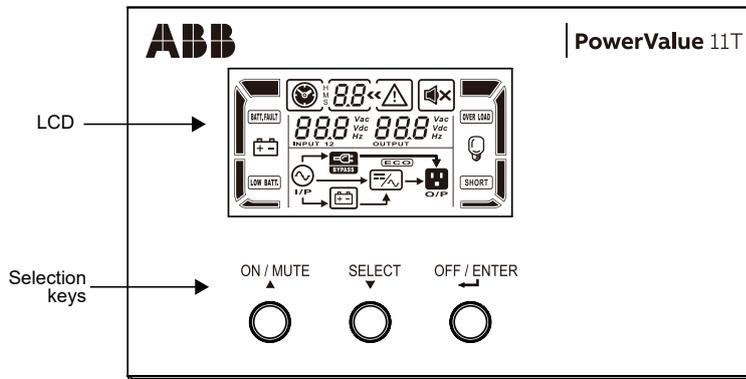
The user can:

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

4.1 Control panel

The user-friendly control panel has two parts:

- Selection keys
- Power management LCD (PMD)



The user-friendly control panel has two parts:

- Selection keys
- Power management LCD (PMD)

4.1-1
Control panel

4.1.1 Selection keys

Table 2: UPS selection keys

Button	Function	Illustration
ON/MUTE ▲	ON/ Mute button	<ul style="list-style-type: none"> • Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS. • Mute the alarm: When the UPS is on battery mode, press and hold this button for at least 5 seconds to disable or enable the alarm system. Not applicable to situations when warnings or errors occur. • Up key: Press this button to display previous selection in UPS settings mode. • Switch to UPS self-test mode: Press and hold ON/Mute button for 5 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.
OFF/ENTER ↵	OFF/ Enter button	<ul style="list-style-type: none"> • Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or will transfer to bypass mode, if the bypass enable is set when this button is pressed. • Confirm selection key: Press this button to confirm selection in UPS settings mode.
SELECT ▼	Select button	<ul style="list-style-type: none"> • Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, output voltage and output frequency. It will revert to default display after 10 seconds of no input. • Settings mode: Press and hold this button for 5 seconds to enter UPS settings mode when UPS is in standby mode or bypass mode. • Down key: Press this button to display next selection in UPS settings mode.
ON/MUTE ▲ SELECT ▼	ON/Mute + Select button	<ul style="list-style-type: none"> • Switch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 5 seconds. Then UPS will enter bypass mode. This action will be ineffective when the input voltage is out of acceptable range.

4 .1 .2 LCD

The LCD shows an overview of the status of the UPS:

- Input
- Output
- Battery
- Load parameters
- Working mode
- Frequency
- Bypass presence

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

A buzzer indicates UPS status. Table 3 lists the buzzer status meanings.

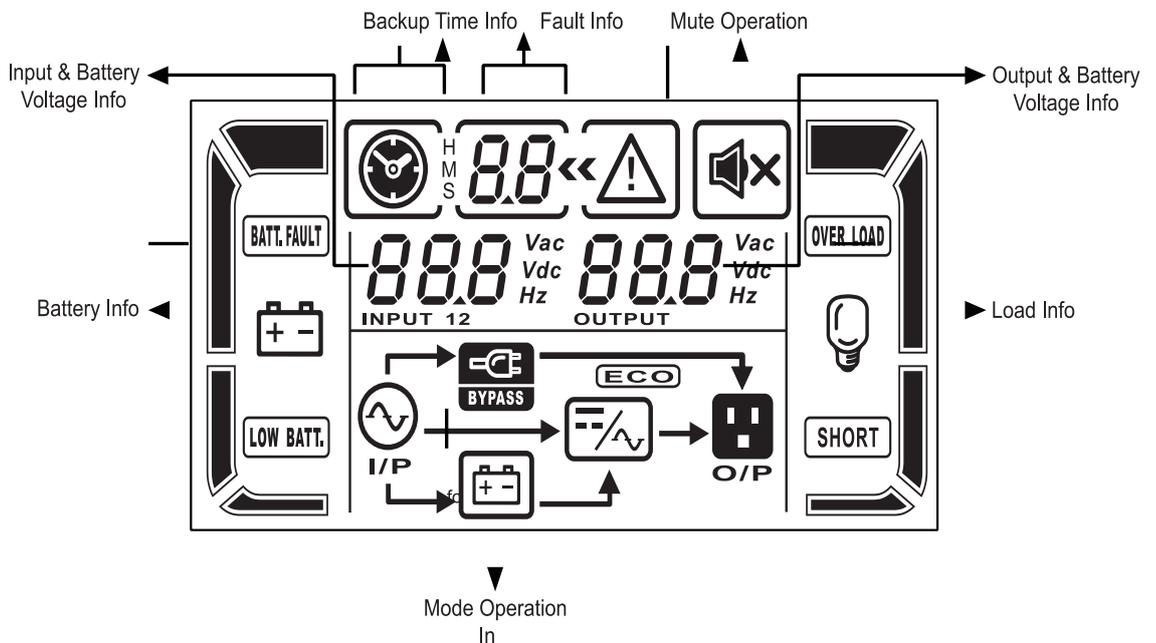
Table 3: Definition of alarms

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 10 minutes
Overload	Beep twice every second

The status screen shows 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)

For more information on how to use the LCD, see Chapter 4.6.

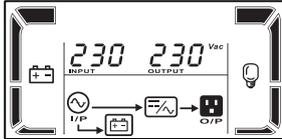
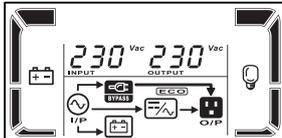
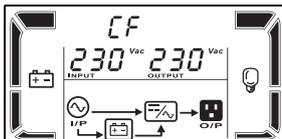
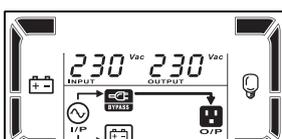
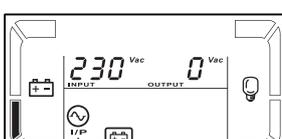


—
4.1.2-1
The default LCD

4.2 Operating mode

The following table describes the UPS status information:

Table 4: Symbols in operating mode

Status	LCD Screen	Description
Online mode		When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery in online mode.
ECO mode		Energy saving mode: When the input voltage is within voltage regulation range, UPS will bypass voltage to output for energy saving.
Frequency converter mode		When 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 battery under this mode.
Battery mode		When the input voltage is beyond the acceptable range or power failure and alarm are sounding every 4 second, UPS will backup power from battery.
Bypass mode		When input voltage is within acceptable range but UPS is overloaded, UPS will enter bypass mode or bypass mode can be set from front panel. Alarm sounds every 10 seconds.
Standby mode		UPS is powered off and no output supply power, but still can charge batteries.

4.3 UPS start-up and shutdown

WARNING!



Switch off the connected loads before turning on the UPS. 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.

NOTE!



The first time the UPS is started up, it must be connected to the utility.

4.3.1 UPS start-up

To start up the UPS with mains supply:

1. Check that all cables are securely and correctly connected.
2. Keep the power button pressed for longer than 1 second. The fans will activate and the UPS will load for a few seconds.
3. The UPS will perform a self-test and the LCD will show the default UPS status screen.

NOTE!



The first time the UPS is started up, it must be connected to the utility.

To start up the UPS without mains supply (cold start):

4. Check that all cables are securely and correctly connected.
5. Keep the power button pressed for longer than 1 second. The UPS will power on, the fans will activate and the LCD will turn on. The UPS will perform a self-test and show the default UPS status screen.
6. Keep the power button pressed for longer than 1 second. The alarm buzzer will sound for 1 second and the UPS will start up.
7. After a few seconds, the UPS transfers to battery mode. When the UPS is supplied with power from the mains, the UPS transfers to online mode without interrupting the UPS power output.

4.3.2 UPS shutdown

To shut down the UPS with mains supply:

1. If the UPS is working in bypass mode, go to step 3.
2. If the UPS is in online mode, keep the power button pressed for more than 3 seconds. The alarm buzzer will sound and the UPS will transfer to bypass mode.

DANGER!



The output is still energized.

3. Disconnect the mains power supply. The display will shut down and the output voltage will be removed from the UPS output terminal.
4. If the bypass has been disabled via the Settings menu, keep the power button pressed for longer than 3 seconds to shut down the UPS. The unit will transfer from online to standby mode. Disconnect the input power cable and the display will shut down.

To shut down the UPS without mains supply:

1. To power off the UPS, keep the power on/off button pressed for more than 3 seconds. The alarm buzzer will sound for 3 seconds and the output power will be immediately cut off.
2. The display will shut down and the output voltage will be removed from the UPS output terminal.

4.4 LCD wordings index

The following table describes the UPS status information:

Table 5: Symbols in operating mode

Abbreviation	Display content	Meaning
ENA	ENR	Enable
DIS	diS	Disable
ESC	ESC	Escape
HLS	HLS	High loss
LLS	LLS	Low loss
BAT	bAtE	Battery
CF	CF	Converter
TP	EP	Temperature
CH	CH	Charger
FU	FU	Bypass frequency unstable
EE	EE	EEPROM error

4.5 LCD panel

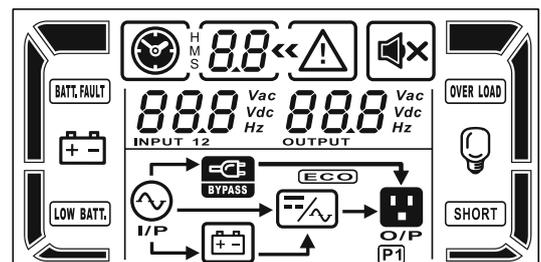


Table 6: Symbols in operating mode

Display	Function
	Indicates the remaining backup time in pie chart
	Indicates the remaining backup time in numbers. H: hours, M: minute, S: second
	Indicates warning and fault.
	Indicates the warning and fault code. Code details are listed in section 3.5.
	Indicates that the UPS alarm is disabled.
	Indicates the input voltage, frequency, output voltage, battery voltage, output current, battery capacity, load percent, output power, positive bus voltage, negative bus voltage, temperature, output receptacle 1, output receptacle 2.
	Indicates the load level: 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates overload.
	Indicates the load or the UPS output is short-circuit.
	Indicates that programmable management outlets are working.
	Indicates the UPS is connected to the mains.
	Indicates the battery is working.
	Indicates the bypass circuit is working.
	Indicates the ECO mode is enabled.
	Indicates the Inverter circuit is working.
	Indicates the output is working.
	Indicates the battery level: 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates the battery is faulty.
	Indicates low battery level and low battery voltage.
	Indicate the input voltage, input frequency and battery voltage. Vac: AC voltage, Vdc: DC voltage, Hz: frequency

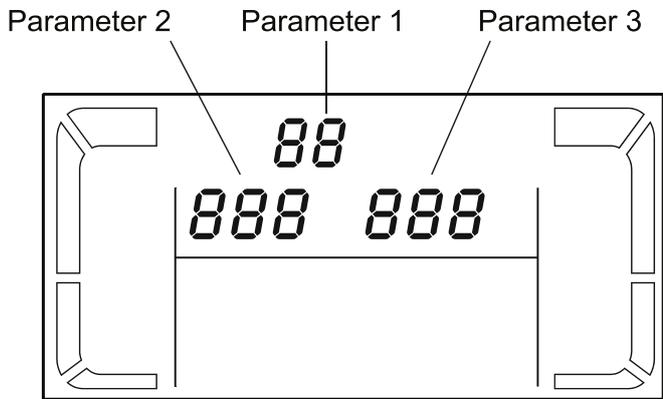
4.6 LCD settings

WARNING!



Changing UPS settings might adversely impact the load supply or load functionality. It is recommended to disconnect the load before proceeding

Press and hold select button for 5 seconds to enter UPS settings mode when UPS is in standby mode or bypass mode. Press and hold "Off/Enter" and "select" buttons for 5 seconds to switch LCD screen in rack or tower display.



There are three parameters to set up the UPS.
 Parameter 1: It's for program alternatives. Refer to below table.
 Parameter 2 and parameter 3 are the setting options or values for each program.

01: Output voltage setting

Interface	Settings
	<p>Parameter 3: Output voltage You may choose the following output voltage: 220: presents output voltage is 220Vac 230: presents output voltage is 230Vac (Default) 240: presents output voltage is 240Vac</p>

02: Frequency converter enable/disable

Interface	Settings
	<p>Parameter 2: Enable or disable converter mode. You may choose the following two options: CF ENA: converter mode enable CF DIS: converter mode disable (Default)</p>

03: Output frequency settings

Interface	Settings
	<p>Parameter 2: Output frequency setting. You may set the initial frequency on battery mode: BAT 50: presents output frequency is 50Hz BAT 60: presents output frequency is 60Hz If converter mode is enabled, you may choose the following outputfrequency: CF 50: presents output frequency is 50Hz CF 60: presents output frequency is 60Hz</p>

04: ECO enable/disable

Interface	Settings
	<p>Parameter 3: Enable or disable ECO function. You may choose the following two options: ENA: ECO mode enable DIS: ECO mode disable (Default)</p>

05: ECO voltage range settings

Interface	Settings
	<p>Parameter 2 & 3: Set the acceptable high voltage point and low voltage point for ECO mode by pressing Down key or Up key. HLS: High loss voltage in ECO mode in parameter 2. The setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V) LLS: Low loss voltage in ECO mode in parameter 2. The setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V)</p>

06: Bypass enable/disable when UPS is off

Interface	Settings
	<p>Parameter 3: Enable or disable Bypass function. You may choose the following two options: ENA: Bypass enable DIS: Bypass disable (Default)</p>

07: Bypass voltage range setting

Interface	Settings
	<p>Parameter 2 & 3: Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key. HLS: Bypass high voltage point 230-264: setting the high voltage point in parameter 3 from 230Vac to 264Vac. (Default: 264Vac) LLS: Bypass low voltage point 180-220: setting the low voltage point in parameter 3 from 180Vac to 220Vac. (Default: 180Vac)</p>

08: Autonomy limitation setting

Interface	Settings
	<p>Parameter 3: Set up backup time on battery mode for general outlets. 0-999: setting the backup time in minutes from 0-999 for general outlets on battery mode. 0: When setting as "0", the backup time will be only 10 seconds. 999: When setting as "999", the backup time setting will be disabled. (Default)</p>

09: Battery capacity setting

Interface	Settings
	<p>Parameter 3: Set up total battery AH value of the UPS. (unit: AH) 7-999: setting the total battery capacity from 7 to 999. Please set up this figure if external battery pack is connected. If the UPS is standard model, the default setting is 9AH. If the UPS is long-run model, the default setting is 65AH.</p>

5. Communication

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

If there is a power failure and a predicted shutdown of the UPS due to low battery autonomies, the monitoring system can save the load data and initiate shutdown of the equipment connected to the UPS.

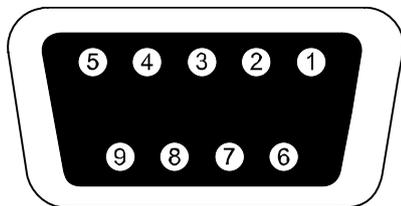
NOTE!

i Length of cables shall not exceed 10m keep routing of communication Cables separated from mains supply AC and DC cables

5.1 RS-232 port

The UPS has an RS-232 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 RS-232 port on the UPS and the other end to the RS-232 port of a computer.

The cable pins for the RS-232 communication port are described in Figure 5.1-1 and Table 7.



5.1-1
RS-232 Communication
Port (DB-9 Connector)

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	-

5.2 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.

6. Troubleshooting

6.1 Fault identification and rectification

Alarms and events indicate warnings and notify errors or potential failures in the system. The output of the UPS is not necessarily affected when an alarm arises but taking the correct actions may prevent loss of power to the load.

6.2 Accessing alarms

6.2.1 Faults reference code

Fault event	Fault code	Icon
Bus start fail	01	X
Bus over	02 X	in
Bus under	03 X	-
Bus unbalance	04 X	
Inverter soft start failure	11 X	
Inverter voltage high	12 X	
Inverter voltage Low	13 X	

Fault event	Fault code	Icon
Inverter output short	14	SHORT
Battery voltage too high	27	BATT. FAULT
Battery voltage too low	28	BATT. FAULT
Over temperature	41	x
Overload	43	OVER LOAD
Charger failure	45	x

6.2.2 Warning indicator

Warning	Icon (flashing)	Code	Alarm
Low battery			Sounding every second
Overload			Sounding twice every second
Battery is not connected			Sounding every second
Over Charge			Sounding every second
Over temperature		EP	Sounding every second
Charger failure		CH	Sounding every second
Battery fault			Sounding every second
Out of bypass voltage range			Sounding every second
Bypass frequency unstable		FU	Sounding every second
EEPROM error		EE	Sounding every second

6.2.3 Audible alarm

Warning	Alarm
Battery mode	Sounding every 4 seconds
Low battery	Sounding every second
Overload	Sounding twice every second
Fault	Continuously sounding
Bypass mode	Sounding every 10 seconds

6.2.4 Troubleshooting

If the UPS system does not operate correctly, please solve the problem by using the table below.

Symptom	Possible cause	Remedy
No indication and alarm even though the mains is normal.	The AC input power is not connected well.	Check if input power cord firmly connected to the mains.
	The AC input is connected to the UPS output.	Plug AC input power cord to AC input correctly.
The icon  and  flashing on LCD display and alarm is sounding every 2 seconds.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
Fault code is shown as 27 and the icon  is lighting on LCD display and alarm is continuously sounding.	Battery voltage is too high or the charger is faulty.	Contact your dealer.
Fault code is shown as 28 and the icon  is lighting on LCD display and alarm is continuously sounding	Battery voltage is too low or the charger is faulty.	Contact your dealer.
The icon  and  is flashing on LCD display and alarm is sounding every second.	UPS is overloaded.	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 43 and the icon  is lighting on LCD display. Alarm is continuously sounding.	The UPS shuts down automatically because of overload at the UPS output.	Remove excess loads from UPS output and restart it.
Fault code is shown as 14 and the icon  is lighting on LCD display and alarm is continuously sounding.	The UPS shuts down automatically because short-circuit occurs on the UPS output.	Check output wiring and if connected devices are in short-circuit status.
Fault code is shown as 01, 02, 03, 11,12, 13 and 41 on LCD display and alarm is continuously sounding.	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplied by power.	Contact your dealer
Battery backup time is shorter than nominal value.	Batteries are not fully charged	Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries are defective	Contact your dealer to replace the battery.



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