

bluevolt

User Manual

Bluevolt R-Type UPS Power System



Manufactured by Blue Volt Energy (Pty) Ltd

Document Number: UM-R-Rev20230524

1. Introduction	3
2. Product Description	3
3. General Operating Notes	7
3.1. Input Power	7
3.2. Storage	7
4. Human Interface	7
5. Connecting Solar Panels (PV Modules)	7
6. Troubleshooting	8
6.1. Common Errors and Recovery Procedures	8
7. Transport	9
7.1. Shipping	9
7.2. General transport	9
8. Environmental requirements	9
8.1. Indoor use	9
8.2. Ventilation	9
8.3. Ambient temperature	10
9. Switching on the Bluevolt R-Type Power System	10
10. Warranty and Repair	11
11. Expected Product Life	11
12. Inverter-Charger Manual	11

1. Introduction

This manual is intended to assist the user with the Bluevolt R-Type UPS Power System. The systems can be used as follows:

1. plug-and-play backup energy with uninterruptible power supply (UPS)
2. hardwired into the mains distribution board of a home or business to power energy efficient lighting and small appliances

In the first case, the manual is helpful to understand the display on top of the unit.

In the second case, or when solar panels (PV modules) are connected, this manual describes the procedures to install and commission the power system.

This manual covers information that is relevant to the installation and commissioning of the power system and omits detailed information about the inner workings of the system that is irrelevant for these steps.

2. Product Description

Bluevolt power systems are available in a number of sizes with energy storage ranging from 1.2 kWh to 12 kWh. Larger systems are manufactured by Bluevolt according to the project requirements.

This manual covers the Bluevolt R-Type UPS Power System.

The Bluevolt R-Type system is designed to be placed on the floor. It is light enough to be lifted easily by 1-2 people.

The system is designed to be plug-and-play. It can simply be plugged into any wall socket to charge. Plug your devices into the R-Type's built-in plug socket to enjoy uninterrupted power through load shedding.

The display in the top face of the device shows the device status. The display shows information including whether the unit has mains power, whether it is charging and what percentage of the maximum power it is generating. You can also scroll through the menu to see more detailed information such as battery voltage and power consumption.

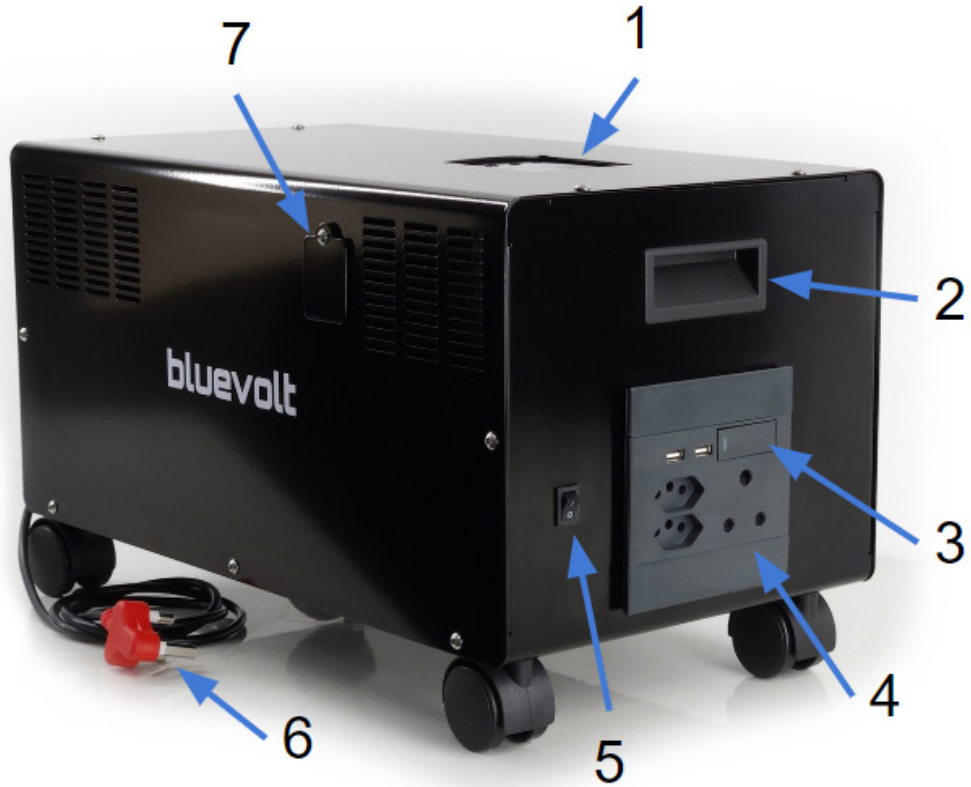


Figure 2.1 Labeled image of Bluevolt R-Type

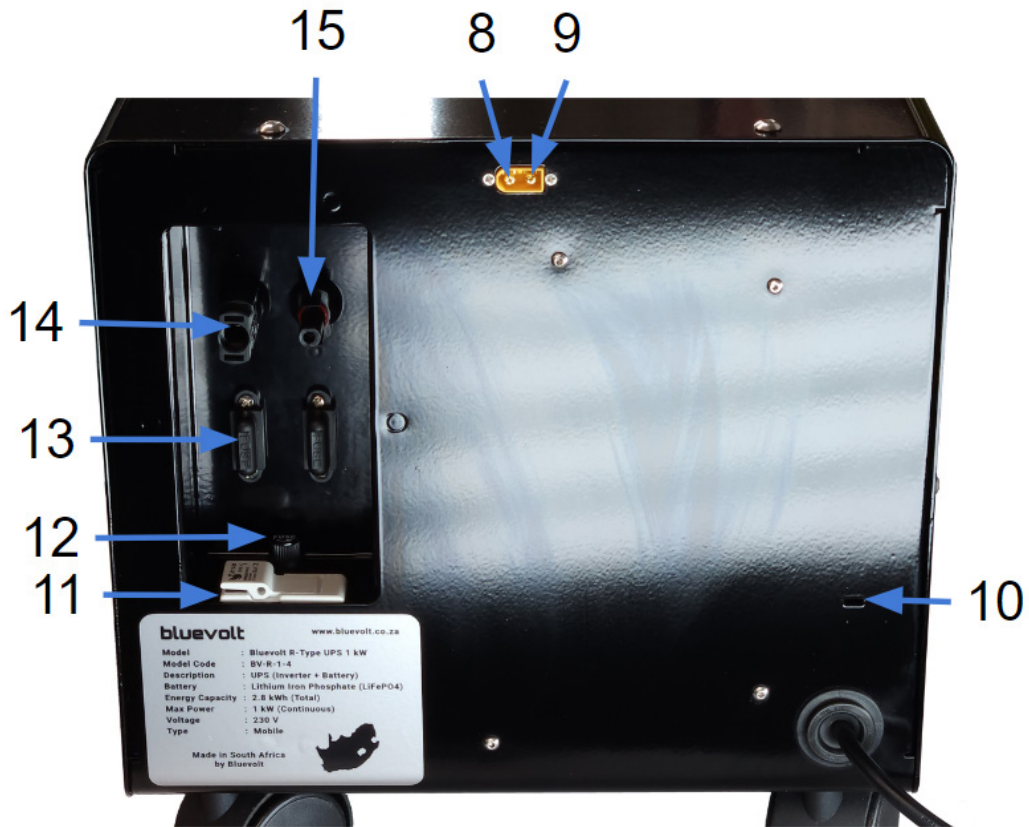


Figure 2.2 Labeled image of Bluevolt R-Type

1. Display
2. Handle
3. Plug socket switch
4. Plug socket - AC output
5. Battery discharge control switch
6. Plug for AC input
7. Inverter AC circuit on switch covered by rotating flap
8. DC bus - XT60 connector (negative)
9. DC bus - XT60 connector (positive) - fused at (13) with 2x 10A blade fuses = 20A DC
10. Kensington slot for anti-theft cable lock
11. PV fuse for MC4 connectors (14, 15)
12. Fuse - AC output - 6A Fast Blow fuse ONLY
13. Fuses (two) - blade fuses for XT60 connector (8, 9)
14. MC4 connector - to positive PV input - fused at (11) 32A DC
15. MC4 connector - to negative PV input

Table 2.1 Bluevolt R-Type Technical Details

Inverter Output	Rated Power	1,000 W
	Surge Rating	2,000 W for 5 seconds
	Waveform	Pure sine wave
	Rated output voltage	230 VAC \pm 3%
	Efficiency	90%
	Working temperature	0-40 °C
	Output frequency	50 Hz
	Transfer time	10-20 ms
Overcurrent Protection	AC Output Fuse	6 A Fast Blow
	Inverter	Automatic shutdown
	BMS	Electronic circuit breaker
Battery	Battery chemistry	Lithium iron phosphate
	Nominal voltage	12.8 V
	Energy storage capacity	220 Ah
	Energy storage capacity	Standard: 2,800 Wh
	Protection	High voltage, low voltage
	Depth of discharge	95% maximum
	Cell type	Prismatic
Charging system	Charging voltages	Bulk 14.6 V Float 14.0 V
	Charging current max	20 A
Mechanical specifications	Dimensions	L 540 x W 290 x H 310 mm
	Weight	38 kg
Miscellaneous	Warranty	Battery: 5 years Other components: 1 year
	Active Cooling	Intelligent fan control
	Colour	Black (or custom colour)

3. General Operating Notes

3.1. Input Power

Leave the unit plugged into the wall as this will ensure that the batteries are fully charged for the next power cut.

Avoid leaving the unit at a low state of charge for prolonged periods as this will cause the battery to disconnect from the inverter. If this happens, follow the procedure in the troubleshooting section.

3.2. Storage

Ensure that the unit is fully charged before storing for a maximum of 2 months. Shutdown the power system by switching the battery off using switch (5), as shown in *Figure 2.1 Labelled image of Bluevolt R-Type*.

4. Human Interface

Please refer to the inverter manual section below.

Please note that tampering with the settings will void the warranty. Adjustment of the solar related settings is permitted by a suitably qualified person only.

5. Connecting Solar Panels (PV Modules)

For the purpose of incorporating solar panels into your power configuration, it is strongly recommended to engage the services of a professional solar power system installer. The user manual for the inverter-charger, contained within the second part of this document, provides a thorough set of guidelines regarding solar panel compatibility.

Solar input integration is achieved through the use of MC4 connectors, which are clearly marked as items (14) and (15) in Figure 2.2, titled "Labelled image of Bluevolt R-Type". Please note that these MC4 connectors are equipped with a 32 A fuse as a safety measure.

It is of the utmost importance that the design and installation procedures are exclusively carried out by qualified and certified photovoltaic/solar panel installers. This is a requirement for ensuring both optimal performance and adherence to safety standards.

6. Troubleshooting

Refer to the inverter manual and the list of fault codes that could be shown on the display.

You can contact your distributor or installer reseller for assistance.

6.1. Common Errors and Recovery Procedures

No power at AC output

Fault description: There is no power at the AC output

Error details: Likely to be inverter overload or blown fuse

Recovery Procedure:

1. Switch OFF the inverter switch (7) and switch it back ON.
2. If the error is not resolved after following step one then switch OFF the inverter switch (7) a second time and leave it in the OFF position.
3. Unplug the unit from the wall socket (6)
4. Unscrew the AC output fuse holder (12) - NB ensure steps 2 and 3 have been followed for safety reasons.
5. If the fuse is blown, then replace it with a 6A Fast Blow fuse ONLY. Installing the incorrect fuse could damage internal circuits.
6. If power to the AC output is still OFF please contact your reseller about a damage assessment.

Possible causes if fault persists: Special reset procedures required or the unit has been damaged internally.

Constant beeping with display flashing

Fault description: Constant beeping with display flashing

Error details: The inverter cannot detect the battery.

Recovery Procedure:

7. First try turning the battery on using the switch shown by (6) in *Figure 2.1 Labelled image of Bluevolt R-Type*.
8. If the switch does not resolve the fault, please contact Bluevolt for further instructions.

Possible causes if fault persists: the inverter *Low DC cut-off voltage* setting has been tampered with, or the power system has been stored at a low state of charge for an extended period.

7. Transport

7.1. Shipping

The Bluevolt R-Type units are packed in a box with layers of protective material.

Ensure that the box stays upright.

The box is easily lifted by one or two people.

7.2. General transport

The power system should be completely shut down for transport as the cooling vents may become obstructed when packed close to other items. Refer to labeller images *Figure 2.1* and *Figure 2.2* and follow these steps:

- Unplug from the wall outlet (6)
- Turn off the inverter using the switch indicated by (7)
- Turn off the battery using the switch indicated by (5)

Ensure that the display (1) is protected from damage.

8. Environmental requirements

8.1. Indoor use

Bluevolt batteries and power systems are designed strictly for indoor use. Keep out of direct sunlight and away from moisture.

8.2. Ventilation

Bluevolt power systems emit no harmful gases, which means that specific venting is not needed.

The system is fan-cooled and the vents should be unobstructed to ensure that cooling air can move freely.

The vents should never be covered as this will cause the unit to overheat.

Keep a minimum of 20 cm of free air around the Bluevolt R-Type power system to ensure that air can move freely through the vents.

8.3. Ambient temperature

The power should be operated between 0°C to 30°C. If the temperature regularly exceeds 40°C, cooling is recommended to extend the service life of the battery.

Charging of the battery is blocked below 0°C to avoid damage to the battery

The power system should remain 500mm away from any heat source at all times.

9. Switching on the Bluevolt R-Type Power System

To switch on the power system refer to *Figure 2.1 Labelled image of Bluevolt R-Type* and:

1. Switch on the battery (5)
2. Take the plug (6) and plug into a wall outlet
3. Switch on the inverter (7)
4. Observe the display to confirm that the battery begins charging as shown by *Figure 10.1*, below.

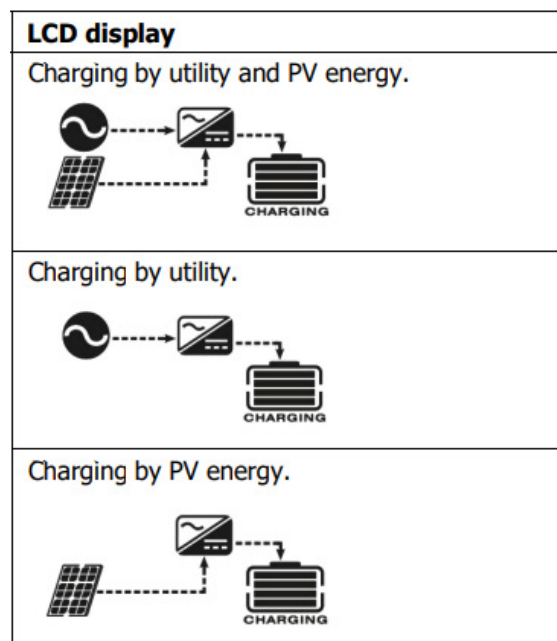


Figure 10.1 Power System Charging

The power system must be switched off (5) fully when not in use. This will prevent self-discharge. Refer to *Figure 2.1 Labelled image of Bluevolt R-Type* and:

1. Turn off the inverter (7)
2. Turn off the battery (5)

It is normal for the unit to charge even though the battery discharge switch (5) is in the OFF position, and the unit is plugged (6) into a wall outlet.

10. Warranty and Repair

Please refer to the warranty document for the Bluevolt Link CAN Bus Controller.

11. Expected Product Life

The Bluevolt R-Type system battery is expected to have a useful life of 15+ years with daily cycling and an average of 80% DoD.

For the longest possible battery life and thus lowest lifetime cost per kWh, you can limit the average DoD to 50-60%, keep the ambient temperature around 10°C to 20°C, and avoid overloading the unit.

To maximise the life of the inverter, turn it off when not in use for long periods using the switch indicated by (5) in *Figure 2.1 Labelled image of Bluevolt R-Type*.

12. Inverter-Charger Manual

What follows is the user manual for the inverter-charger inside the Bluevolt R-Type UPS Power System.

Connection of the power system to a mains distribution board is to be done only by a suitably qualified and experienced installer of inverters.

For the user there is information in this manual about operating and understanding the display on top of the Bluevolt R-Type.