

HP 1U UPS User Guide

Abstract

This document is for the person who installs and maintains HP UPS products. HP assumes you are qualified in the installation of electrical equipment and trained in recognizing hazards in products with hazardous energy levels.



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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.

The 1U UPS models described in this manual are intended for installation in an environment within 0 to 40°C/32 to 104°F, free of conductive contaminant.

Certification Standards

- UPS directives: UL 1778 4th edition (UL listed).
- Performance: IEC 62040-3: 2001.
- Radiated emission: FCC CFR 47 part 15 subpart B, Class A, VCCI.
- Surges withstand ability: IEEE ANSI C62.41 Category A2 (UL Listed).

Regulatory Notices

See HP EG regulatory notices at <http://www.hp.com/support/Safety-Compliance-EnterpriseProducts>.

Special Symbols

The following are examples of symbols used on the UPS or accessories to alert you to important information:



RISK OF ELECTRIC SHOCK - Observe the warning associated with the risk of electric shock symbol.



Important instructions that must always be followed.



Do not discard the UPS or the UPS batteries in the trash.
This product contains sealed lead acid batteries and must be disposed as it's explain in this manual.
For more information, contact your local recycling/reuse or hazardous waste center.



This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

Personal Safety

- The system has an internal battery as a backup power source. Consequently, the power outlets may be energized, even if the system is disconnected from the AC power source.
- Dangerous voltage levels are present within the system. It should be opened exclusively by qualified service personnel.
- The system must be properly grounded
- There are no user serviceable parts inside except for the replaceable battery.
- The battery supplied with the system contains small amounts of toxic materials.
- To avoid accidents, the directives listed below must be observed:
 - Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
 - When replacing batteries, replace with the same type and number of batteries or battery packs.
 - Do not dispose of batteries in a fire. The batteries may explode.
 - Batteries constitute a danger (electrical shock, burns). The short-circuit current may be very high.

Precautions must be taken for all handling:

- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

Product Safety

- The UPS connection instructions and operation described in the manual must be followed in the indicated order.
- A protection circuit breaker must be installed upstream and be easily accessible. The system can be disconnected from the AC power source by opening this circuit breaker.
- Check that the indications on the rating plate correspond to your AC powered system and to the actual electrical consumption of all the equipment to be connected to the system.
- For PLUGGABLE EQUIPMENT, the outlet shall be installed near the equipment and shall be easily accessible.
- Never install the system near liquids or in an excessively damp environment.
- Never let a foreign body penetrate inside the system.
- Never block the ventilation grates of the system.
- Never expose the system to direct sunlight or source of heat.
- If the system must be stored prior to installation, storage must be in a dry place.
- The storage temperature range is -15 to +50°C/5 to 122°F.
- The system is not for use in a computer room AS DEFINED IN the standard for the Protection of Information Technology Equipment, ANSI/NFPA 75 (US installations only).

Special Precautions

- All handling operations will require at least two people (unpacking, installation in rack system).
- Before and after the installation, if the UPS remains de-energized for a long period, the UPS must be energized for a period of 24 hours, at least once every 6 months (for a normal storage temperature less than 25°C/ 77°F. This charges the battery, thus avoiding possible irreversible damage.
- During the replacement of the battery module, it is imperative to use the same type and number of element as the original battery module provided with the UPS to maintain an identical level of performance and safety. For questions, contact your HP representative.

Important: Replace the battery module with the same type battery module, available from HP.

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1. Overview

Save these instructions. This document contains important safety instructions that should be followed during installation, operation, and maintenance of the UPS and batteries.

1.1 Environmental protection


Products are developed according to an eco-design approach.

Substances

This product does not contain CFCs, HCFCs , or asbestos.

Packing

To improve waste treatment and facilitate recycling, separate the various packing components.

- The cardboard we use comprises over 50% of recycled cardboard.
- Sacks and bags are made of polyethylene.
- Packing materials are recyclable and bear the appropriate identification symbol 

Materials	Abbreviations	Number in the identification symbols
Polyethylene terephthalat	PET	01
High-density polyethylene	HDPE	02
Polyvinyl chloride	PVC	03
Low-density polyethylene	LDPE	04
Polypropylene	PP	05
Polystyrene	PS	06

Follow all local regulations for the disposal of packing materials.

End of life

HP processes products at the end of their service lives in compliance with local regulations. HP works with companies in charge of collecting and eliminating our products at the end of their service lives.

Product

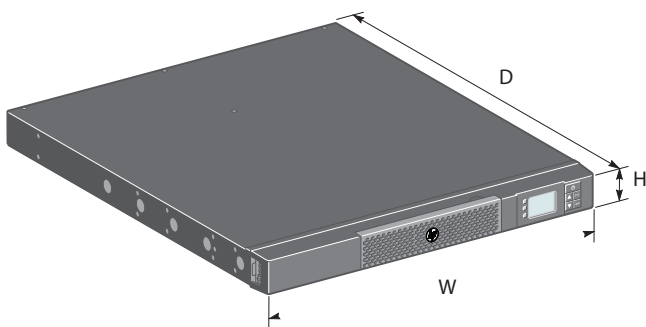
The product is made up of recyclable materials. Dismantling and destruction must take place in compliance with all local regulations concerning waste. At the end of its service life, the product must be transported to a processing center for electrical and electronic waste.

Battery

The product contains lead-acid batteries that must be processed according to applicable local regulations concerning batteries. The battery may be removed to comply with regulations and correct disposal.

1. Overview

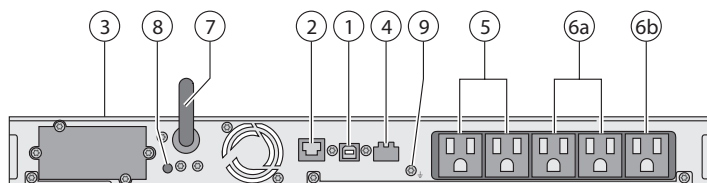
1.2 Weights and dimensions



Description	Weights (kg/lb.)	Dimensions (mm/inch) D x W x H
HP R1500 G4 NA	20 kg/44 lb.	554 x 437 x 43 mm/21.8 x 17.2 x 1.7 in.
HP R1500 G4 JP/TWN UPS	20 kg/44 lb.	554 x 437 x 43 mm/21.8 x 17.2 x 1.7 in.
HP R1500 G4 INTL UPS	19.5 kg/43 lb.	554 x 437 x 43 mm/21.8 x 17.2 x 1.7 in.

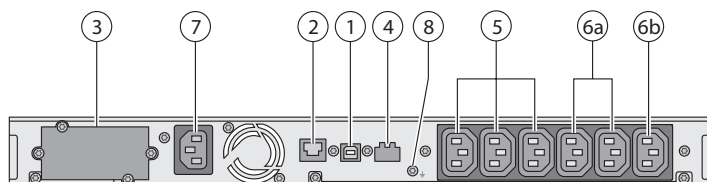
1.3 Rear panels

HP R1500 G4 NA UPS and HP R1500 G4 JP/TWN UPS



- (1) USB communication port
- (2) RS-232 communication port
- (3) Slot for optional communication card
- (4) Connector for ROO (Remote On/Off) or RPO (Remote Power Off) control
- (5) Outlets for connection of critical equipment (Primary group)
- (6a) Group 1: programmable outlets for equipment connection
- (6b) Group 2: programmable outlets for equipment connection
- (7) Attached 6 ft. input power cord for AC power source
- (8) LED indicating site wiring fault alarm
- (9) Ground screw

HP R1500 G4 INTL UPS

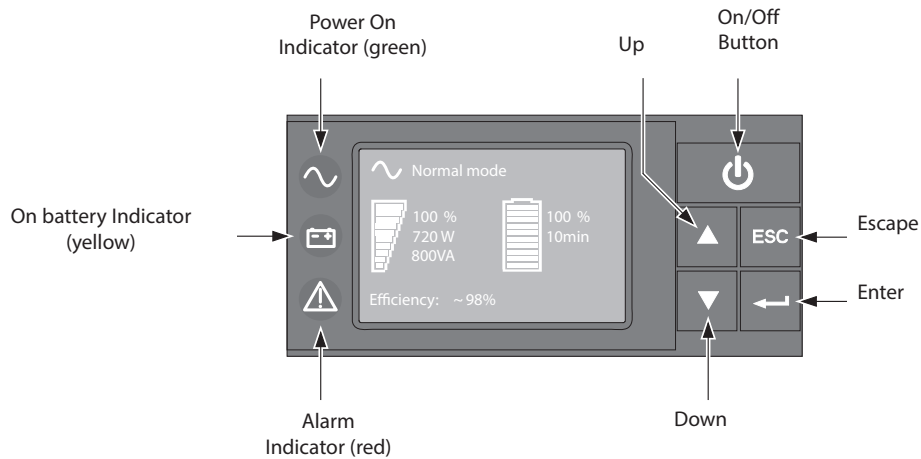


- (1) USB communication port
- (2) RS-232 communication port
- (3) Slot for optional communication card
- (4) Connector for ROO (Remote On/Off) or RPO (Remote Power Off) control
- (5) Outlets for connection equipment (Primary group)
- (6a) Group 1: programmable outlets for equipment connection
- (6b) Group 2: programmable outlets for equipment connection
- (7) Socket for connection to AC power source
- (8) Ground screw




2. User Interface

2.1 Control panel

The UPS has a five-button graphical control panel.



The following table shows the indicator status and descriptions:

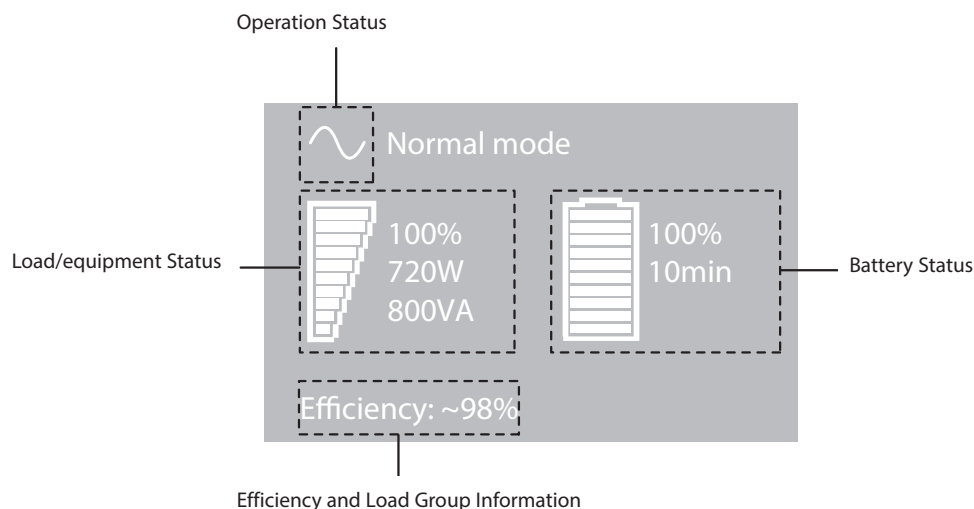
Indicator	Status	Description
 Green	On	The UPS is operating normally.
 Yellow	On	The UPS is on battery mode.
 Red	On	The UPS has an active alarm or fault. See "5.1 Troubleshooting", page 16 for additional information.

2. User Interface

2.2 LCD window







The LCD window provides useful information about the UPS, load status, events, measurements, and settings. As the default, or after five minutes of inactivity, the LCD displays the screen saver.

The backlight LCD automatically dims after 10 minutes of inactivity. Press any button to restore the screen.



The following table illustrates the Operation Status icons that you could see and describes the condition associated with each icon.

Note: If other indicators appear, see "5.1 Troubleshooting", page 16 for additional information.

Operation status	Possible cause	Action
 Standby mode	The UPS is off, waiting for start-up command from user.	Equipment is not powered until the  button is pressed.
 Normal mode	The UPS is operating normally.	The UPS is powering and protecting the equipment.
 In Automatic Voltage Regulation mode Load protected LED is on. 'o audio alarm.	The UPS is operating normally but the utility voltage is outside normal mode thresholds.	The UPS is powering the equipment through an AVR device. The equipment is still protected.
 On Battery Battery LED is on. Audio alarm beeps every 10 seconds	A utility failure has occurred and the UPS is in Battery mode.	The UPS is powering the equipment with the battery power. Prepare your equipment for shutdown.
 End of backup time Audio alarm beeps every three seconds	The UPS is in Battery mode and the battery is running low.	This warning is approximate, and the actual time to shutdown may vary significantly. Depending on the UPS Load, the "Battery Low" warning may occur before the battery reaches 20% capacity.

2. User Interface

2.3 Display functions

Press the  button to activate the menu options. Use the  and  buttons to scroll through the menu structure. Press the  button to select an option. Press the ESC button to cancel or return to the previous menu.

Display Function Menu

Main menu	Submenu	Display information or Menu function
Measurements	—	Load W VA/Load A pf/Output V Hz/Input V Hz/ Battery V min/Efficiency/Power usage
Control	Load Segments	Group 1: ON/OFF Group 2: ON/OFF These commands overrule user settings for load segments.
	Start battery test	Starts a manual battery test
	Reset fault state	Clears active faults (UPS restart required)
	Restore factory settings	Returns all settings to original values
	Reset power usage	Clears power usage measurements
Settings	Local settings	Sets general parameters
	Input/output settings	Sets Input and output parameters
	ON/OFF settings	Sets on and off conditions
	Battery settings	Sets battery configuration
Fault log	—	Displays event log or alarms
Identification	—	UPS Type/Part Number/Serial Number/Firmware release/Com card address

2.4 User settings

The following table displays the options that can be changed by the user.

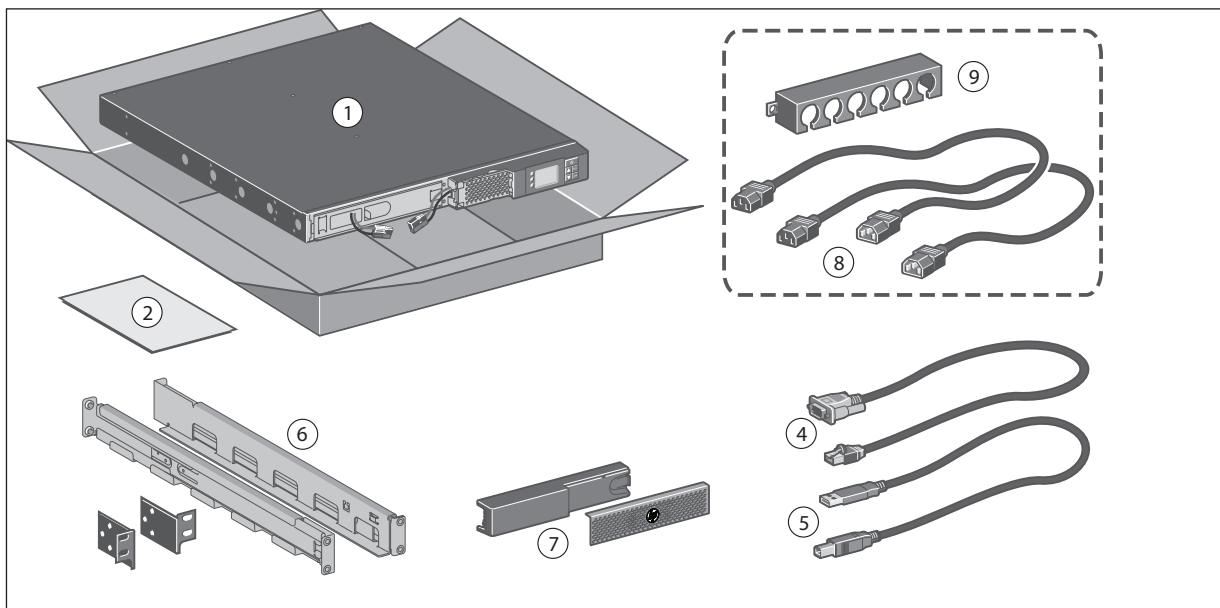
	Description	Available settings	Default settings
Local settings	Language	[English] [French] [German] [Spanish] [Italian] [Portuguese] [Russian] Menus, status, notices and alarms, UPS fault, event log data and settings are in all supported languages.	English User selectable when UPS is pow- ered the first time.
	LCD settings	Allows LCD screen brightness and contrast to be adapted to room light conditions.	—
	Audible alarm	[Enabled] [Disabled on battery] [Always disabled] Allows you to enable or disable the audio alarm if an alarm occurs.	Enabled
In/Out settings	Output voltage	[100V] [120V] [125V] On INTL models: [200V] [208V] [220V] [230V] [240V]	User selectable when UPS is powered the first time.
	Input thresholds	[Normal mode] [Extended mode] Extended mode reduces lower input volt- age to 70V before UPS transfers to battery. This can be used if the load can withstand low voltage supply.	Normal mode
	Sensitivity	[High] [Low] High: For sensitive equipment, the UPS will easily transfer to battery when utility conditions deteriorate. Low: For less sensitive equipment, the UPS will not transfer to battery when utility conditions deteriorate.	High
	Load segments - Auto start delay	[No Delay] [1 s] [2 s]...[65354 s] The connected equipment is powered after the specified delay.	Group 1: 3 s Group 2: 6 s
Continued			

2. User Interface

Continued			
	Description	Available settings	Default settings
In/Out settings	Load segments - Auto shutdown delay	[Disable] [0s] [1 s] [2 s]...[65354 s] During a power outage, authorizes UPS to turn off power to equipment connected to Group 1 and/or Group 2 outlets. This feature sheds non-critical loads in order to conserve battery power for critical loads connected to the primary group.	Group 1: Disable Group 2: Disable
	Overload prealarm	[10%] [15%] [20%] ... [100%] [105%] Sets alarm for critical percentage of load where alarm overload occurs.	[105%]
ON/OFF settings	Cold start	[Disable] [Enable] Enables or disables the product to start on battery. The first cold start is always disabled.	Enable
	Forced reboot	[Disable] [Enable] If power returns during a shutdown sequence: If enabled, the shutdown sequence will complete and there is a 10 second delay prior to restart. If disabled, shutdown sequence does not complete and restart occurs immediately.	Enable
	Auto restart	[Disable] [Enable] Enables or disables the UPS to restart automatically when power returns after a complete battery discharge.	Enable
	Energy saving	[Disable] [Enable] If enabled, the UPS will shutdown after five minutes if no load is detected on the output.	Disable
	Sleep mode	[Disable] [Enable] If enabled, LCD and communication stays on 1h and 30 min after UPS turns off. If disabled, LCD and communication will turn off immediately after the UPS turns off.	Disable
	Remote command	[Disable] [Enable] If enabled, shutdown or restart commands from software are allowed. If disabled, shutdown or restart commands from software are not allowed.	Enable
	RPO delay	[0 s] [1 s] [2 s]...[180 s] Delays RPO command for the specified number of seconds.	[0 s]
Battery settings	Automatic battery test	[No test] [Every day] [Every week] [Every month] Available only if Battery Charge mode is set to constant charge.	Every week (in constant charge) otherwise following EBM
	Low battery warning	[1%] [2%] ... [100%] The alarm occurs when the value set for the low battery capacity warning is reached.	20%
	Restart battery level	[1%] [2%] ... [100%] If set, automatic restart occurs only when the percentage of battery charge you specify is reached.	0%
	Battery charge mode	[EBM cycling] [Constant charge]	EBM cycling
	Deep discharge protection	[Yes] [No] If set to Yes, the UPS automatically prevents the battery from deep discharge by adapting the end of the back-up time voltage threshold.	Yes

3. Installation

3.1 Unpacking and contents check



- (1) HP 1U UPS
- (2) Documentation
- (3) 1U Rack kit
- (4) RS-232 communication cable
- (5) USB communication cable
- (6) 1U Rack kit
- (7) Bezel parts
- (8) Two connection cables for the protected equipment (for International models only)
- (9) Cable locking system

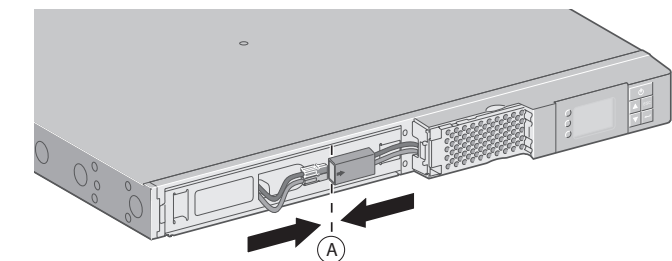


Packing materials must be disposed of in compliance with all local regulations concerning waste. Recycling symbols are printed on the packing materials to facilitate sorting.

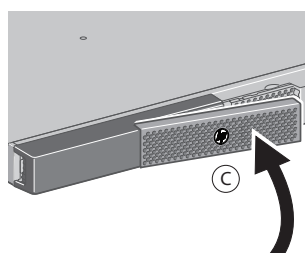
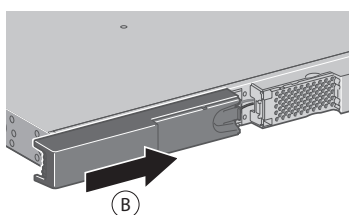
3.2 Battery module connection

This operation must be performed when the UPS is switched off and unplugged from the AC source. In addition, do not disconnect the connector while the unit is operating from the AC source or in reserve mode.

Note: Before starting the UPS, you must connect the internal battery. A small amount of arcing may occur when connecting the batteries. This is normal and does not damage the UPS or present any safety concern.



- (A) Connect the battery module. Never pull on the wires.

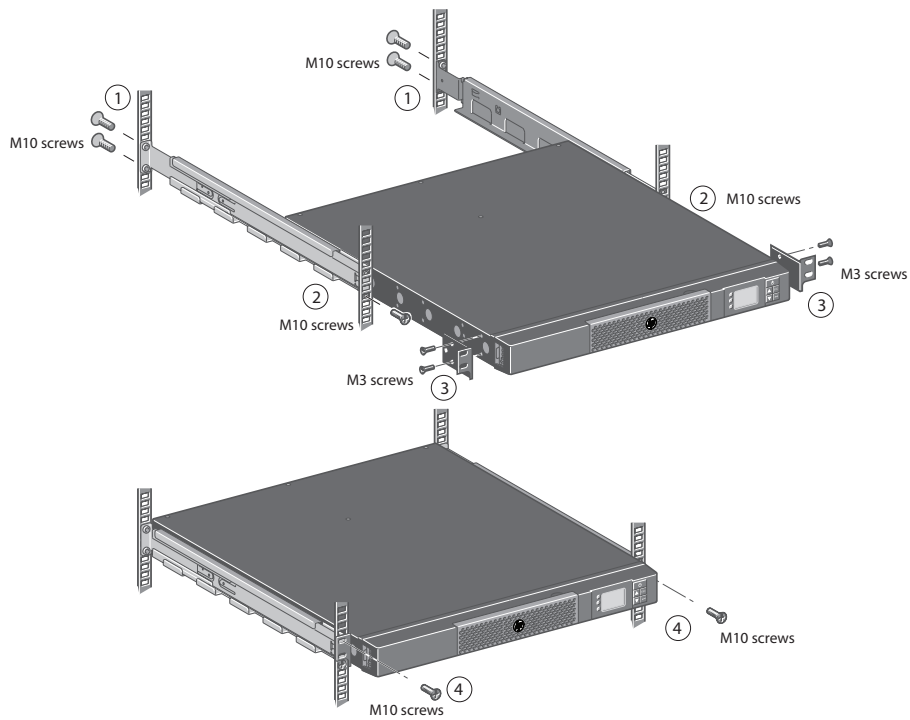


- (B) Slide the left-hand side of the bezel to the right. Ensure that the pushbutton locks.
- (C) Attach the center panel.

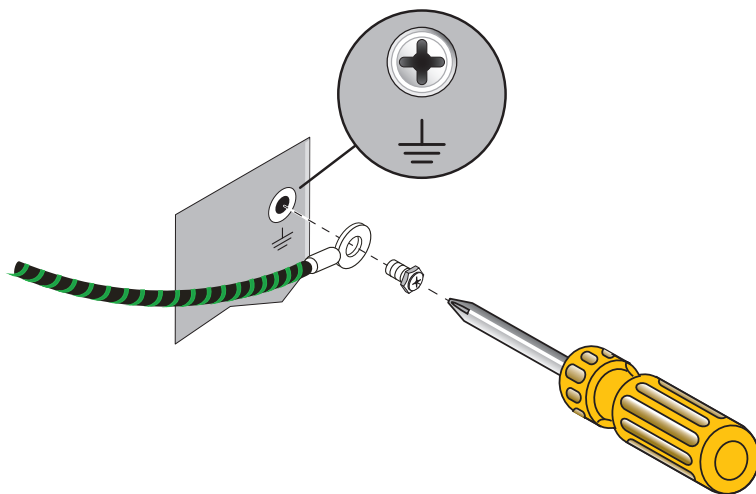
3. Installation

3.3 Installing the UPS on the rails

Follow steps 1 through 4 for mounting the UPS on the rails.



3.4 Ground connection



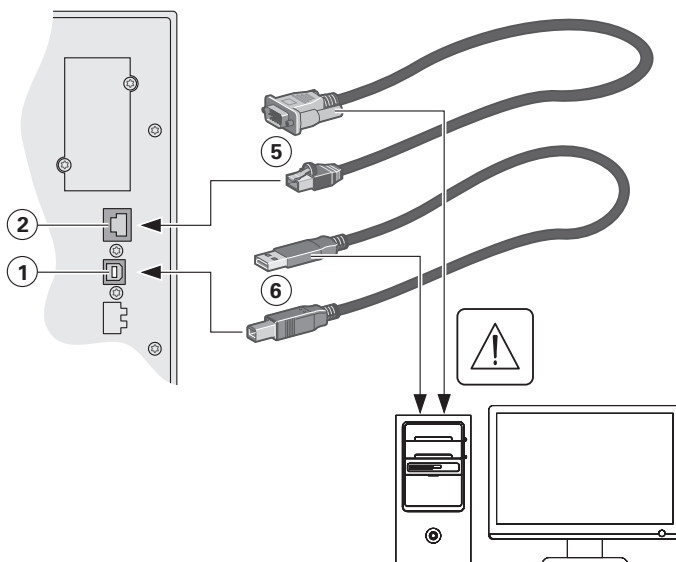
3. Installation

3.5 Communication ports



Connecting RS-232 or USB communication port

The RS-232 and USB communication ports cannot operate simultaneously.

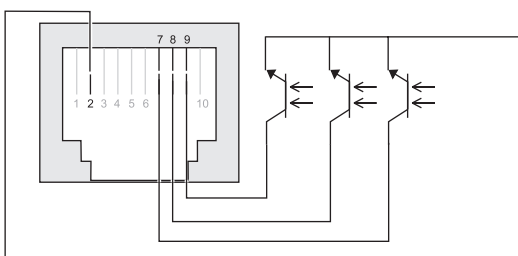


1. Connect the RS-232 (5) or USB (6) communication cable to the serial or USB port on the computer equipment.

2. Connect the other end of the communication cable to the USB (1) or RS-232 (2) communication port on the UPS.

The UPS can now communicate with HP power management software.

Characteristics of the optocoupler RS-232 communications port



- Pins 1, 3, 4, 5, 6, 10: not used
- Pin 2: common (user)
- Pin 7: low battery
- Pin 8: operation on battery power
- Pin 9: UPS on, equipment supplied

no: normally open contact

When a signal is activated, the contact is closed between the common (pin 2) and the pin for the corresponding signal.

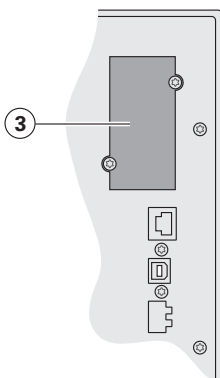
Contact characteristics (optocoupler)

- Voltage: 48 Vdc max
- Current: 25 mA max
- Power: 1.2W



Installing the communication cards

It is not necessary to shut down the UPS before installing a communication card.






1. Remove the slot cover (3).
2. Insert the communication card in the slot.
3. Secure the card cover with the two screws you removed in Step 1.

4. Operation

4.1 Startup and normal operation

To start the UPS:

1. Verify that the UPS power cord is plugged in.
2. Press the  button on the UPS control panel for at least two seconds.
The UPS LCD window display changes status to "UPS starting...".
3. Check the UPS LCD window display for active alarms or notices.
If the  indicator is on, do not proceed until all alarms are cleared.
Correct the alarms and restart if necessary.
4. Verify that the  indicator illuminates, indicating that the UPS is operating normally and any loads are powered and protected.
The UPS should be in Normal mode.



4.2 Starting the UPS on battery



Before using this feature, the UPS must have been powered by utility power with output enabled at least once.



Note: Battery start can be disabled. In "2.4 User settings", page 910, see the "Cold start" setting in "ON/OFF settings."

To start the UPS on battery:

1. Press the  button on the UPS control panel until the UPS LCD window display illuminates and shows a status of "UPS starting...".
The UPS cycles through Standby mode to Battery mode. The  indicator illuminates.
The UPS supplies power to your equipment.
2. Check the UPS LCD window display for active alarms or notices besides the Battery mode notice and notices that indicate missing utility power. Resolve any active alarms before continuing.
See "5.1 Troubleshooting", page 16.



4.3 UPS shutdown

To shut down the UPS:

1. Press the  button on the UPS control panel for three seconds.
2. The audio alarm beeps and shows a status of "UPS shutting OFF...". The UPS then transfers to Standby mode and the  indicator turns off.
3. The audio alarm stops.

4.4 Operation on battery power

Transfer to battery power



- The connected devices continue to be supplied by the UPS when AC input power is no longer available. The necessary energy is provided by the battery.
- The  and  indicator illuminates.
- The audio alarm beeps every 10 seconds.



The connected devices are supplied by the battery.

4. Operation

Low-battery warning

- The  and  indicator illuminates.
- The audio alarm beeps every three seconds.
- The remaining battery power is low. Shut down all applications on the connected equipment because automatic UPS shutdown is imminent.

End of battery backup time


- LCD displays "End of backup time."
- All the LEDs go off.
- The audio alarms stops.

4.5 Return of AC input power

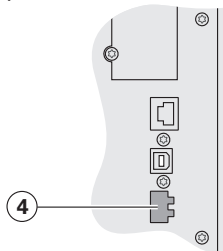
Following an outage, the UPS restarts automatically when AC input power returns (unless the restart function has been disabled) and the load is supplied again.

4.6 UPS remote control functions

The 1U UPS offers a choice between two remote control functions.

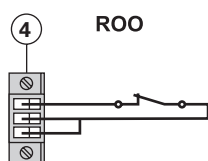
- RPO: Remote Power Off allow a remote contact to be used to disconnect all the equipment connected to the UPS. Restarting the UPS requires manual intervention.
- ROO: Remote On/Off allows remote action of the  button to shut down the UPS.

These functions are obtained by opening a contact connected between the appropriate pins of connector (4) on the rear panel of the UPS.



Remote control connection and test


1. Check that the UPS is off and disconnected from the AC input source.
2. Remove connector (4).
3. Connect a normally closed volt-free contact (60 Vdc/30 Vac max., 20 mA max., 0.75 mm² [18 AWG] cable cross-section) between the two pins of connector (4).

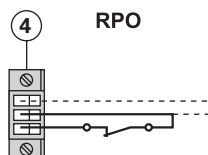


ROO

Contact open: UPS shutdown


Contact closed: UPS start up (UPS connected to AC power and AC power is available)

Note: The local on/off control using the  button overrides the remote-control function.



RPO

Contact open: UPS shutdown, LED  illuminates.

To return to normal operation, deactivate the remote external contact and restart the UPS by pressing the  button.







4. Plug connector (4) into the back of the UPS.
5. Connect and restart the UPS following the previously described procedures.
6. Activate the external remote shutdown contact to test the function.



Warning. This connector must only be connected to SELV (Safety Extra-Low Voltage) circuits.

5. Maintenance

5.1 Troubleshooting

Operation status	Possible cause	Action
Batteries disconnected 	The UPS does not recognize the internal batteries. The batteries are disconnected.	If the condition persists, contact your service representative Verify that all batteries are properly connected. If the condition persists, contact your service representative.
Overload 	Power requirements exceeds the UPS capacity (greater than 105% of nominal).	Remove some of the equipment from the UPS. The UPS continues to operate, but may shut down if the load increases. The alarm resets when the condition becomes inactive.
End of battery life 	The end of the battery life is reached.	Contact your service representative for battery replacement.
Event 	A UPS event occurs Example: Remote Power OFF, the RPO contact has been activated to shutdown the UPS and now prevents restart.	Set the contact back to its normal position and press the  button to restart.
UPS fault 	The UPS has an internal fault.	The UPS does not protect the equipment anymore. Note: Record the alarm message and the UPS Serial Number, then contact your service representative.

5.2 Updating the UPS firmware

To update the UPS firmware, see the HP website (<http://www.hp.com/go/rackandpower>).

5. Maintenance

5.3 Battery module replacement

Safety recommendations

Warning: To prevent personal injury from hazardous energy:

- This operation must be performed when the UPS is switched off and unplugged from the AC source.
- Do not disconnect the connector while the unit is operating from the AC mains or in reserve mode.
- The battery connection must not be disconnected while running in reserve mode.
- The battery can cause electrocution and high short-circuit currents. The following safety precautions are required before servicing the battery components:
 - Remove watches, rings, or other metal objects.
 - Use tools with insulated handles.
 - Do not place tools or metal parts on top of batteries.

Replacing the batteries

- Read and observe the requirements in "Important battery safety information" and "Battery care and storage guidelines" in this section before battery module replacement.
- Follow the instructions in this section to replace the battery module.

Note: Replace all battery modules at the same time.

Important battery safety information

Warning: The unit contains sealed lead-acid battery modules. To prevent fire or chemical burns:

- Do not attempt to recharge batteries after removal from the unit.
- Do not disassemble, crush, or puncture the batteries.
- Do not short the external contacts of the batteries.
- Do not immerse the batteries in water.
- Do not expose to temperatures higher than 60°C (140°F).

Battery care and storage guidelines

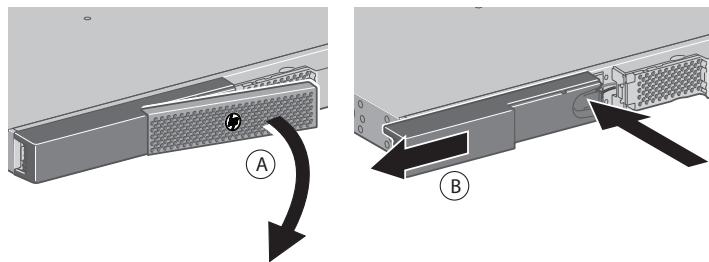
Caution: Because of the short shelf life of the batteries, avoid storing a battery spare as a backup. Do not maintain an inventory of spare batteries on site unless a procedure to keep these batteries charged while in storage is implemented.

To maintain the batteries:

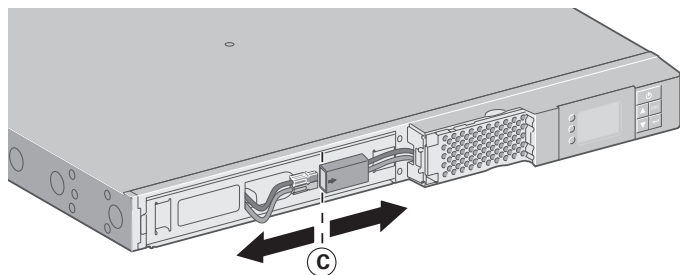
- Minimize the amount of time the UPS uses battery power by matching the UPS configuration with the utility voltage (see "6.1 HP R1500 G4 NA UPS and HP R1500 G4 JP/TWN UPS", page 19 and "6.2 HP R1500 G4 INTL UPS", page 20).
- Keep the area around the UPS clean and dust-free. If the environment is very dusty, clean the outside of the UPS regularly with a vacuum cleaner.

5. Maintenance

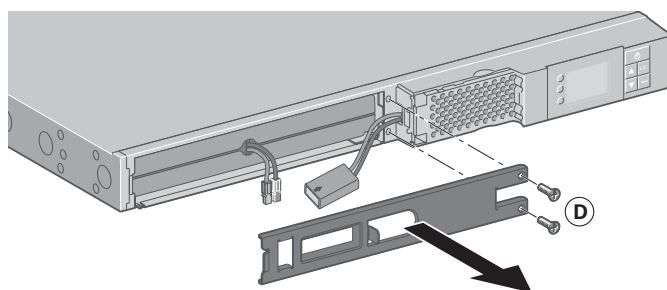
Battery tray removal



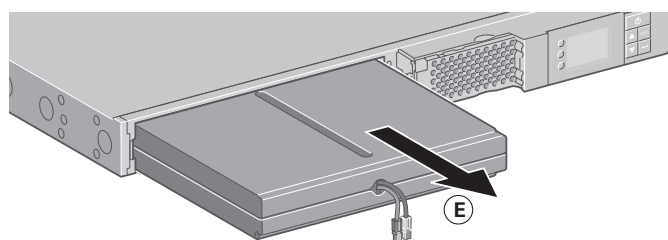
- (A) Remove the middle panel.
- (B) Unlock the pushbutton. Slide the left-hand side of the bezel to the left.



- (C) Disconnect the battery-module by separating the connectors. Never pull on the wires.



- (D) Remove the metal protection cover in front of the battery (two screws).



- (E) Pull the plastic tab to remove the battery block and replace the block.

Installing the new battery module

Perform the removal instructions in reverse order.



- To ensure safety and high performance, only use batteries supplied by HP.
- Take care to firmly press together the two parts of the connector during remounting.

5.4 Spares

Ordering Spares

To order a spare, visit the HP website (<http://www.hp.com/buy/parts>).

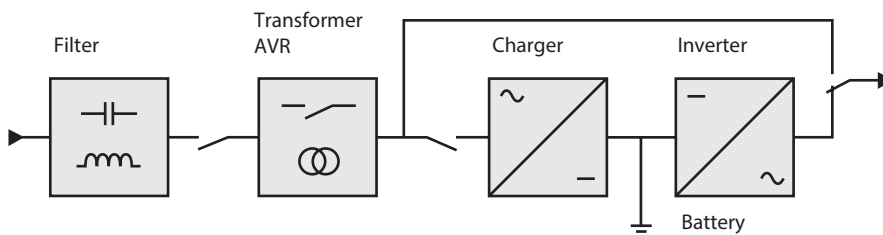
To replace parts under warranty, contact an HP authorized service representative.

UPS spare parts list

Item	Spare Part Number
SPS-UPS R1500 G4 NA	796754-001
SPS-UPS R1500 G4 JP/TWN	796755-001
SPS-UPS R1500 G4 INTL	796756-001
SPS-BATTERY KIT UPS R1500	796776-001

6. Technical Specifications

6.1 HP R1500 G4 NA UPS and HP R1500 G4 JP/TWN UPS



Rack	HP R1500 G4 NA UPS	HP R1500 G4 JP/TWN UPS
Output Power @ 120V	1440 VA 1100W	—
Output Power @ 100V	—	1200 VA 900W
AC Input power		
• Rated input voltage	Single phase 100-125V	
• Input voltage range	80 to 162V (-10% to +5%) ⁽¹⁾	
• Input frequency range	47 to 70 Hz (50 Hz system), 56.5 to 70 Hz (60 Hz system) ⁽²⁾	
Output on battery power		
• Voltage	100/120V (-10% to +5%) ⁽³⁾	
• Frequency	50/60 Hz ±0.1 Hz	
Battery (sealed lead acid, maintenance free)		
• Standard	6 x 6V 9 Ah	
Environment		
• Operating temperature range	32 to 104°F/0 to 40°C	
• Storage temperature range	5 to 122°F/-15 to +50°C	
• Relative humidity	0 to 90% (without condensation)	
• Noise level	< 40 dBA	

(1) The high and low thresholds can be adjusted using UPS settings.

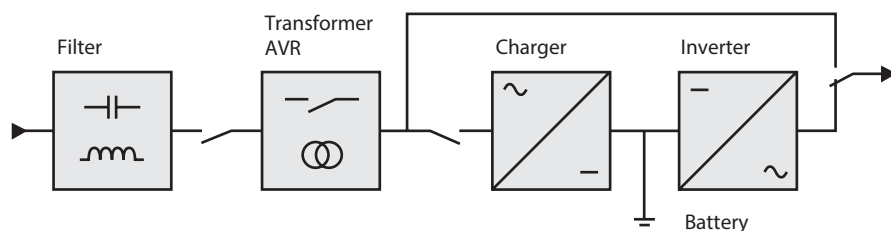
(2) Up to 40 Hz in low-sensitivity mode (programmable using UPS settings).

(3) Adjustable to 100/120/125V, but must be set to the identical AC power source value.

Caution: To reduce the risk of fire, connect only to a circuit provided with 20A maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.

6. Technical Specifications

6.2 HP R1500 G4 INTL UPS



Rack	HP R1500 G4 INTL UPS
Output Power @ 230V	1550 VA 1100W
Output Power @ 200V/208V	1395 VA 990W
AC Input power	
• Rated input voltage	Single phase 200-240V
• Input voltage range	160 to 294V ⁽¹⁾
• Input frequency range	47 to 70 Hz (50 Hz system), 56.5 to 70 Hz (60 Hz system) ⁽²⁾
Output on battery power	
• Voltage	200/208/220/230/240V (-10% to +5%) ⁽³⁾
• Frequency	50/60 Hz ±0.1 Hz
Battery (sealed lead acid, maintenance free)	
• Standard	6 x 6V 9 Ah
Environment	
• Operating temperature range	32 to 104°F/0 to 40°C
• Storage temperature range	5 to 122°F/-15 to +50°C
• Relative humidity	20 to 90% (without condensation)
• Noise level	< 40 dBA

(1) The high and low thresholds can be adjusted using UPS settings.

(2) Up to 40 Hz in low-sensitivity mode (programmable using UPS settings).

(3) Adjustable to 200/208/220/230/240V, but must be set to the identical AC power source value.

When the UPS is used in the EU area, use an external circuit breaker in front of the line with rating 16A, 250V which is IEC/EN 60898-1 standard compliant.

When the UPS is used in th NA area, use an external circuit breaker in front of the line with rating 20A, 250V.

7. Support and other resources

Safety and regulatory compliance

For safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the HP website (<http://www.hp.com/support/Safety-Compliance-EnterpriseProducts>).

Warranty information

HP ProLiant and X86 Servers and Options (<http://www.hp.com/support/ProLiantServers-Warranties>)

Before you contact HP

Be sure to have the following information available before you call HP:

- Active Health System log (HP ProLiant Gen8 or later products)
- Download and have available an Active Health System log for 7 days before the failure was detected. For more information, see the HP iLO 4 User Guide or HP Intelligent Provisioning User Guide on the HP website (<http://www.hp.com/go/ilo/docs>).
- Onboard Administrator SHOW ALL report (for HP BladeSystem products only)
- For more information on obtaining the Onboard Administrator SHOW ALL report, see the HP website (<http://www.hp.com/go/OAlog>).
- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For United States and worldwide contact information, see the Contact HP website (<http://www.hp.com/go/assistance>).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (<http://www8.hp.com/us/en/support-drivers.html>). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (<http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html>).

Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP website (<http://www.hp.com/go/qs>).

Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (<mailto:docsfeedback@hp.com>). Include the document title and part number, version number, or the URL when submitting your feedback.