

RT11kVA 6U Rack or Tower Uninterruptible Power Supplies-G2

Product Guide

The RT11kVA 6U Rack or Tower Uninterruptible Power Supply-G2 offerings provide extended power protection with increased efficiency and simplified power management to safeguard high-availability of Lenovo server environments. With efficiency ratings of up to 98%, these compact 6U rack or tower designs can help reduce energy usage without compromising performance or reliability.

The 6U Rack or Tower UPS-G2 units can be installed in a data center rack cabinet or can be used as tower UPS units in office and distributed IT environments where extended power protection is required.

The 6U Rack UPS-G2 unit (RT11kVA) is shown in Figure 1



Figure 1. RT11kVA 6U Rack UPS-G2 unit (Power module (top) and Battery module (bottom))

Did you know?

6U Rack or Tower UPS-G2 units feature Advanced Battery Management (ABM) technology that uses a unique three-stage charging technique that significantly extends battery service life and optimizes recharge time, compared to traditional charging methods.

6U Rack or Tower UPS-G2 units come standard with the Maintenance Bypass module, which enhances system availability by providing service continuity during UPS maintenance and upgrades.

6U Rack or Tower UPS-G2 units come standard with UPS Manager software that integrates seamlessly with the major virtualization platforms, which enables you to view and manage your entire power system from your current dashboard. It also triggers live migration during power outages and avoids data loss by gracefully shutting down virtual machines and hosts in a cluster if there is an extended power outage.

Ordering information

The following tables show the orderable feature code, CTO, LFO and part number codes for the 6U Rack or Tower UPS-G2 models and options.

Table 1. Ordering feature code, CTO and LFO model

Description	Feature code	CTO	LFO
UPS unit			
IBM RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)	BV3E	7DD5CTO4WW	7DD5A00AWW
Extended Battery Modules (EBM)			
8kVA/11kVA 3U Rack or Tower Extended Battery Module-G2	BV3F	7DD5CTO4WW	7DD5A00BWW

Table 2. Ordering feature code and Part number option

Description	Feature code	Part number
Environmental Monitoring Probe-G2	BV3H	4XF7A87625

- The RT11kVA 6U Rack or Tower UPS-G2 model ships standard with the Network Management Card (NMC) which includes software license for IPM.

The RT11kVA 6U Rack or Tower UPS-G2 model includes the following items:

- A power module
- A battery module
- A Maintenance Bypass module (MBP) with the hardwired MBP detection cable and two hardwired power cables for connections to the power module's terminal block
- An accessory kit that contains the following items:
 - Power Module
 - Extended battery module (EBM)
 - Network Management Card
 - (2) brackets for 19' mounting
 - (2) Rack-mounting kit
 - Serial cable
 - USB cable
 - (2) Supports for tower mounting
 - Link plate
 - Safety instructions
- Quickstart guide

The Extended Battery Modules are shipped with the following items:

- An accessory kit that contains the following items:
 - Rack-mount kit
 - Tower kit
 - EBM power cable
 - EBM detection cable
- Documentation package

The RT11kVA 6U Rack or Tower UPS-G2 units have a hardwired terminal block connector for AC input power.

- All 6U Rack or Tower UPS-G2 models come standard with a NMC included with the models.

Network Management Card (NMC)

The NMC provides convenient, over-the-network UPS remote monitoring and management through a standard web browser (IPM software).

Figure below shows the UPS NMC.



Figure 2. UPS Network Management Card

The NMC includes the following features:

- Versatile connectivity through HTTP, SNMP, SMTP, Telnet, SSL, and SSH
- Simultaneous shutdown of protected servers
- Configuration of automatic email messages in response to UPS alarms and to transmit reports
- Customizable actions, including automatic shutdown if there is an extended power failure with standard UPS Power Protector software
- Control of UPS on/off switching with a web browser
- Adjustment and control of load segments through the HTML interface, including sequential starting of the installation and optimization of backup time by shutting down non-priority systems
- Automatic date and time adjustment through an NTP server
- Dual stack IP v4/IP v6
- Recording of events and measurements in the card log
- Data and event logging in the nonvolatile memory
- Card firmware update through the network
- 10/100 Mb Ethernet (RJ-45 connector) with auto-negotiation
- Measurement of humidity and temperature with the Environmental Monitoring Probe (EMP)
- Includes IPM software

Environmental Monitoring Probe (EMP)

EMP (part number 4XF7A87625) is used to report local temperature and humidity values and make that information available to management tools. The EMP connects to the UPS via the NMC. The EMP is shown below.



Figure 3. Environmental Monitoring Probe

The Environmental Monitoring Probe has the following features:

- Monitors temperature, humidity, and status of two user-provided contact devices or sensors
- Connects to an NMC through an RJ-45 CAT5 Ethernet cable (1 m cable that is included with the EMP)
- Can be located up to 20 m (65.6 ft) from the UPS
- Measures ambient temperatures between 0 - 80 °C (32 - 176 °F), with an accuracy of ± 1 °C (33.8° F)
- Measures relative humidity between 10 - 90%, with an accuracy of $\pm 5\%$
- Displays temperature, humidity, and contact closure status through a Web browser
- Supports user-defined alarm thresholds for temperature, humidity, and contact closure status
- Stores events in the NMC's event log
- Sends SNMP alarms to network management systems
- Sends email notifications through SMTP

Note: The EMP requires Network Management Card (NMC)

Features

A UPS is a device that acts as a defensive barrier between electronic equipment and incoming power problems. It conditions, regulates, and filters out power disturbances to ensure a clean power source for IT equipment. A UPS also provides battery backup if there is a power failure.

In today's high availability server environments, unplanned power outages or line quality irregularities can have a considerable financial impact on all sized businesses. The typical utility power is 99.9% available, but that means that there can be almost 9 hours of downtime a year, not to mention brownouts and other power quality problems. Selecting the right UPS can help protect against these potentially costly issues.

The RT11kVA 6U Rack or Tower UPS-G2 units protect against the following power problems: power failures, power sags, power surges, under-voltage, electrical line noise, over-voltage, frequency variation, switching transients, and harmonic distortion.

The RT11kVA 6U Rack or Tower UPS-G2 models offer the following features:

- High-efficiency protection delivers more real power (Watts) in a compact tower or 6U rack design, which lowers power and cooling consumption
- Graphical Liquid Crystal Display (LCD) provides intuitive configuration, management, and monitoring capabilities in the following languages to reduce management complexity:
 - English
 - French
 - German
 - Spanish
 - Russian
 - Portuguese
 - Italian
- Hot-swappable batteries for maximum uptime, availability, and ease of maintenance
- Standard UPS Power Manager software provides effective local or remote power monitoring and management for servers and virtual machines, and allows for graceful remote system shutdown
- ABM technology significantly extends battery service life and optimizes recharge time
- Optional external battery modules (EBMs) provide extra run time to critical systems during a prolonged power outage
- Standard NMC provides enhanced UPS monitoring and control over-the-network through a standard web browser
- Environmental Monitoring Probe provides thermal management requirements (temperature and humidity)
- Standard Maintenance Bypass enhances availability by providing service continuity during UPS maintenance and upgrades
- Provides dual channel communication through the USB or RS-232 port and an NMC at the same time to maximize communications flexibility
- Flash upgrades firmware for both the UPS and the NMC, which makes it an ideal solution for remote locations
- Includes ROO and RPO connectors to control power of the UPS unit through a wired remote switch

Technical specifications

The following table lists the technical specifications for the 11kVA 6U Rack or Tower UPS-G2 models.

Table 3. Technical specifications

Specification	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)
General	
Part number	7DD5CTO4WW
Form factor	6U Rack or Tower
Topology	Online, double conversion, sinewave output
VA/Watts rating	11000 VA 10000 W
Efficiency (on utility power)	<ul style="list-style-type: none"> • Online mode: Up to 94.5% • High efficiency mode: Up to 98%
Transfer time	<ul style="list-style-type: none"> • Online mode: 0 ms (no break) • High efficiency mode: 10 ms maximum (due to loss of utility power)
Energy Star compliant	Yes

Specification	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)
Electrical input	
Input voltage	200 - 240 V AC, 1-Phase
Input frequency	50/60 Hz
Max input amperage	50 A
Input connector	Hardwired terminal block
Input line cord	Onsite electrician and wiring required
Electrical output	
Output voltage settings	200/208/220/230/240 V AC
Output frequency	50/60 Hz
Output power capacity	<ul style="list-style-type: none"> • 200-208 V AC: 10000 VA/9000 W • 220 V AC: 11000 VA/9900 W • 230-240 V AC: 11000 VA/10000 W
Output connectors	4x IEC 320-C19 (16 A) (on the MBP)
Batteries	
Battery type	Valve Regulated Lead Acid (VRLA): Maintenance-free, sealed, leak-proof
Battery management	ABM technology or temperature-compensated charging method (user selectable), automatic battery test and deep discharge protection, and automatic recognition of external battery units
Battery replacement	Hot-swap standard and extended battery modules
External battery support	Up to 8 (PN 7DD5CTO4WW)
Typical backup times	See Table below
Communications and management	
USB port (Type B)	Yes
RS-232 serial port (RJ-45)	Yes
10/100 Mbps Ethernet port (RJ-45)	Yes (on the Network Management Card)
Environmental monitoring	Optional EMP (4XF7A87625) connects to the Network Management Card (requires NMC, 4C57A87624)
Management software	Intelligent Power Manager (IPM)
Control panel	Intelligent 5-button graphical LCD
LED indicators	Online, On Battery, Bypass, and Fault
Remote On/Off and Power Off	Remote On/Off and Remote Power Off terminal block connectors

Following table lists the expected period that the 6U Rack or Tower UPS-G2 models operates only on batteries, depending on the load.

Note: Battery backup times are approximate and can vary with equipment, configuration, battery age, and temperature.

Table 4. 6U Rack or Tower UPS-G2 runtime chart

Load		Run time, Minutes								
Percentage	Watts	Internal Batteries	1x EBM	2x EBMs	3x EBMs	4x EBMs	5x EBMs	6x EBMs	7x EBMs	8x EBMs
RT11kVA 6U Rack or Tower UPS-G2 (1-phase)										
25%	2500 W	NA	25	60	97	136	163	184	223	261
50%	5000 W	NA	10	25	42	61	79.7	98	120	139
75%	7500 W	NA	5.5	15	25	37	48	61	73	86
100%	10000 W	NA	3	10	18	25	34	42	51	61

Connectors and controls

The 6U Rack or Tower UPS-G2 units have a 5-button graphical LCD on the front. It provides useful information about the UPS itself, load status, events, measurements, and settings.

Figure 4 shows the control panel on the front of the 6U Rack or Tower UPS-G2.

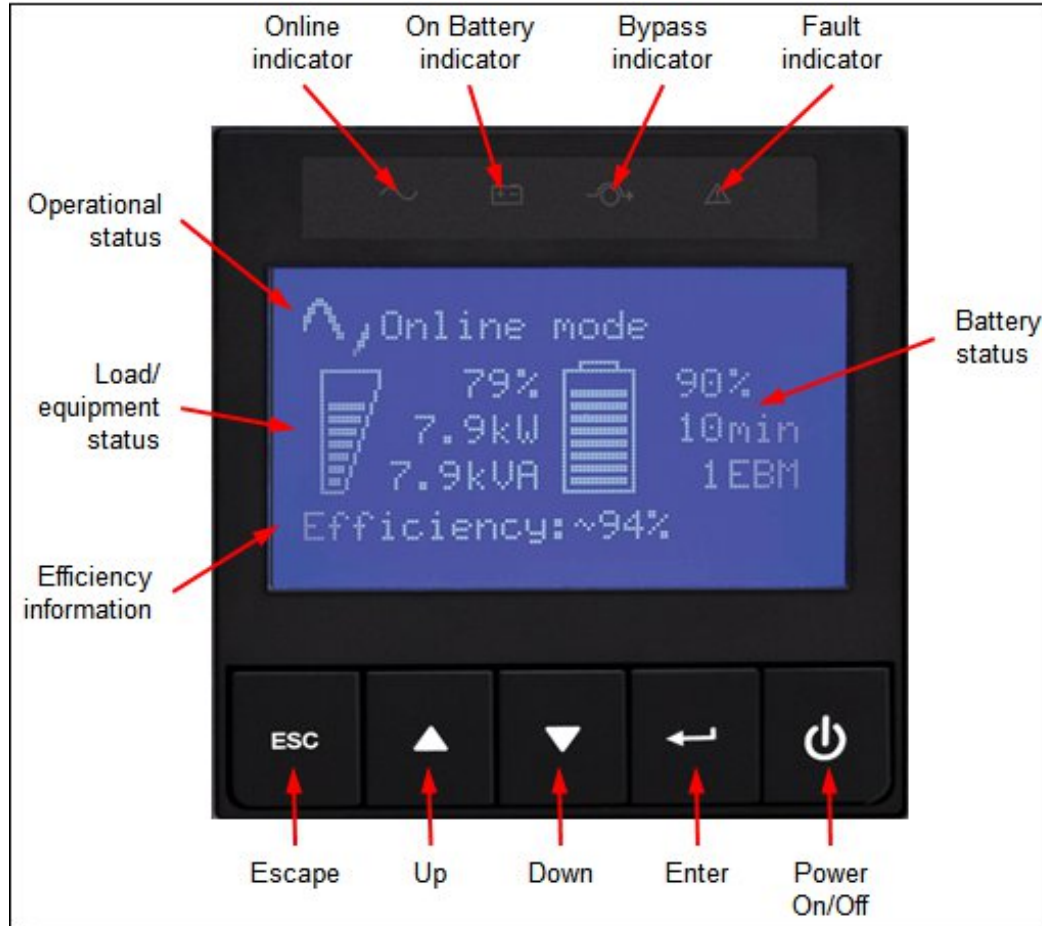


Figure 4. Control panel on the front of the 6U Rack or Tower UPS-G2

The following functions are available on the control panel:

- Status information: Displays the battery status, load percentage, output power, operational mode, and load group information.
- Measurements: Displays the output Watts/VA, amperage, power factor, voltage, frequency, input voltage, input frequency, battery voltage, efficiency, and power usage.
- Control: Displays the battery test, reset error state, configure load segments, clear power usage measurements, and restore settings.
- Settings: Allows you to change product general parameters and set input and output parameters, on/off conditions, and battery configuration.
- Event log: Displays the stored events, selects faults, alarms and events to display, and clears events.
- Fault log: Displays the event log and alarm history.
- Identification: Displays the machine type, model, and serial number of the unit, and the firmware level of the UPS, including the NMC's firmware level and IP address.

Figure below shows the rear view of the RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)

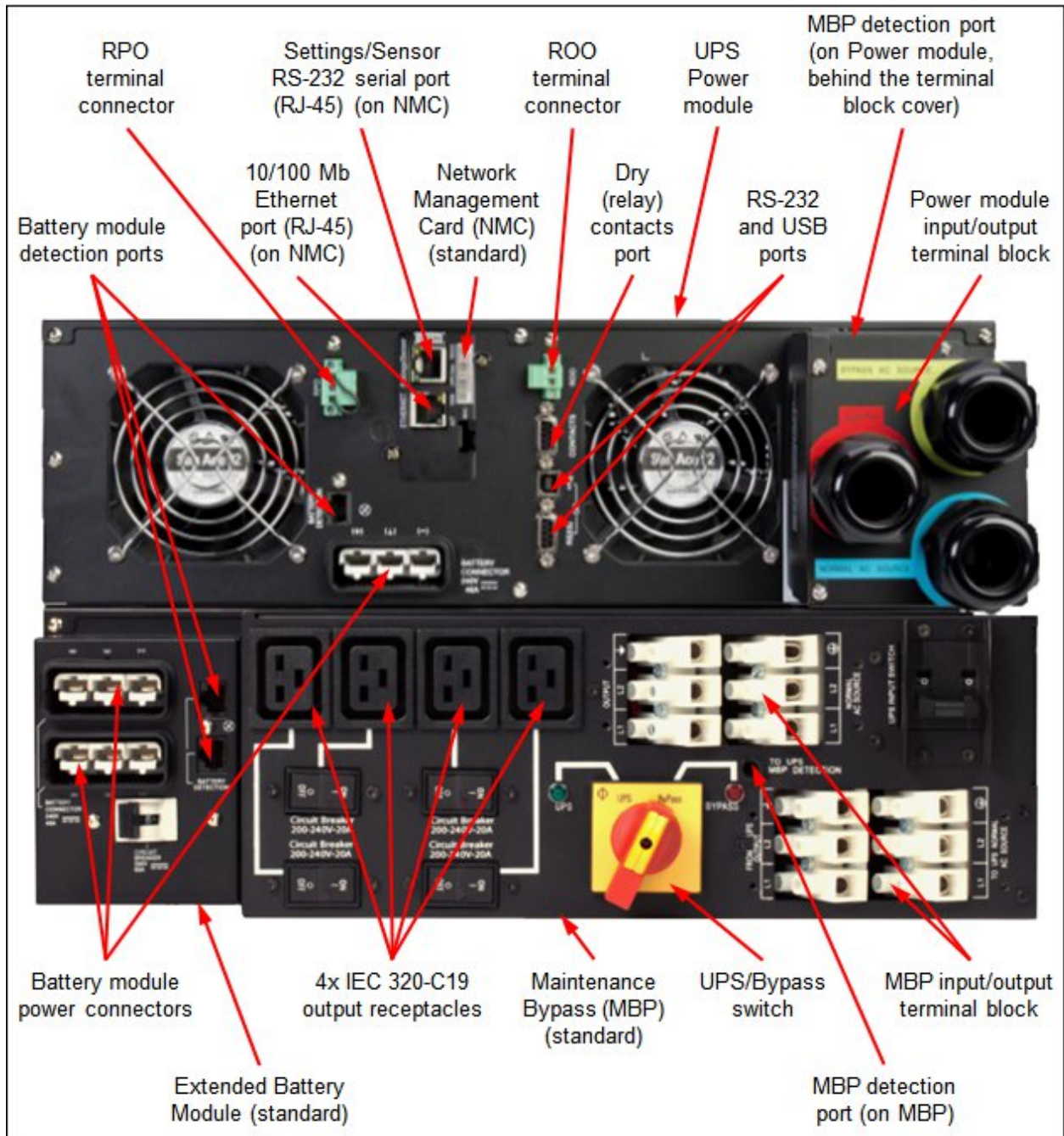


Figure 5. Rear view of the RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)

Figure below shows the rear view of the 11kVA 3U Rack or Tower Extended Battery Module-G2

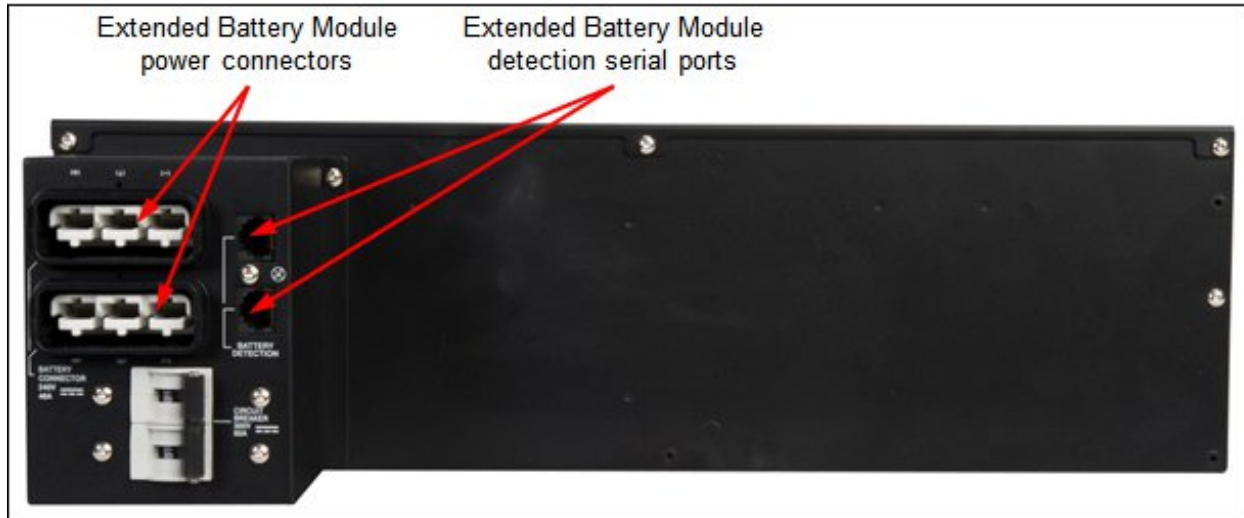


Figure 6. Rear view of the 11kVA 3U Rack or Tower Extended Battery Module-G2

Physical specifications

The RT11kVA 6U Rack or Tower UPS-G2 Power Module has the following physical specifications (approximate):

- Height: 260 mm (10.2 in.)
- Width: 440 mm (17.3 in.)
- Depth: 700 mm (27.6 in.)
- Weight:
 - 11kVA 86 kg (189.6 lb)

The 11kVA 3U Rack or Tower Extended Battery Module has the following physical specifications (approximate):

- Height: 440 mm (17.3 in.)
- Width: 680 mm (26.8 in.)
- Depth: 130 mm (5.1 in.)
- Weight: 65 kg (143 lb)

Operating environment

The RT11kVA 6U Rack or Tower UPS-G2 unit is supported in the following environments:

- Temperature (operation): 0 - 40 °C (32 - 104 °F), with linear derating for altitude
- Relative humidity: 0 - 95%
- Maximum altitude (operation): 3,000 m (9,843 ft)

Agency approvals

The RT11kVA 6U Rack or Tower UPS-G2 units conform to the following regulations:

- RoHS Compliant
- BESC
- CBSA
- CE
- cUL/CSA
- Pvoc
- SGS
- UKCA
- UL

Warranty

The 11kVA 6U Rack or Tower UPS-G2 models and the Extended Battery Module (EBM), including batteries, have 3 year warranty.

Management software

Eaton's Intelligent Power Manager (IPM) software for disaster avoidance applications provides the tools you need to monitor and manage power equipment in physical or virtual environments to keep IT devices running during a power or environmental event. This innovative software ensures system uptime and data integrity by allowing you to remotely monitor, manage and control devices on your network. IPM provides a solution that is easy to use, maintains business continuity and allows you to do more with less.

Intelligent Power Manager (IPM)

IPM is an easy-to-use disaster avoidance platform with sophisticated capabilities that include triggering alerts and automating resolutions to keep applications running. IPM enables you to:

- Leverage Eaton's integrations with industry leaders to keep critical applications running and automate resolutions for your entire network risking potential downtime.
- Migrate workloads to increase system uptime and minimize generator load by suspending non-critical virtual machines.
- Power cap servers to keep critical loads running longer by limiting server power consumption.
- Support for 5 nodes.

The Intelligent Power Manager (IPM) offers three levels of licenses

Monitor, manage and optimize. IPM Optimize is the premium offering and provides the most complete set of capabilities.

Table 5. Levels of licenses

Monitor Edition	Manage Edition	Optimize Edition
Choose this option if your key objective is to monitor an IT room	Choose this option if your key objective is to manage a number of UPSs and/or you are looking for basic graceful shutdown	Choose this option if you need virtualization load-shedding
<ul style="list-style-type: none"> Contextual visibility of power metrics and constraints Monitor Eaton and third-party power devices 	<ul style="list-style-type: none"> Contextual visibility of power metrics and constraints Monitor Eaton and third-party power devices 	<ul style="list-style-type: none"> Contextual visibility of power metrics and constraints Monitor Eaton and third-party power devices Manage and update Eaton power devices Define basic business continuity automation configurations with host-level actions Simple wizard-based automation configuration Define advanced business continuity automation configurations with VM and cluster-level actions Graceful shut down

Maintain business continuity: Minimize operating expenses

- Intelligent load-shedding: Increase system uptime while extending battery runtime and minimizing generator load by suspending non-critical virtual machines.
- Site Recovery Manager failover: Reduce data recovery expenses by syncing primary and disaster-recovery sites prior to power failures.
- Power capping on demand: Keep critical workloads running longer during a power outage by limiting server power consumption.

Eaton’s Intelligent Power Manager resources:

Refer to the following resources:

- [Setup guide](#)
- [IPM User guide](#)
- [Intelligent Power Manager \(IPM\) FAQ](#)

Eaton’s software subscription

Intelligent Power Manager software subscription for eligible Lenovo UPS-G2 models include a 3-year subscription for up to 5 equipment nodes of Eaton’s Intelligence Power Manager (IPM) software (Optimize subscription).

IPM subscription is available from:

- <https://Eaton.com/LenovoIPM>
- [LenovoIPM](#)

Note:

To use the IPM software, you must have the NMC installed. UPSes, PDUs and ATSSs, as well as rack mounted servers, hypervisors, and storage devices count as nodes.

Supported servers

The RT11kVA 6U Rack or Tower UPS-G2 offerings are compatible with all ThinkSystem, System x and ThinkServer systems and other devices that require AC power.

To determine the best fit UPS for a particular configuration, the following needs to be considered:

- Total power load of the hardware that will be connected to the UPS
- Number and type of outlets required
- UPS outlet and group limitations for connecting the hardware to the UPS

To determine chassis, node and server overall power capacities, use the Power Configurator tool. The tool can be downloaded from <http://support.lenovo.com/documents/LNVO-PWRCONF>

To determine the power draw of other devices such as storage and switching that will be attached to the UPS, refer to the products user manual for the maximum power draw.

For additional technical information on the UPS line cords, outlets and grouping refer to the UPS Technical Reference, <https://support.lenovo.com/docs/UM104477>

Supported rack cabinets

The RT11kVA 6U Rack or Tower UPS-G2 units can be installed in the compatible rack cabinets that are listed in Table 4.

Table 6. Rack cabinets

Part number	Description
93072RX	25U Standard Rack
93072PX	25U Static S2 Standard Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93604PX	42U 1200mm Deep Dynamic Rack
93614PX	42U 1200mm Deep Static Rack
93074RX	42U Standard Rack

Related publications and links

For more information about this topic, see the following resources:

- Power and Cooling Technical References:
 - <https://support.lenovo.com/us/en/documents/lnvo-powinf>
- Product specifications and resources - RT11kVA 6U UPS-G2 (200-240VAC):
 - <https://www.eaton.com/gb/en-gb/skuPage.9PX11KIRTNBP.specifications.html>
- Installation and User's Manual - RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC):
 - [9PX11KiRTNBP \(RT11kVA 6U Rack or Tower UPS-G2 \(200-240VAC\)\)](#)
- Network Management Card
 - [Network Management Card User Guide](#)

Related product families

Product families related to this document are the following:

- [Uninterruptible Power Supplies](#)

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