

# T1kVA and T1.5kVA Tower Uninterruptible Power Supplies-G2

## Product Guide

The T1kVA and T1.5kVA Tower Uninterruptible Power Supply (UPS)-G2 offerings provide power protection with increased efficiency and simplified power management to safeguard the high-availability of Lenovo server environments. With efficiency ratings of up to 98%, these compact tower designs can help reduce cooling and utility costs.



Figure 1. Tower UPS-G2 unit (T1kVA or T1.5kVA)

### Did you know?

T1kVA and T1.5kVA 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.

T1kVA and T1.5kVA Tower UPS-G2 units can enhance system availability with adjustable tolerance and sensitivity; users can maximize useful battery life by widening the input voltage window or adjustable input waveform sensitivity to adapt the UPS to a specific environment.

## Ordering information

The following tables show the orderable feature code, CTO, LFO and part number codes for the T1kVA and T1.5kVA Tower UPS-G2 models.

Table 1. Ordering feature code, CTO and LFO models

Description	Feature code	CTO	LFO
<b>UPS units</b>			
T1kVA Tower UPS-G2 (100-125VAC)	BV3K	7DD6CTO1WW	7DD6A000WW
T1kVA Tower UPS-G2 (200-240VAC)	BV3J	7DD6CTO1WW	7DD6A001WW
T1.5kVA Tower UPS-G2 (100-125VAC)	BV3L	7DD6CTO2WW	7DD6A002WW
T1.5kVA Tower UPS-G2 (200-240VAC)	BV3M	7DD6CTO2WW	7DD6A003WW

Table 2. Ordering feature code and Part number options

Description	Feature code	Part number
UPS Network Management Card-G2	BV3G	4C57A87624
Environmental Monitoring Probe-G2	BV3H	4XF7A87625

The UPS-G2 models ship with the following items:

- User manual\*
- Intelligent Power Software Suite\*
- Quick start guide\*
- USB cable
- RS-232 cable

Note: \*manuals and guides are available web based

The 100 - 125 V models ship with fixed 1.8 m NEMA 5-15P line cord.

The 200 - 240 V models do not ship with line cords. Table below lists the compatible line cords, which are suitable for 200 - 240 V models.

Table 3. Line cords for 7DD6CTO1WW and 7DD6CTO2WW models

Description	Part number	Feature code
Line Cord - 2.8m, 250V, C13 to NBR 14136 (Brazil)	39Y7929	6223
2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord	39Y7930	6222
2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan) Line Cord	23R7158	6386
2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord	69Y1988	6532
2.8m, 10A/250V, C13(2P+Gnd) (India) Line Cord	39Y7927	6269
2.8m, 10A/250V, C13 to SABS 164 (S Africa) Line Cord	39Y7922	6214
2.8m, 220-240V, C13 to CEI 23-16 (Italy/Chile) Line Cord	39Y7921	6217
2.8m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord	39Y7918	6213
2.8m, 10A/250V, C13 to SI 32 (Israel) Line Cord	39Y7920	6218
2.8m, 220-240V, C13 to GB 2099.1 (China) Line Cord	39Y7928	6210
2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord	39Y7917	6212
2.8m, 220-240V, C13 to KETI (S Korea) Line Cord	39Y7925	6219
2.8m, 10A/250V, C13 to AS/NZ 3112 (Australia/NZ) Line Cord	39Y7924	6211
2.8m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord	39Y7919	6216
2.8m, 10A/250V, C13 to BS 1363/A (UK) Line Cord	39Y7923	6215
2.8m, 10A/240V, C13 to CNS 10917-3 (Taiwan) Line Cord	81Y2375	6317
2.8m, 12A/125V, C13 to JIS C-8303 (Japan) Line Cord	46M2593	A1RE
2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord	46M2592	A1RF

The T1kVA and T1.5kVA Tower UPS-G2 models also come equipped with a communication bay for the installation of an optional Network Management Card-G2 (4C57A87624). The NMC provides convenient, over-the-network UPS remote monitoring and management through a standard web browser or IPM software.

The following figure shows the Network Management Card ( NMC )



Figure 2. UPS Gigabit Network Management Card

The Network Management Card has the following features:

- 10/100 Mb Ethernet (RJ-45 connector) with auto-negotiation
- Protocol Support HTTP, HTTPS 1.1, TLS 1.2, SNMP V1, SNMP V3, NTP, SMTP, SMTPS BOOTP/DHCP, CLI, MQTT, SSH, ARP, Syslog, Radius, LDAP, ActiveDirectory
- Graceful shutdown of protected servers and storage
- Configuration of automatic email messages in response to UPS alarms and to transmit periodic reports
- Cybersecurity enhancements, including stronger encryption, configurable password policy and usage of CA and PKI signed certificates
- 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
- SNMP v1/v3 and IP v4/v6
- Recording of events and measurements in the system logs
- Data and event logging in the nonvolatile memory
- Card firmware update through the network
- Measurement of humidity and temperature with the optional Environmental Monitoring Probe (EMP)
- Easy installation (can be installed while the UPS is online to maintain the highest system availability)
- Includes IPM software

The optional 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 in the following figure.



Figure 3. Environmental Monitoring Probe

The Environmental Monitoring Probe-G2 has the following features:

- Monitors temperature, humidity, and status of two user-provided contact devices or sensors
- Compatibility with UPS Gigabit Network Management Card

- Can be located 50m from the network card using standard CAT5 network cable
- Ability to be daisy-chained (up to 3 per host), allowing multiple sensor connection to a single host
- Operating Temperature - 0 ° C to 70 ° C with an accuracy of  $\pm 2$  ° C
- Operating humidity - 10 % to 90 % with an accuracy of  $\pm 5$ %
- Temperature, humidity, and contact status can be viewed with a Web browser through the Network user interface
- Stores events in the NMC's event log
- Sends SNMP alarms to network management systems
- Sends e-mail notifications through SMTP
- Dimensions (L x W x H) 57 x 37 x 29 mm
- Weight 34 g

**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 effect 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, which includes brownouts and other power quality problems.

Selecting the right UPS can help protect against these potentially costly incidents.

The T1kVA and T1.5kVA Tower UPS-G2 units are most effective against five power problems: power failures, power sags, power surges, under-voltage, and over-voltage.

The T1kVA and T1.5kVA Tower UPS-G2 models offer the following features:

- High-efficiency protection delivers more real power (watts) in a compact design, lowering power, and cooling consumption
- Graphical Liquid Crystal Display (LCD) provides intuitive configuration, management, and monitoring capabilities in the following languages to reduce management complexity:
  - Chinese
  - English
  - French
  - German
  - Italian
  - Japanese
  - Spanish
- Hot-swappable batteries for maximum uptime, availability, and ease of maintenance
- Subscription based Intelligent Power Manager (IPM) Software seamlessly integrates with leading virtualization environments and cloud orchestration tools. IPM 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
- Load segments for individual control of receptacle groups to manage sequential shut downs and start ups and reserve battery run time for the most critical equipment
- Optional Network Management Card for enhanced UPS monitoring and control over-the-network through a standard web browser
- Optional Environmental Monitoring Probe for thermal management requirements (temperature and humidity)
- Allows dual channel communication through the USB or RS-232 port and an optional NMC at the same time to maximize communications flexibility
- Remote flash upgradeable firmware for the UPS and NMC, which makes it an ideal solution for remote locations
- Includes a Remote On/Off (ROO)/Remote Power Off (RPO) port to control power of the UPS unit through a wired remote switch

## Technical specifications

Table 3 lists the technical specifications for the T1kVA and T1.5kVA Tower UPS-G2 units.

Table 4. Technical specifications

Specification	T1kVA Tower UPS-G2 (100-125VAC)	T1kVA Tower UPS-G2 (200-240VAC)	T1.5kVA Tower UPS-G2 (100-125VAC)	T1.5kVA Tower UPS-G2 (200-240VAC)
<b>General</b>				
CTO	7DD6CTO1WW	7DD6CTO1WW	7DD6CTO2WW	7DD6CTO2WW
Form factor	Tower	Tower	Tower	Tower
Topology	Line interactive, high frequency, sinewave output			
VA/Watts rating	1000 VA/770 W	1150 VA/770 W	1440 VA/1100 W	1550 VA/1100 W
Efficiency (on utility power)	Up to 98%	Up to 98%	Up to 98%	Up to 98%
Energy Star compliant	No	Yes	Yes	Yes
<b>Electrical input</b>				
Input voltage	100 - 125 V AC	200 - 240 V AC	100 - 125 V AC	200 - 240 V AC
Input frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Max input amperage	8.8 A	5.3 A	12 A	7.1 A
Input connector	NEMA 5-15P (12 A)	IEC 320 C14 (10 A)	NEMA 5-15P (12 A)	IEC 320 C14 (10 A)
Input line cord	Fixed 1.8 m (6 ft) NEMA 5-15P	Optional (See Table 3)	Fixed 1.8 m (6 ft) NEMA 5-15P	Optional (See Table 3)
<b>Electrical output</b>				
Output voltage settings	100/120/125 V AC	200/208/220/230/240 V AC	100/120/125 V AC	200/208/220/230/240 V AC
Output frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Output power capacity	<ul style="list-style-type: none"> <li>• 100 V AC: 833 VA/641 W</li> <li>• 120 - 125 V AC: 1000 VA/770 W</li> </ul>	<ul style="list-style-type: none"> <li>• 200 - 208 V AC: 1035 VA/693 W</li> <li>• 220 - 240 V AC: 1150 VA/770 W</li> </ul>	<ul style="list-style-type: none"> <li>• 100 V AC: 1080 VA/825 W</li> <li>• 120 - 125 V AC: 1440 VA/1100 W</li> </ul>	<ul style="list-style-type: none"> <li>• 200 - 208 V AC: 1395 VA/990 W</li> <li>• 220 - 240 V AC: 1550 VA/1100 W</li> </ul>
Output connectors	8x NEMA 5-15R (12 A)	8x IEC 320 C13 (10 A)	8x NEMA 5-15R (12 A)	8x IEC 320 C13 (10 A)
Output load segments	<ul style="list-style-type: none"> <li>• Primary: 4x 5-15R</li> <li>• Group 1: 2x 5-15R</li> <li>• Group 2: 2x 5-15R</li> </ul>	<ul style="list-style-type: none"> <li>• Primary: 4x C13</li> <li>• Group 1: 2x C13</li> <li>• Group 2: 2x C13</li> </ul>	<ul style="list-style-type: none"> <li>• Primary: 4x 5-15R</li> <li>• Group 1: 2x 5-15R</li> <li>• Group 2: 2x 5-15R</li> </ul>	<ul style="list-style-type: none"> <li>• Primary: 4x C13</li> <li>• Group 1: 2x C13</li> <li>• Group 2: 2x C13</li> </ul>
<b>Batteries</b>				
Battery type	Valve Regulated Lead Acid (VRLA): Maintenance-free, sealed, and leak-proof			
Battery capacity	9 Ah	9 Ah	9 Ah	9 Ah

Specification	T1kVA Tower UPS-G2 (100-125VAC)	T1kVA Tower UPS-G2 (200-240VAC)	T1.5kVA Tower UPS-G2 (100-125VAC)	T1.5kVA Tower UPS-G2 (200-240VAC)
Battery management	ABM technology or temperature-compensated charging method (user selectable), automatic battery test, and deep discharge protection			
Battery replacement	Hot-swap internal battery			
External battery support	No	No	No	No
Typical backup times	See Table 5		See Table 6	
<b>Communications and management</b>				
USB port (Type B)	Yes	Yes	Yes	Yes
RS-232 serial port (RJ-45)	Yes	Yes	Yes	Yes
10/100 Mbps Ethernet port (RJ-45)	Optional with Gigabit Network Management Card, 4C57A87624			
Environmental monitoring	Optional with Environmental Monitoring Probe, 4XF7A87625 (requires NMC, 4C57A87624)			
Management software	Optional with Intelligent Power Manager and requires NMC			
Control panel	LCD graphical interface in a single screen view			
LED indicators	Power On, On Battery, and Alarm			
Remote On/Off and Power Off	Remote On/Off (ROO) and Remote Power Off (RPO) terminal block connector			

The following two tables list the expected period that the T1kVA and T1.5kVA Tower UPS-G2 models operate solely on batteries, depending on the load.

Table 5. T1kVA and T1.5kVA Tower UPS-G2 runtime chart

Load		Run time in minutes	
Percentage	100V / 200V	T1kVA Tower UPS-G2 (100-125VAC)	T1.5kVA Tower UPS-G2 (200-240VAC)
20%	128W / 193W	33	33
50%	321W / 385W	12	12
70%	449W / 539W	8	8
100%	641W / 770W	5	5



Table 6. T1.5kVA Tower UPS-G2 runtime chart

Load		Run time in minutes	
Percentage	100V / 200V	T1.5kVA Tower UPS-G2 (100-125VAC)	T1.5kVA Tower UPS-G2 (200-240VAC)
20%	220W / 275W	33	33
50%	550W / 550W	11	12
70%	825W / 825W	8	8
100%	1100W / 1100W	5	5

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

## Connectors and controls

The T1kVA and T1.5kVA Tower UPS-G2 units have a 5-button graphical LCD on the front. The LCD provides useful information about the UPS, load status, events, measurements, and settings.

The following figure shows the control panel on the front of the Tower UPS-G2.

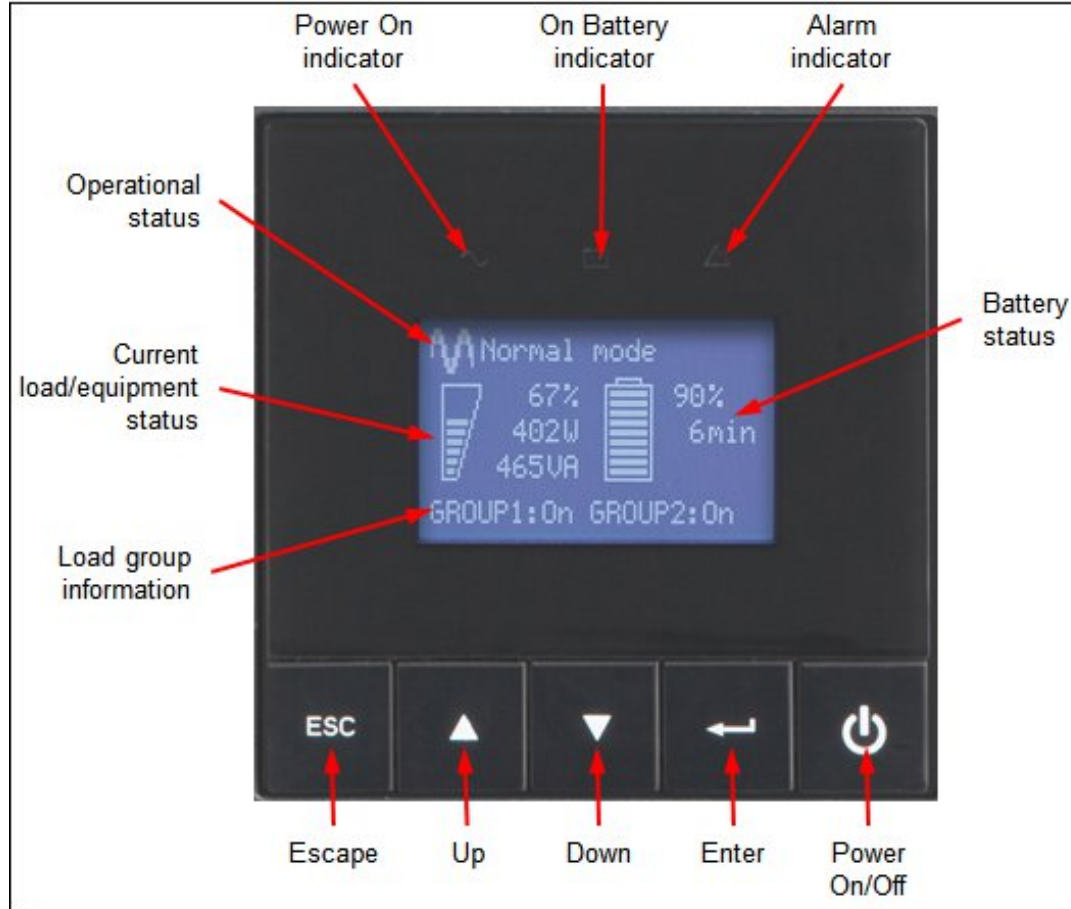


Figure 4. Control panel on the front of the Tower UPS-G2

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.
- 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 optional NMC's firmware level, and IP address, if installed.

The following figure shows the rear view of the T1kVA Tower UPS-G2 (100-125 VAC) (7DD6CTO1WW).

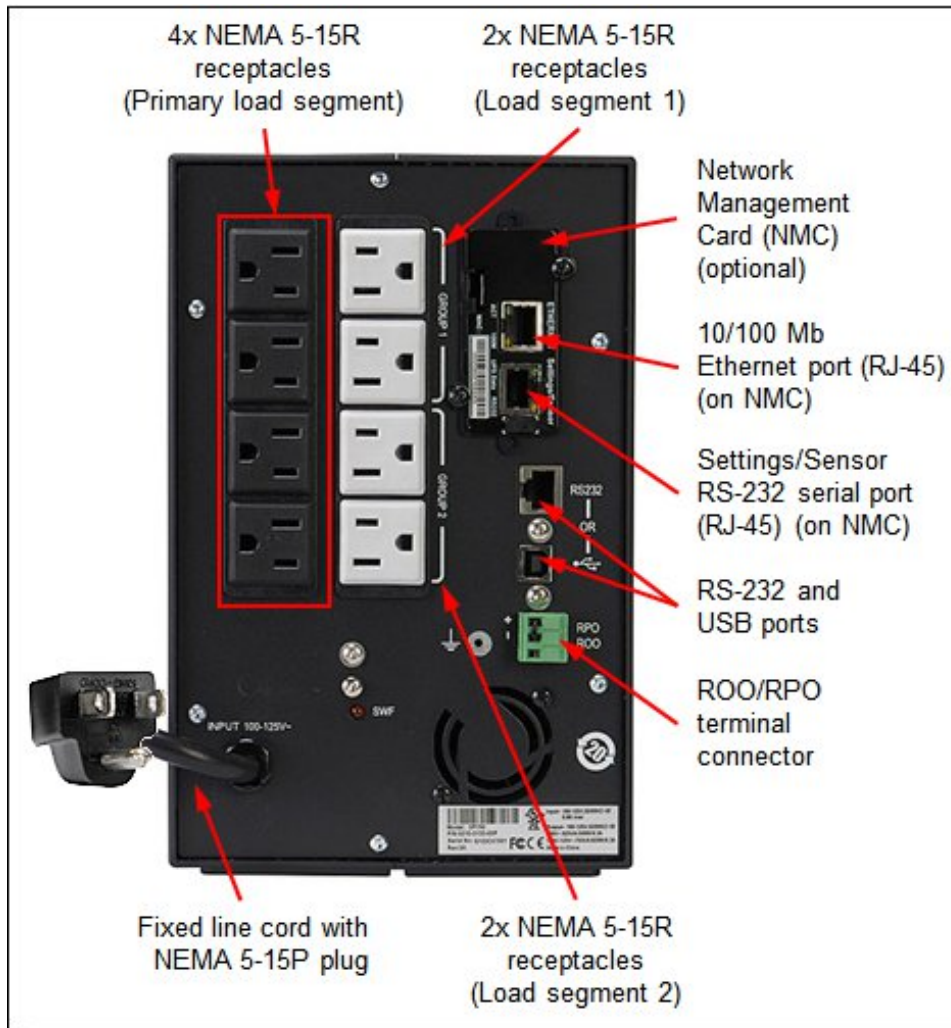


Figure 5. Rear view of the T1kVA Tower UPS-G2 (100-125VAC) (7DD6CTO1WW)

The following figure shows the rear view of the T1kVA Tower UPS-G2 (200-240VAC) (7DD6CTO1WW).

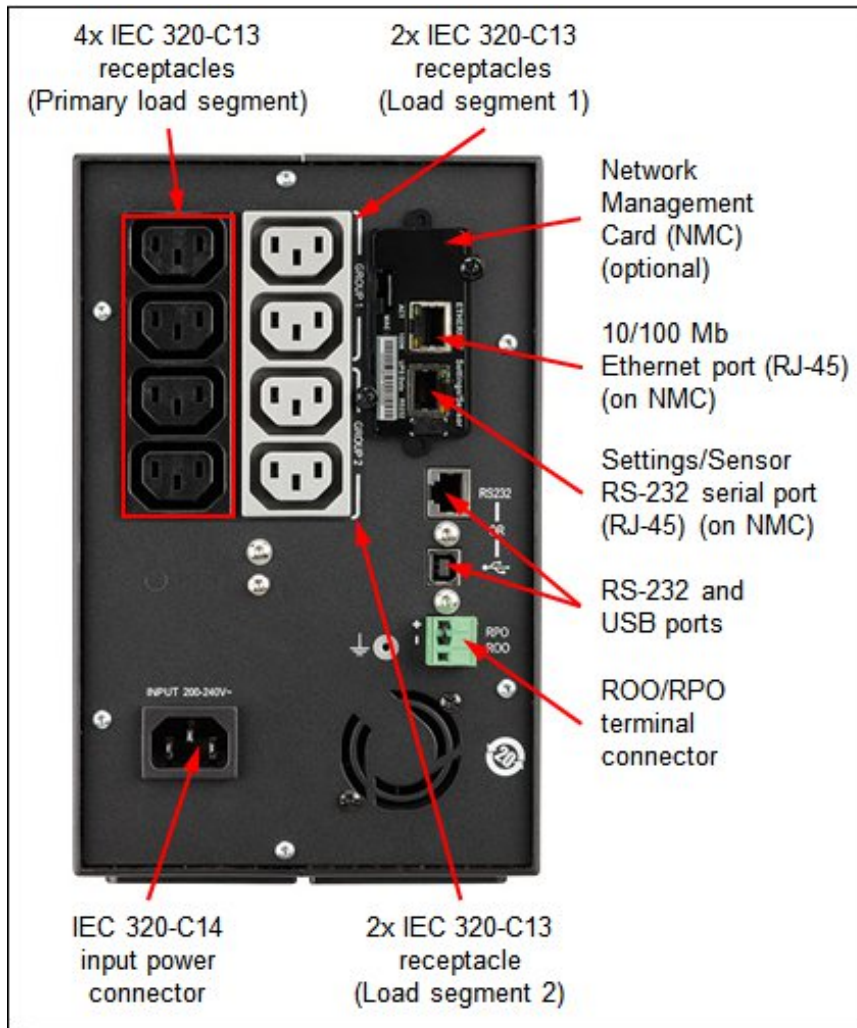


Figure 6. Rear view of the T1kVA Tower UPS-G2 (200-240VAC) (7DD6CTO1WW)

The following figure shows the rear view of the T1.5kVA Tower UPS-G2 (100-125VAC) (7DD6CTO2WW).

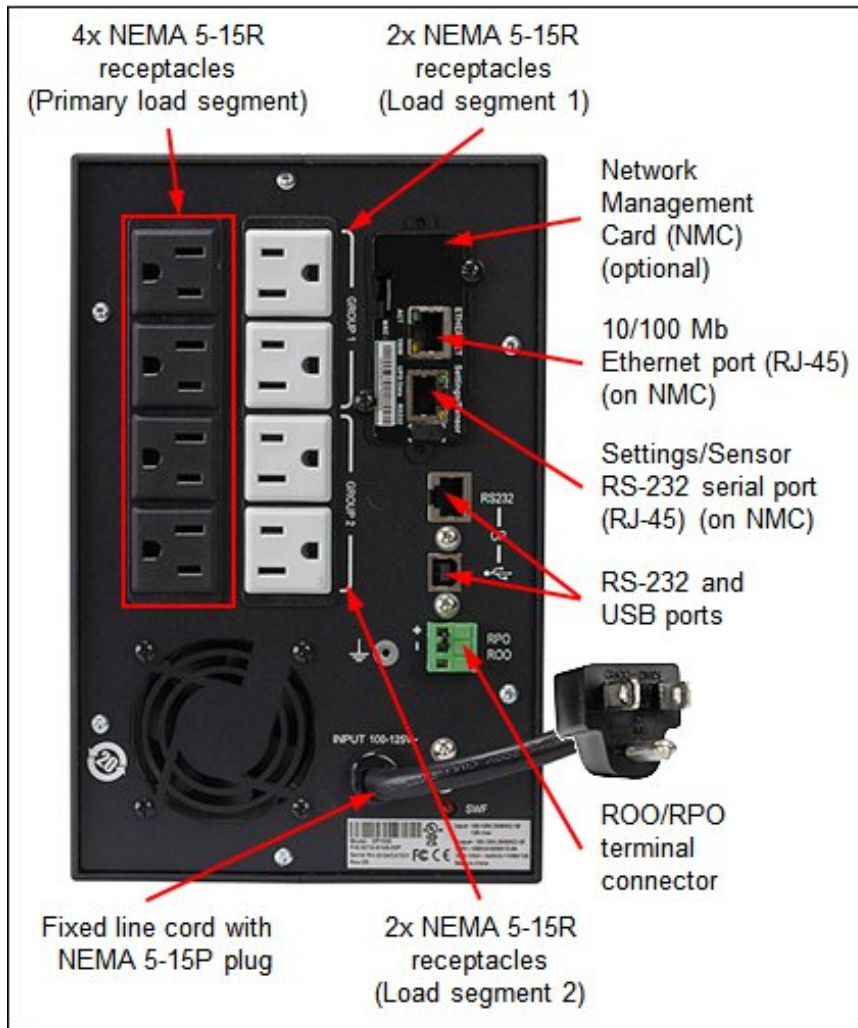


Figure 7. Rear view of the T1.5kVA Tower UPS-G2 (100-125VAC) (7DD6CTO2WW)

The following figure shows the rear view of the T1.5kVA Tower UPS-G2 (200-240VAC) (7DD6CTO2WW).

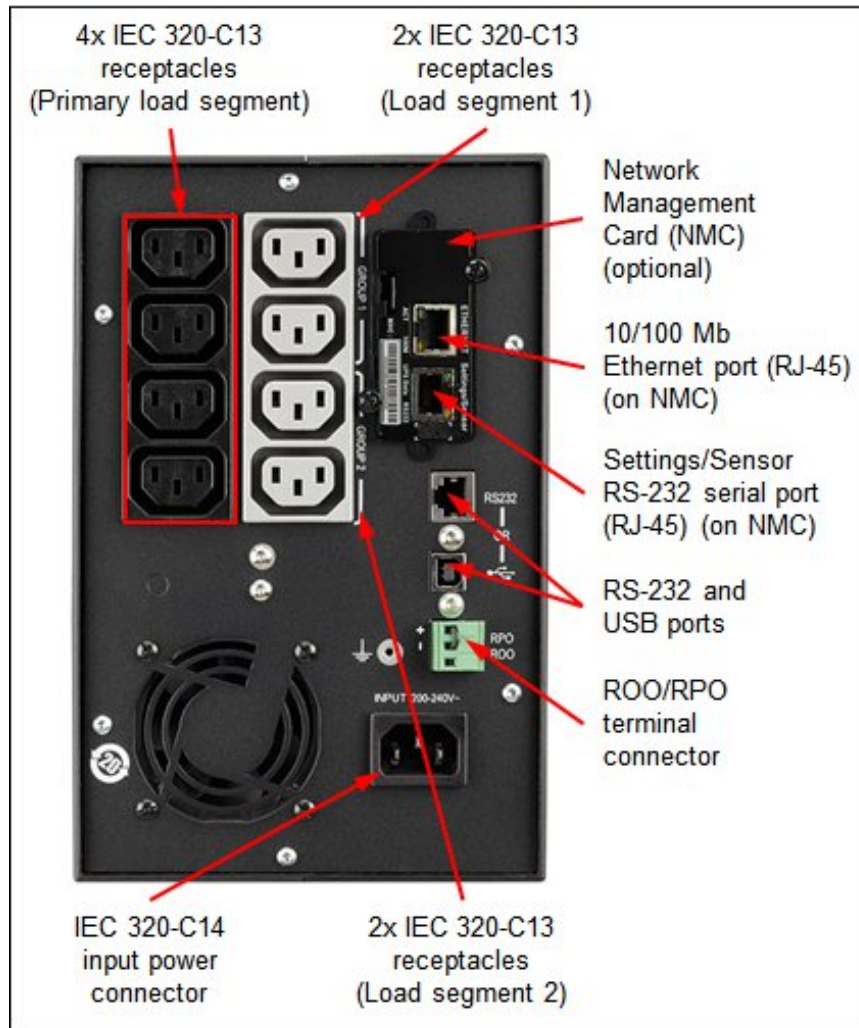


Figure 8. Rear view of the T1.5kVA Tower UPS-G2 (200-240VAC) (7DD6CTO2WW)

### Physical specifications

The T1kVA Tower UPS unit has the following physical specifications (approximate):

- Height: 230 mm (9.1 in.)
- Width: 150 mm (5.9 in.)
- Depth: 345 mm (13.6 in.)
- Weight: 11.5 kg (24.4 lb)

The T1.5kVA Tower UPS unit has the following physical specifications (approximate):

- Height: 230 mm (9.1 in.)
- Width: 150 mm (5.9 in.)
- Depth: 445 mm (17.5 in.)
- Weight: 15.6 kg (34.4 lb)

## Operating environment

The T1kVA and T1.5kVA Tower UPS units are supported in the following environment:

- Temperature (operation):
  - T1kVA Tower UPS: 0 - 35 °C (32 - 95 °F)
  - T1.5kVA Tower UPS: 0 - 40 °C (32 - 104 °F)
- Relative humidity: 0-90% non-condensing
- Maximum altitude (operation): Up to 10,000 ft (3000m) without de-rating

## Agency approvals

The T1kVA and T1.5kVA Tower UPS-G2 units conform to the following compliance and regulations:

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

## Warranty

The T1kVA and T1.5kVA Tower UPS-G2, including batteries, have a 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 7. 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"> <li>Contextual visibility of power metrics and constraints</li> <li>Monitor Eaton and third-party power devices</li> </ul>	<ul style="list-style-type: none"> <li>Contextual visibility of power metrics and constraints</li> <li>Monitor Eaton and third-party power devices</li> </ul>	<ul style="list-style-type: none"> <li>Contextual visibility of power metrics and constraints</li> <li>Monitor Eaton and third-party power devices</li> <li>Manage and update Eaton power devices</li> <li>Define basic business continuity automation configurations with host-level actions</li> <li>Simple wizard-based automation configuration</li> <li>Define advanced business continuity automation configurations with VM and cluster-level actions</li> <li>Graceful shut down</li> </ul>

**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 T1kVA and T1.5kVA 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 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 guidance in finding the most suitable UPS for your solutions refer to the UPS selector.

- <https://upsselector.eaton.com/>

## Related publications and links

For more information, see the following resources:

- Product specifications and resources - T1kVA Tower UPS-G2 (100-125VAC):
  - <https://www.eaton.com/us/en-us/skuPage.5P1000.specifications.html>
- Product specifications and resources - T1kVA Tower UPS-G2 (200-240VAC):
  - <https://www.eaton.com/us/en-us/skuPage.5P1500.specifications.html>
- Network Management Card (NMC) User's guide
  - [Network Management Card User Guide](#)
- Lenovo Capacity Planner (LCP):
  - <https://datacentersupport.lenovo.com/us/en/solutions/lnvo-lcp>

## Related product families

Product families related to this document are the following:

- [Uninterruptible Power Supplies](#)

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