Rackgo X Series

S1M

World's Densest 42-Node Microserver system

User's Guide

Quanta

Version: 1.0.0

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Revision History

Refer to the table below for the updates made to this technical guide.

DATE	CHAPTER	UPDATES

Copyright

Version 1.0.0 / May 27, 2014

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For the latest information and updates please see www.QuantaQCT.com

All the illustrations in this guide are for reference only and are subject to change without prior notice.

About the Book

This guide is written for users who want to know the system featuers.

For the latest version of this guide, see www.QuantaQCT.com.

Intended Application Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment), other than an ITE application, may require further evaluation.

Conventions

Several different typographic conventions are used throughout this manual. Refer to the following examples for common usage.

Bold type face denotes menu items, buttons and application names.

Italic type face denotes references to other sections, and the names of the folders, menus, programs, and files.

<**Enter**> type face denotes keyboard keys.

WARNING!
Warning information appears before the text it references and should not be ignored as the content may prevent damage to the device.

CAUTION!
CAUTIONS APPEAR BEFORE THE TEXT IT REFERENCES, SIMILAR TO NOTES AND WARNINGS. CAUTIONS, HOWEVER, APPEAR IN CAPITAL LETTERS AND CONTAIN VITAL HEALTH AND SAFETY INFORMATION.

Note:
Highlights general or useful information and tips.

Structure of this guide

- Chapter 1: About the System

  "This section introduces the system, its different configuration(s) and the main features."

- Chapter 2: Regulatory and Compliance Information

  "This section provides regulatory and compliance information applicable to this system."

About the System

Chapter 1

This section introduces the system, its different configuration(s) and the main features.

1.1 Introduction

World's Densest 42-Node Micro Server in a 2 OU Chassis

The S1M is based on Quanta's patented "hidden-shelf" chassis design to fit 42x independent hot-plug Microserver nodes in a 2 OU (Open Unit) space.

Redundant Hot-plug 40GbE integrated Ethernet switches

S1M also has an integrated Intel's FM5224 switch that aggregates all the inbound and outbound network traffic. It significantly reducing cabling complexity in the rack that enhances manageability and reduces CAPEX by eliminating extra Top-of-Rack switch.

Specifications

Table 1.1: System Specifications

SPECIFICATIONS	DESCRIPTION
Form factor	2OU (Open Unit) rack mount
Dimensions (W x H x D)	21.1 x 3.7 x 31.5 inch 536 x 93.2 x 800 mm
Network Switch	Built-in redundant switches with up to 4x 40GbE QSFP+ ports for uplink
Chassis Management	Chassis level management including FRU / Power / Fan Speed via Web UI and Command Line Protocol (CLP)
Front I/O	up to 4x 1GbE RJ 45 management port on the system up to 4x 40GbE QSFP+ ports on the system up to 2x switch / chassis management console ports via mini-USB on the system
Fan	6x hot-plug system fans
Operating environment	Operating temperature: 5°C to 35°C (41°F to 95°F) Non-operating temperature: -40°C to 65°C (-40°F to 149°F) Operating relative humidity: 50% to 85%RH Non-operating relative humidity: 20% to 90%RH
Weight (Max. Configuration)	47kg (103lb)
Processor / per node	**Processor type:** Intel® Atom® processor C2000 product family **Max. TDP support:** 20W **Number of processor:** 1
Chipset / per node	Intel® Atom® processor C2000 SoC
Memory / per node	**Total slots:** 4 **Capacity:** up to 32 GB **Memory type:** 1333/1600 MHz DDR3 ECC SODIMM **Memory size:** 8GB, 4GB
Storage controller / per node	**Onboard (Intel® Atom® processor C2000 SoC SATA):** 1x mSATA 6Gb/s connector

Table 1.1: System Specifications (Continued)

SPECIFICATIONS	DESCRIPTION
Network Controller / per node	**LOM:** ● Intel® Atom® processor C2000 SoC 2.5 Gbs SerDes per noder connection to back-plane board ● 10/100 Mbps managment per node connection to back plane board"
Management / per node	Monitor Temperature / Voltage

1.2 Package Contents

- (1) S1M system*
- (1) utility CD (This Guide included)

Note:

Note: For exact shipping contents, contact your Quanta sales representative.

*There are three basic SKUs for S1M system:

- SKU1: I/O Module 1 and Switch Module 1 are installed - No redundancy support for Switch Module / No availability on upgrading to redundancy for Swithc Module.
- SKU2: I/O Module 1 and Switch Module 1 are installed and cabling ready for I/O Module 2 and Switch Module 2 - Availability on upgrading to redundancy for Switch Module / No redundancy support for Switch Module.
- SKU3: I/O Module 1, 2 and Switch Module 1, 2 are installed and redundancy support for Switch Module.

1.3 A Tour of the System

System Overview

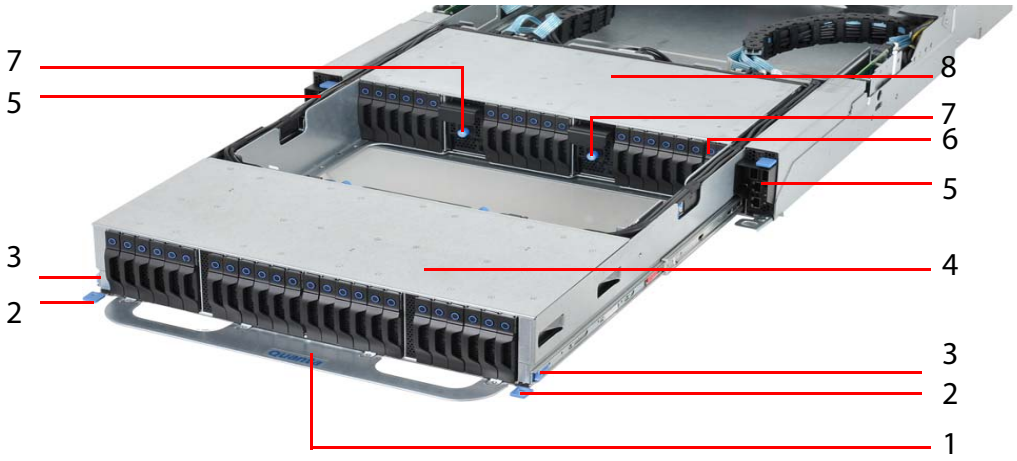

Figure 1-1. System Component Overview

Table 1.2: Component Overview

NO.	ITEM	DESCRIPTION
1	Handle	Hold to pull / push the MB sled cage. It's not allowed to lift or move the system with this handle.
2	MB sled cage release button[1]	Release the lock of MB sled cage by pressing the button from bottom to top. It's locked when inserted into the system chassis.
3	Inner rail lock[1]	Pull forward will release the inner rail lock. It's locked when the MB Sled Cage is fully extended .
4	Front MB sled cage	Support up to 24 MB Sleds
5	I/O Module	Management ports and LEDs support system status / management I/O Module 1 (Left) I/O Module 2 (Right, optional, function is enabled only when Switch Module 2 is installed)
6	Chassis Management Module	Management on FRU / Power / Fan Speed
7	Switch Module	Management the network connection for all MB sleds Switch Module 1 (Left) Switch Module 2 (Right, optional for redundant support and available on SKU2 and SKU3 only.)
8	Rear MB sled cage	Support up to 18 MB sleds, 2 Switch Modules and one Chassis Management Module

[1]: Unlcok Left and Right side at the same time.

System Front View

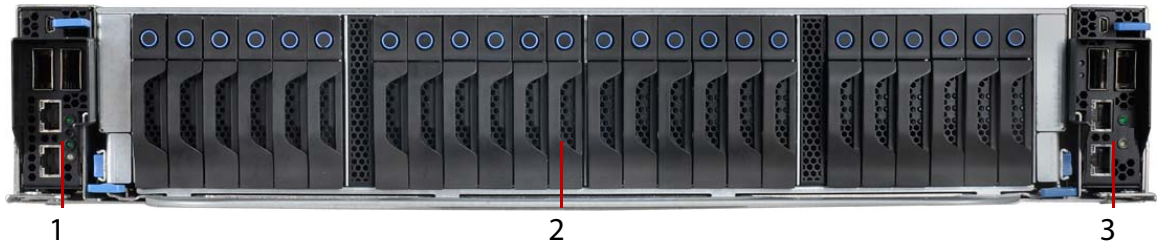

Figure 1-2. System Front View

Table 1.3: System Front View

NO.	NAME	DESCRIPTION
1	I/O Module 1	Management ports and LEDs support system status / management
2	MB Sleds	24x MB Sled trays in front Cage 18x MB Sled trays in rear Cage
3	I/O Module 2	Management ports and LEDs support system status / management* * Optional, function is enabled only when Switch Module 2 is installed

I/O Module 1 & I/O Module 2

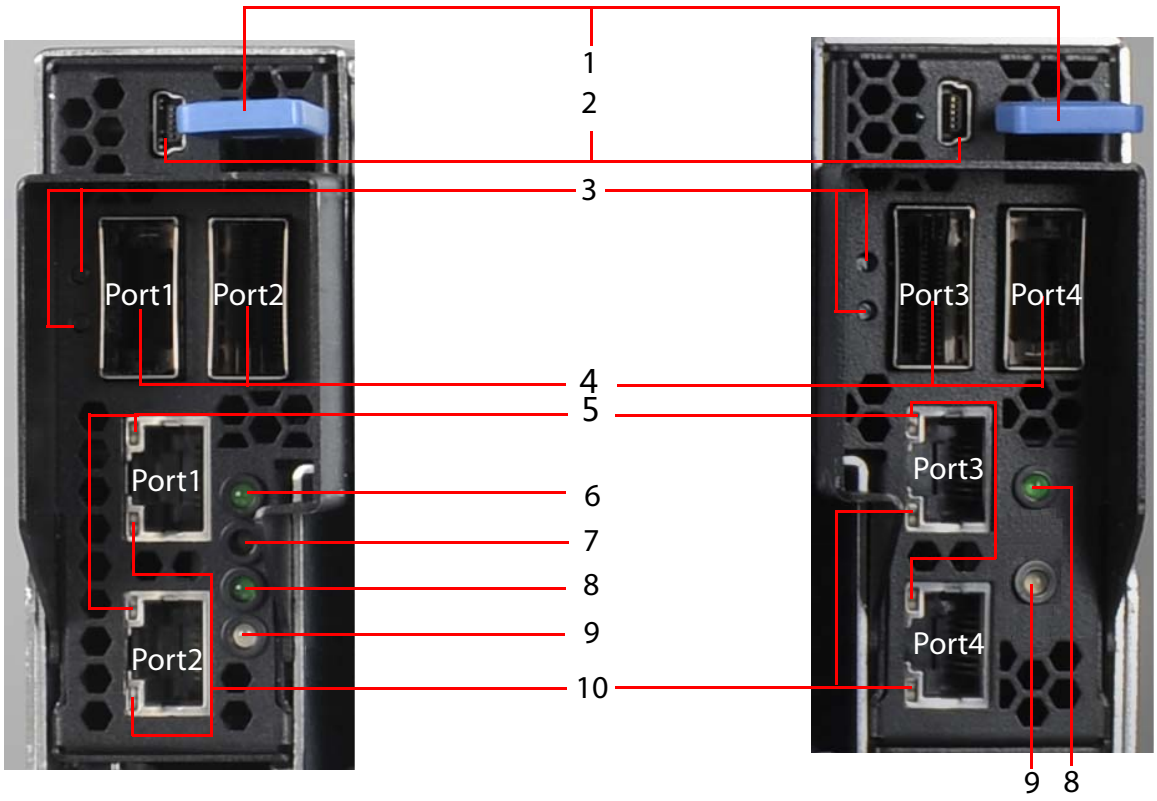

Figure 1-3. I/O Module

Table 1.4: I/O Module

NO.	NAME	DESCRIPTION			
		I/O MODULE 1 (LEFT)		I/O MODULE 2 (RIGHT)[2]	
		LEFT (UPPER)	RIGHT (BOTTOM)	LEFT (UPPER)	RIGHT (BOTTOM)
1	Release Latch	Press to unlock the I/O Module			
2	mini-USB port	Console port for Chassis Management / Switch Module 1		Console port for Switch Module 2	
3	Link/Act LED	QSFP+ Port 1	QSFP+ Port 2	QSFP+ Port 3	QSFP+ Port 4
4	QSFP+ Port				
5	Speed LED	Switch Management Port 1	Switch Management Port 2	Switch Management Port 3	Switch Management Port 4
6	Status LED	Chassis Management		Not Available	
7	Heart-Beat LED				
8	Status LED	Switch Module 1		Switch Module 2	
9	Power LED				
10	Link/Act LED	Switch Management Port 1	Switch Management Port 2	Switch Management Port 3	Switch Management Port 4

[2]: Optional, function is enabled only when Switch Module 2 is installed.

MB Sled

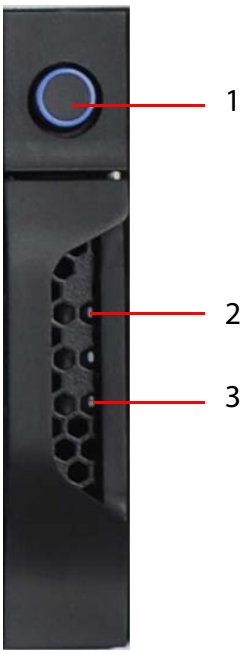

Figure 1-4. MB Sled

Table 1.5: MB Sled

NO.	NAME	DESCRIPTION
1	Release button	Press to release MB Sled Lever.
2	Power / ID LED	Display the Power / ID condition.
3	Status LED	Display the MB status.

System Rear View

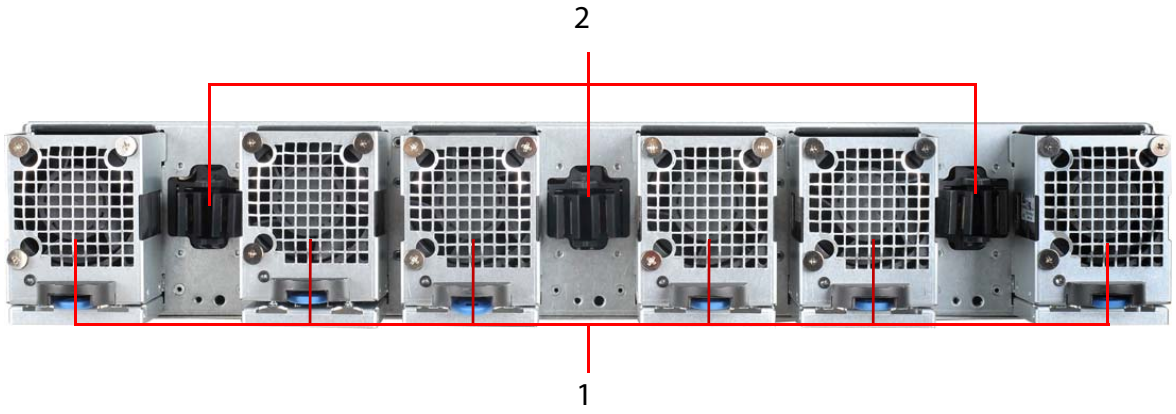

Figure 1-5. System Rear View

Table 1.6: System Rear View

NO.	NAME	DESCRIPTION
1	Fan Modules	6x Hot-Plug Fan Modules (From Right to Left: FANSYS_0~FANSYS_5)
2	Bus Bar Clips	3x Bus Bar Clips connecting to Rack's Bus Barfor power supplying

Fan Module

Figure 1-6. Fan Module

Table 1.7: Fan Module View

NO.	NAME	DESCRIPTION
1	Power / Status LED	Bi-colored LED to show the condition and status of power supply.
2	Release Latch	Press to release from system chassis

LED Definitions

I/O Module 1 & I/O Module 2 LEDs

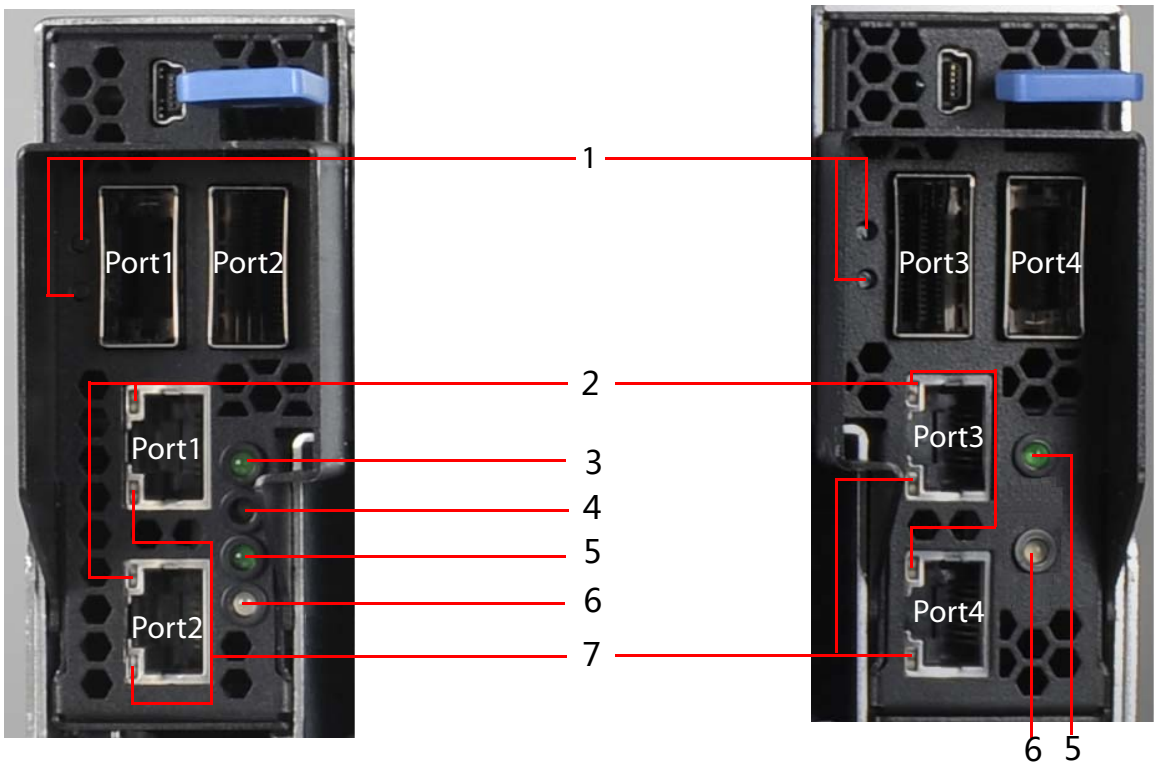

Figure 1-7. I/O Module LEDs

Table 1.8: I/O Module LEDs

NO.	NAME	STATE	DESCRIPTION
1	QSFP+ port Link / Act LED	Solid Green	Network is connected
		Off	Network is disconnected
		Amber blinking	There is data transmission on this LAN port
2	Switch Management port Speed LED	Green	100 Mbps
		Amber	1000 Mbps
3	Chassis Management Status LED	Amber blinking	System Failure: Critical Fan, Voltage, Temperature
		Off	CM board log is Cleared , Last pending warning or error has been de-asserted.
4	Chassis Management Heart-Beat LED	Green blinking	CM board is working
		Off	CM is not installed . BMC on CM board is not working.
5	Switch Status LED	Green On	Switch is working
		Off	Switch is not working

Table 1.8: I/O Module LEDs (Continued)

6	Switch Power LED	Green	SW and IO module power OK
		Amber	SW and IO module power failed
7	Switch Management port Link / Act LED	Solid Green	Network is connected
		Off	Network is disconnected
		Blinking	There is data transmission on this LAN port

MB Sled LEDs

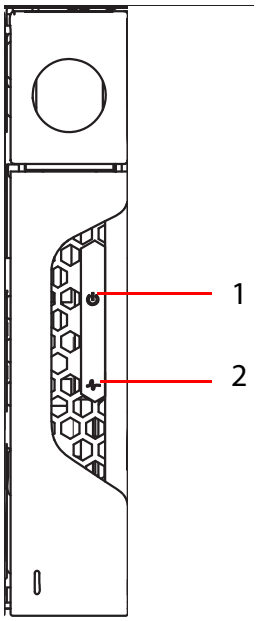

Figure 1-8. MB Sled LEDs

Table 1.9: MB Sled LEDs

NO.	NAME	STATE	DESCRIPTION
1	Power / ID LED	Solid Blue	MB is powered on
		Off	MB is in Standby mode or MB is not installed into chassis well.
		Blinking	Identification event active.
2	MB Status LED	Amber blinking	MB Failure: Critical Fan, Voltage, Temperature
		Off	SEL Cleared Last pending warning or error has been de-asserted

Fan Module LED

Figure 1-9. Fan Module LED

Table 1.10: Fan Module LED

NO.	NAME	STATE	DESCRIPTION
1	Power / Fault LED	Blue On	Fan is working
		Red On	Fan Module failed.

Regulatory and Compliance Information

Chapter 2

This section provides regulatory and compliance information applicable to this system.

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Product Regulatory Compliance Markings

Regulatory Compliance	Region	Marking
UL/cUL Mark	USA / Canada	c UL US
CE Mark	Europe	CE
FCC Marking (Class A)	USA	This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
ICES	Canada	CAN ICES-3 (A)/NMB-3(A)
VCCI Marking (Class A)	Japan	この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A
BSMI Certification Number & Class A Warning	Taiwan	警告使用者： 此為甲類資訊技術設備，於居住環境使用中時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。
EAC Marking	Russia	EAC
Recycling Package Mark	Other than China	Corrugated Recycles CFB
MSIP	Korea	A급 기기 (업무용 정보통신기기) 이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Electromagnetic Compatibility Notices

FCC Verification Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Europe (CE Declaration of Conformity)

This product has been tested in accordance too, and complies with the Low voltage Directive(2006/95/EC) and EMC Directive (2004/108/EC). The product has been marked with the CE Mark to illustrate its compliance.

VCCI (Japan)

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

English translation of the notice above:

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

BSMI (Taiwan)

The BSMI Certification Marking and EMC warning is located on the outside rear area of the

警告使用者：
此為甲類資訊技術設備，於居住環境使用中時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

MSIP (Korea)

Ministry of Science, ICT & Future Planning (MSIP) Class A Statement:

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Regulated Specified Components

To maintain the UL listing and compliance to other regulatory certifications and/or declarations, the following regulated components must be used and conditions adhered to. Interchanging or use of other component will void the UL listing and other product certifications and approvals.

Updated product information for configurations can be found on the site at the following URL:

www.QuantaQCT.com

If you do not have access to the Web address, please contact your local representative.

- **Add-in cards:** must have a printed wiring board flammability rating of minimum UL94V-1. Add-in cards containing external power connectors and/or lithium batteries must be UL recognized or UL listed. Any add-in card containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.
- **Peripheral Storage Devices:** must be UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply.

Restriction of Hazardous Substances (RoHS) Compliance

Quanta® Computer Inc. has a system in place to restrict the use of banned substances in accordance with the European Directive 2011/65/EU. Compliance is based on declaration that materials banned in the RoHS Directive are either (1) below all applicable threshold limits or (2) an approved / pending RoHS exemption applies.

RoHS implementation details are not fully defined and may change.

Threshold limits and banned substances are noted below:

- Quantity limit of 0.1% by mass (1000 PPM) for:

— Lead

— Mercury

— Hexavalent Chromium

— Polybrominated Diphenyl Ethers (PBDE)

- Quantity limit of 0.01% by mass (100 PPM) for:

— Cadmium

End of Life / Product Recycling

Product recycling and end-of-life take-back systems and requirements vary by country. Contact the retailer or distributor of this product for information about product recycling and / or take-back.