

QuantaGrid Series

D51B-1U

**Full-Featured Energy Efficient 2-Way Server
User's Guide**

Quanta

Version: 2.0

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



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.

Precautionary Measures

Read all caution and safety statements in this document before performing any of the instructions. To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read and observe all warnings and precautions in this chapter before installing or maintaining your system. To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following instructions and information. The following symbols may be used throughout this guide and may be marked on the product and / or the product packaging.

Safety Instructions about your system

In the event of a conflict between the information in this guide and information provided with the product or on the website for a particular product, the product documentation takes precedence.

Your system should be integrated and serviced only by technically qualified persons.

You must adhere to the guidelines in this guide and the assembly instructions in related chapters to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL Listing and other regulatory approvals of the product, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

Table 1: Warning and Cautions







CAUTION	Indicates the presence of a hazard that may cause minor personal injury or property damage if the CAUTION is ignored.
WARNING	Indicates the presence of a hazard that may result in serious personal injury if the WARNING is ignored.
	Indicates potential hazard if indicated information is ignored.
	Indicates shock hazards that result in serious injury or death if safety instructions are not followed.
	Indicates hot components or surfaces.
	Indicates do not touch fan blades, may result in injury.
	Remove the system from the rack to disconnect power system.

Table 1: Warning and Cautions (Continued)

	<p>The enclosure is designed to carry only the weight of the system sled. Do not use this equipment as a workspace. Do not place additional load onto any equipment in this system.</p>
	<p>Indicates two people are required to safely handle the system.</p>
	<p>Restricted Access Location: The system is intended for installation only in a Server Room or Computer Room where both these conditions apply:</p> <ul style="list-style-type: none"> • access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and • access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

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.

Site Selection

The system is designed to operate in a typical office environment. Choose a site that is:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power system, because they serve as the product's main power disconnect.
- Provided with either two independent DC power system or two independent phases from a single power system.

Equipment Handling Practices

Reduce the risk of personal injury or equipment damage:

- Conform to local occupational health and safety requirements when moving and lifting equipment.
- Use mechanical assistance or other suitable assistance when moving and lifting equipment.
- To reduce the weight for easier handling, remove any easily detachable components.
- Never lift or move your system solely by the handle on the component.

Power and Electrical Warnings



CAUTION!

MAKE SURE THE SYSTEM IS REMOVED FROM THE RACK BEFORE SERVICING ANY NON-HOT PLUG COMPONENTS. THE BUS BAR CLIPS MUST BE DISCONNECTED FROM THE POWER SYSTEM IN ORDER TO FULLY SEPARATE THE SYSTEM FROM THE POWER SOURCE.



CAUTION!

TO AVOID RISK OF ELECTRIC SHOCK, DISCONNECT ALL CABLING FROM THE SYSTEM AND REMOVE THE SYSTEM FROM THE RACK.

System Access Warnings



CAUTION!

TO AVOID PERSONAL INJURY OR PROPERTY DAMAGE, THE FOLLOWING SAFETY INSTRUCTIONS APPLY WHENEVER ACCESSING THE INSIDE OF THE PRODUCT:

- Disconnect from the power source by removing the system from the rack.
- Disconnect all cabling running into the system.
- Retain all screws or other fasteners when servicing. Upon completion servicing, secure with original screws or fasteners.



CAUTION!

IF THE SERVER HAS BEEN RUNNING, ANY INSTALLED HDD MODULES MAY BE HOT.



CAUTION!

UNLESS YOU ARE ADDING OR REMOVING A HOT-PLUG COMPONENT, ALLOW THE SYSTEM TO COOL BEFORE SERVICING.



CAUTION!

TO AVOID INJURY DO NOT CONTACT MOVING FAN BLADES. IF YOUR SYSTEM IS SUPPLIED WITH A GUARD OVER THE FAN, DO NOT OPERATE THE SYSTEM WITHOUT THE FAN GUARD IN PLACE.

Rack Mount Warnings

The following installation guidelines are required by UL for maintaining safety compliance when installing your system into a rack.

The equipment rack must be anchored to an unmovable support to prevent it from tipping when your system or piece of equipment is extended from it. The equipment rack must be installed according to the rack manufacturer's instructions.

Install equipment in the rack from the bottom up, with the heaviest equipment at the bottom of the rack.

Extend only one piece of equipment from the rack at a time.

You are responsible for installing a main power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the system(s).

To avoid risk of potential electric shock, a proper safety ground must be implemented for the rack and each piece of equipment installed in it.

Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained.

Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Electrostatic Discharge (ESD)



CAUTION!

ESD CAN DAMAGE DRIVES, BOARDS, AND OTHER PARTS. WE RECOMMEND THAT YOU PERFORM ALL PROCEDURES AT AN ESD WORKSTATION. IF ONE IS NOT AVAILABLE, PROVIDE SOME ESD PROTECTION BY WEARING AN ANTI-STATIC WRIST STRAP ATTACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges without any component and pin touching. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Cooling and Airflow



CAUTION!

CAREFULLY ROUTE CABLES AS DIRECTED TO MINIMIZE AIRFLOW BLOCKAGE AND COOLING PROBLEMS. FOR PROPER COOLING AND AIRFLOW, OPERATE THE SYSTEM ONLY WITH THE CHASSIS COVERS* / AIR DUCT INSTALLED. OPERATING THE SYSTEM WITHOUT THE COVERS / AIR DUCT IN PLACE CAN DAMAGE SYSTEM PARTS . TO INSTALL THE COVERS* / AIR DUCT:

- Check first to make sure you have not left loose tools or parts inside the system.
- Check that cables, add-in cards, and other components are properly installed.

Attach the covers* / air duct to the chassis according to the product instructions.

* May not apply to all systems.

Please be aware that slots and openings on the front and rear side of the chassis are designed for ventilation; to make sure reliable operation of your system and to protect it from overheating, these openings must not be covered or blocked. The openings should never be covered or blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.

Laser Peripherals or Devices



CAUTION!

TO AVOID RISK OF RADIATION EXPOSURE AND / OR PERSONAL INJURY:

- Do not open the enclosure of any laser peripheral or device.
- Laser peripherals or devices are not serviceable.
- Return to manufacturer for servicing.

Use certified and rated Laser Class I for Optical Transceiver product.

Heed safety instructions: Before working with the system, whether using this manual or any other resource as a reference, pay close attention to the safety instructions. Adhere to the assembly instructions in this manual to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components spec-

ified in this manual. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in non-compliance with product regulations in the region(s) in which the product is sold.

System power on/off: To remove power from system, you must remove the system from rack. Make sure the system is removed from the rack before opening the chassis, adding, or removing any non hot-plug components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the cables attached to the system before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground any unpainted metal surface on the server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

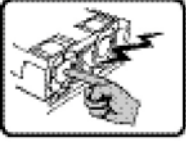
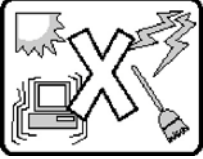


General Information

The information about rack and the wording “rack” in this technical guide supports the organization of Open Compute definition.

The term *Rack* as found in this technical guide refers to the term *Rack* or *Open Rack* as described and used in the Open Compute Project definition.

Before servicing this system, it is recommended to read this technical guide completely to be aware of any safety issues or requirements involved in the servicing of this system.

Assembly Safety Guidelines

	<p>The power system in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.</p>
	<p>The system is designed to operate in a typical office environment. Choose a site that is:</p> <ul style="list-style-type: none"> ● Clean and free of airborne particles (other than normal room dust). ● Well ventilated and away from sources of heat including direct sunlight. ● Away from sources of vibration or physical shock. ● Isolated from strong electromagnetic fields produced by electrical devices. ● In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm. ● Provided with a properly grounded wall outlet. ● Provided with sufficient space to access the power system, because they serve as the product's main power disconnect.
	<p>WARNING!</p> <p>The system is safety certified as rack-mounted equipment for use in a server room or computer room, using an approved customer rack. The enclosure is designed to carry only the weight of the system sled. Do not place additional load onto any equipment.</p>
	<p>Heavy object. Indicates two people are required to safely handle the system.</p>

About the System

Chapter 1

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

1.1 Introduction

QuantaGrid D51B-1U is a general purpose rackmount server designed for optimal performance and power efficiency. It is based on the dual Intel® Xeon® processor E5-2600 v3 product family and features up to 1.5 TB memory capacity in a 1U chassis.

- Greener and More Powerful

Powered by the Intel® Xeon® processor E5-2600 v3 product family and DDR4 memory technology, the QuantaGrid D51B-1U allows owners to upgrade computing performance without overextending power consumption. With Quanta's enhanced thermal design, the server can operate under ambient temperatures as high as 40°C. This allows owners to save unnecessary costs associated with datacenter cooling needs and achieve higher data center infrastructure efficiency (DCIE) value.

- Full-Featured Design for Demanding Virtualization Workload

With 24 dual in-line memory module (DIMM) slots, QuantaGrid D51B-1U offers non-latency support to virtualization environments that require the maximum memory capacity. The D51B-1U also has two 2.5" PCIe Non-Volatile Memory Express (NVMe) SSDs on certain configuration options (with a 2.5" PtP backplane) to accelerate cache and metadata storage for today's demanding cloud storage and computing workload.

- Flexible and Scalable I/O options

QuantaGrid D51B-1U provides flexible I/O scalability for today's diverse data center application requirements. It features OCP LAN mezzanine card solutions in addition to dual GbE or 10GbE LAN on motherboards (LoM). With various controller vendors and different speed and technology options, customers can choose from 1GbE to 56GbE bandwidth, copper or fiber-optic cabling, basic Ethernet function or FCoE and ISCSI SAN connectivity. The onboard SAS controller offers multiple Quanta SAS mezzanine card options with different RAID levels and data transfer bandwidth so customers can tailor the SAS controller for specific application needs.

Specifications

Table 1.1: System Specifications

SPECIFICATIONS	DESCRIPTION
Form factor	1U rack mount
Chassis dimensions (W x H x D)	17.24 x 1.7 x 29.21 inches 438 x 43.2 x 742 mm

Table 1.1: System Specifications (Continued)

SPECIFICATIONS	DESCRIPTION
Processor	<p>Processor type: Intel® Xeon® processor E5-2600 v3 product family</p> <p>Max. TDP support:</p> <ul style="list-style-type: none"> ● 145W with limited HDD Qty ● 135W with max configuration <p>Number of processors: 2</p> <p>Internal Interconnect: 6.4 / 8.0 / 9.6 GT/s</p> <p>Last Level Cache (LLC): Up to 35 MB</p>
Chipset	Intel® C610
Memory	<p>Total slots: 24</p> <p>Capacity: Up to 384GB RDIMM / Up to 768GB LRDIMM</p> <p>Memory type: 2133 MHz DDR4 RDIMM / LRDIMM</p> <p>Memory size: 16 GB, 8 GB RDIMM / 32 GB LRDIMM</p>
Storage controller	<p>Onboard (Intel® C610):</p> <ul style="list-style-type: none"> ● 10x SATA 6Gb/s ports ● SATA RAID 0, 1, 10 <p>Optional controller:</p> <ul style="list-style-type: none"> ● Quanta LSI® 2308 6Gb/s SAS mezzanine, RAID 0, 1, 10 ● Quanta LSI® 3008 12Gb/s SAS mezzanine, RAID 0, 1, 10 ● Quanta LSI® 2108 6Gb/s RAID mezzanine, RAID 0, 1, 5, 10, RAID 6 with additional RAID key ● Quanta LSI® 2208 6Gb/s RAID mezzanine, RAID 0, 1, 5, 10, RAID 6 with additional RAID key
Networking	<p>LOM:</p> <ul style="list-style-type: none"> ● Intel® I350 dual-port 1GbE or Intel® X540 dual-port 10GbE BASE-T ● Dedicated 1GbE management port <p>Optional NIC: (more options refer to the AVL)</p> <ul style="list-style-type: none"> ● Quanta Intel® i350 dual-port OCP mezzanine ● Quanta Intel® X540 dual-port 10GbE BASE-T OCP mezzanine ● Quanta Intel® 82599ES dual-port 10G SFP+ OCP mezzanine
Expansion slots	<p>Riser 1</p> <ul style="list-style-type: none"> ● (default): One x8 PCIe 3.0 SAS mezzanine slot (CPU0) ● (option 2): One x16 PCIe 3.0, Low profile MD-2 (CPU0) <p>Riser 2</p> <ul style="list-style-type: none"> ● One x16 PCIe 3.0, Low profile MD-2 (CPU1) <p>OCP mezz slot</p> <ul style="list-style-type: none"> ● One x8 PCIe Connector (CPU0)
Storage	<ul style="list-style-type: none"> ● 4x 3.5" hot-plug HDD/SSD (3.5" HDD SKU) ● 10x 2.5" hot-plug HDD/SSD (2.5" HDD SKU; requiring additional LSI SAS/ MegaRAID card to connect to the expander backplane) ● 10x 2.5" hot-plug HDD/SSD (2.5" HDD SKU: including 2x optional 2.5" NVMe PCIe SSD)

Table 1.1: System Specifications (Continued)

SPECIFICATIONS	DESCRIPTION
Onboard storage	2x SATADOM (optional*) (*Option not supported if these on-board SATA ports are used up to activate front HDD 0-1 for 2.5" HDD SKU)
Video	Integrated Aspeed AST2400 with 8MB DDR3 video memory
Front I/O	<ul style="list-style-type: none"> ● Power/ID/Reset Buttons ● LAN/HDD/Status/ID LEDs ● 2x USB 2.0 ports (3.5" HDD SKU)
Rear I/O	<ul style="list-style-type: none"> ● 2x USB 3.0 ports ● 1x VGA port ● 1x RS232 serial Port ● 2x 1 GbE or 10G BASE-T RJ45 port ● 1x GbE RJ45 management port ● 1x ID LED ● 1x Port 80 Debug Port (optional)
Optical drive	NA
TPM	Yes (optional)
Power supply	1 High efficiency redundant hot-plug 500W PSU, 80 Plus Platinum (2nd PSU optional)
Fan	6x dual rotor fans (1+1 redundant)
System management	IPMI v2.0 Compliant, on board "KVM over IP" support
Weight (Max. configuration)	<ul style="list-style-type: none"> ● 15.77 Kg (3.5" HDD SKU) ● 14.5 Kg (2.5" HDD SKU)
Operating environment	<ul style="list-style-type: none"> ● Operating temperature: 5°C to 40°C (41°F to 104°F) ● Non-operating temperature: -40°C to 70°C (-40°F to 158°F) ● Operating relative humidity: 50% to 85%RH. ● Non-operating relative humidity: 20% to 90%RH

1.2 Package Contents

- (1) D51B-1U system
- (2) processor heat sinks
- (1) power supply unit
- (1) power cord (optional)
- (1) utility CD (Technical Guide included)
- (1) rail kit

Note:

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

1.3 A Tour of the System

System Overview

The server is available as a 2.5" and 3.5" HDD configuration.

The 2.5" HDD configuration system overview is displayed in the following image:

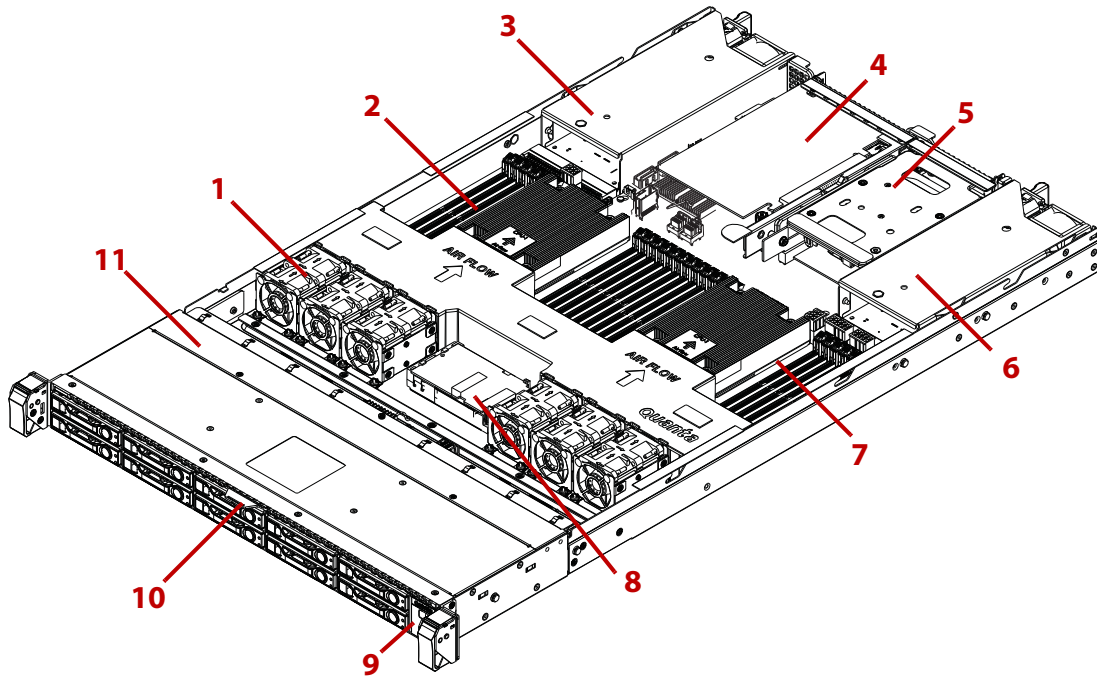


Figure 1-1. 2.5" HDD System Component Overview

The 3.5" HDD configuration system overview is displayed in the following image:

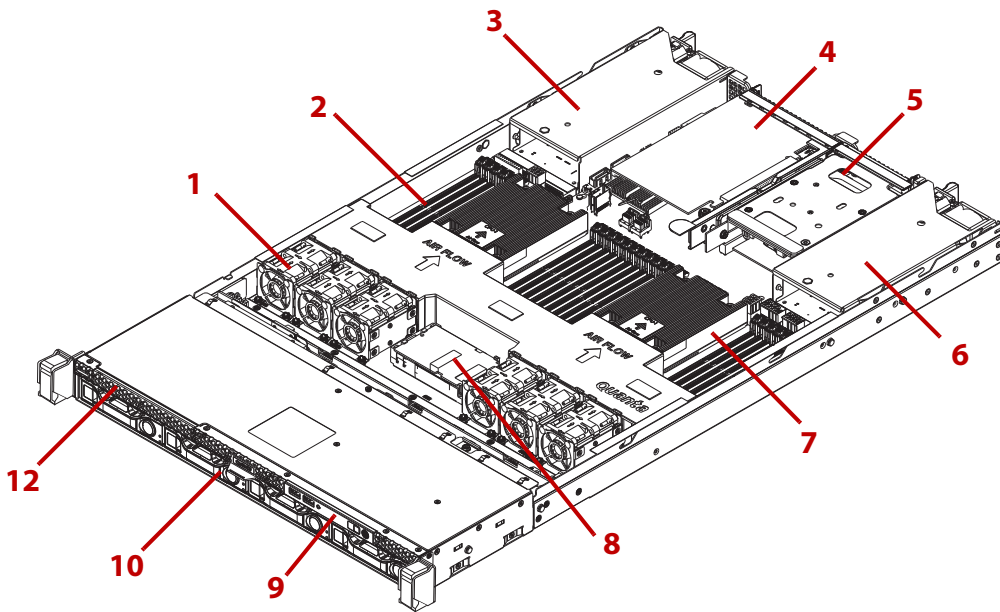


Figure 1-2. 3.5" HDD System Component Overview

Table 2: Component Overview

No.	ITEM	DESCRIPTION
1	Fan module	(6) System fan modules
2	DIMM slots	(12) DDR4 DIMM slots
3	PSU assembly	Redundant power supply unit assembly
4	Riser assembly	Up to two x8 PCIe slots
5	Riser assembly	
6	PSU assembly	Redundant power supply unit assembly
7	Mainboard	System mainboard
8	Backup battery	Backup battery for mezzanine card
9	Front control panel	See <i>Front Control Panel</i> on page 1-8
10	HDD assembly	<ul style="list-style-type: none"> ● 3.5" model: 4 x hard disk drive assemblies ● 2.5" model: 10 x hard disk drive assemblies
11	Mid-Top cover (2.5" model only)	See <i>Removing the Middle Top Cover</i> on page 2-7
12	SSD assembly (3.5" model only)	2 x solid state disk drive assemblies.

Note:

The system features one standard PCIe Riser Assembly supporting standard PCIe cards (see item 4 in previous illustration) and one low profile PCIe riser assembly (available in certain models) supporting low profile PCIe cards (see item 5 in previous illustration).

System Front View

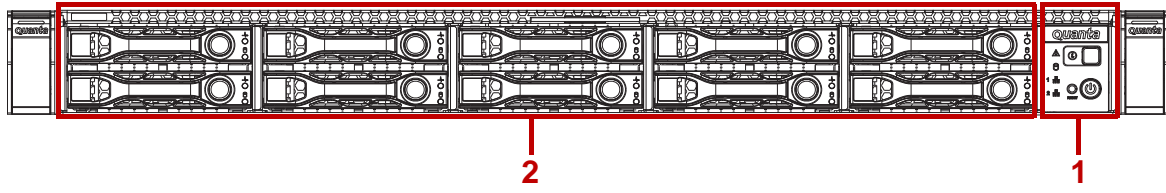


Figure 1-3. 2.5" System Front View

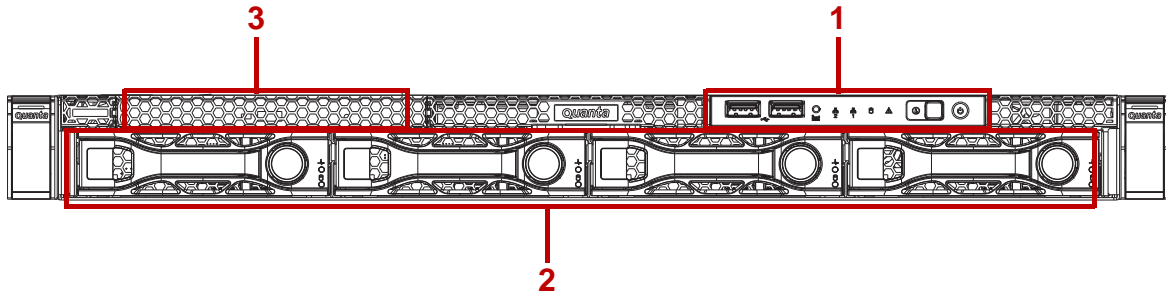


Figure 1-4. 3.5" System Front View

Table 3: Front Panel View

No.	NAME	DESCRIPTION
1	Front control panel	See <i>Front Control Panel LED</i> on page 1-10 for further information.
2	HDD bays	<ul style="list-style-type: none"> ● 3.5": 4 x SAS/SATA HDD ● 2.5": 10 x SAS HDD
3	SSD tray	2 x SSD

Front Control Panel

For purposes of this procedure, the 3.5" FCP is used for the numbering indicators. There are no USB ports on the 2.5" FCP.

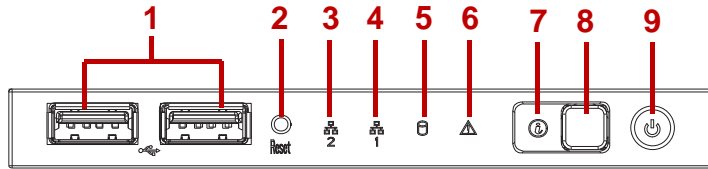


Figure 1-5. 3.5" Front Control Panel

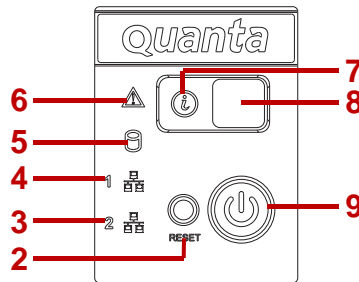


Figure 1-6. 2.5" Front Control Panel

Table 4: Front Control Panel Definition

No.	ICON	NAME	DESCRIPTION
1		USB ports	USB ports 1 & 2
2		Reset button	Soft reset system function
3		LAN2 LED	LAN access
4		LAN1 LED	LAN access
5		HDD activity LED	Hard disk drive access
6		Fault LED	Provides critical and non-critical failure notification
7		Identification LED	Activate ID LED to identify system
8		ID button	Toggles ID LED
9		Power button	Power on / off

System Rear View

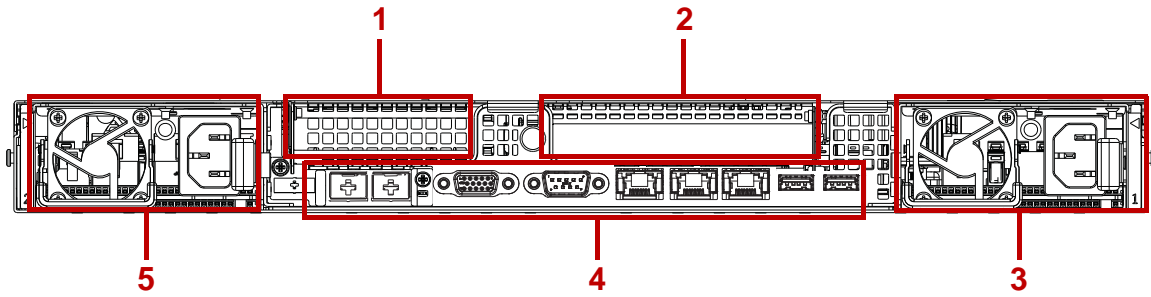


Figure 1-7. System Rear View

Table 5: System Rear View

No.	FEATURE	DESCRIPTION
1	Expansion slot	PCIe expansion slot with PCIe x8 signal
2	Expansion slot	
3	Power sub-system	Main power supply unit (PSU1). See <i>Power Sub-System</i> on page 1-10.
4	System I/O ports	See <i>System Rear I/O</i> on page 1-9
5	Power sub-system	Secondary power supply unit (PSU2). See <i>Power Sub-System</i> on page 1-10

System Rear I/O

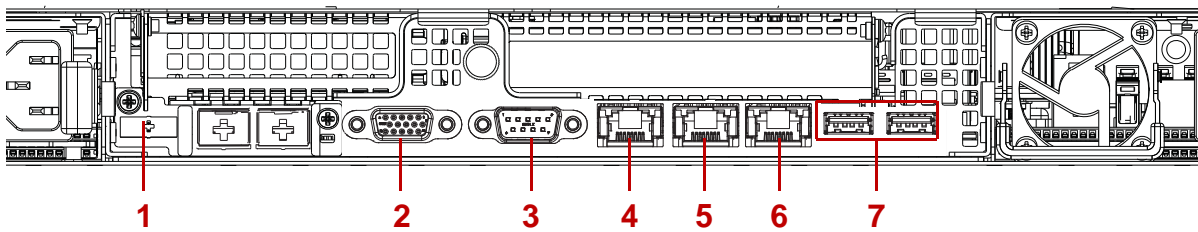




Figure 1-8. System Rear I/O

Table 6: System Rear I/O Definition

No.	ICON	NAME	DESCRIPTION
1		OCP connector	OCP debug connector (optional)
2		VGA connector	Maximum display resolution: 1920x1200 32bpp@60Hz (reduced blanking)
3		COM port A	DB9 port (Serial_A) for debug or terminal concentrator
4		NIC2	RJ45 connector
5		NIC1	RJ45 connector

Table 6: System Rear I/O Definition (Continued)

No.	ICON	NAME	DESCRIPTION
6		Dedicated NIC	Dedicated RJ45 connector
7		USB ports	USB ports (2.0 / 3.0)

Power Sub-System

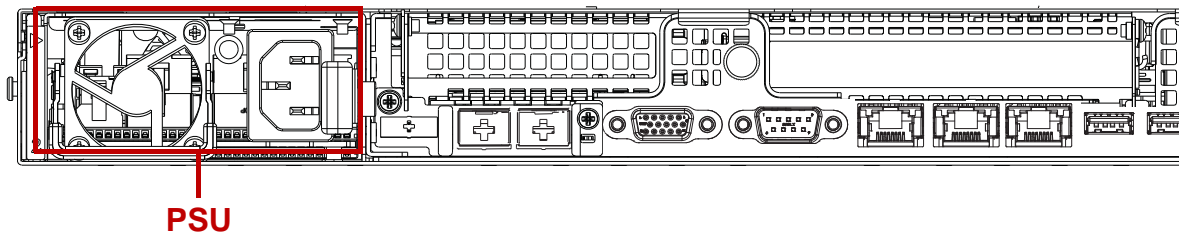


Figure 1-9. PSU to Mainboard Module Description

A single power supply unit (default) and power distribution board (PDB) are supplied in the system. A secondary PSU is available for redundancy functionality.

Table 7: Power Supply Units by Model

PSU	AC INPUT
2 x 750W high efficiency redundant PSU	100-240V AC 50/60Hz

LED Status Definitions

Front Control Panel LED

For further information and location of the FCP LEDs, see *Front Control Panel LED* on page 1-10.

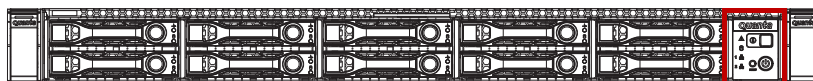


Figure 1-10. 2.5" System Front Control Panel LEDs

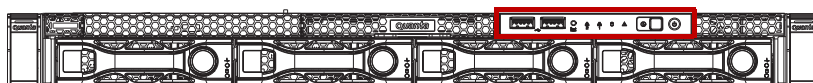


Figure 1-11. 3.5" System Front Control Panel LEDs

Table 8: Front Control Panel LED Behavior

NAME	COLOR	CONDITION	DESCRIPTION
Power LED	Blue	On	System power on
		Off	System power off
Identification	Blue	On	Unit selected for identification
		Off	No identification request
Fault LED	Amber	Blinking	Critical Failure: critical fan, voltage, temperature state.
			Non-Critical Failure: non-critical fan, voltage, temperature state, CPU thermal trip, DC off.
		Off	SEL cleared Last pending warning or error has been de-asserted.
HDD activity	Blue	Blinking	Hard disk drive access (only on board SATA port)
		Off	No access (non-SAS)
LAN1 LED	Blue	On	Link
		Blinking	LAN access (off when there is traffic)
LAN2 LED	Blue	On	Link
		Blinking	LAN access (off when there is traffic)

LAN LED

The system mainboard includes an optional dual 1GbE network with 1GbE dedicated management port with an optional 10G SPF+ OCP network mezzanine card. Each RJ45 connector has two built-in LEDs. See the following illustration and table for details.

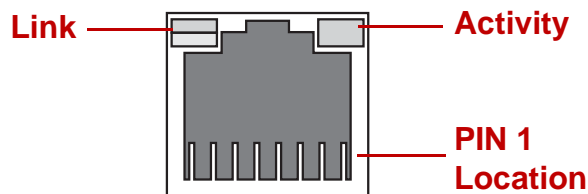


Figure 1-12. RJ45 LAN Connector

Table 9: RJ45 LED Description

CONDITION	LINK	ACTIVITY
Unplugged	Off	Off
1G active link	On amber	Blinking green
100M active link	On green	Blinking green
10M active link	Off	Blinking green

BMC Management Port LED

Table 10: BMC Management Port LED Behaviour

NAME		COLOR	CONDITION	BEHAVIOUR
BMC Dedicated LAN	Speed 1G (Left LED)	Amber	On	LAN link
			Off	No link
	Speed 100M (Left LED)	Green	On	LAN link
			Off	No link
	Activity (Right LED)	Green	Blinking	LAN Access
			Off	Disconnected

HDD LED

The following LED behavior table represents LED conditions when a driver is online and the slot is not empty.

Table 11: HDD LED Status Behavior

NAME	COLOR	CONDITION	DESCRIPTION
HDD Status*	Blue	On	Drive is online
		Off	Slot is empty
HDD Activity	Blue	On	HDD access is active
		Off	No access
HDD Fault	Amber	On	HDD failure
		Off	No failure detected

* Only support SATA/SAS HDD/SSD.

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Regulatory and Compliance Information

Chapter 2

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

2.1 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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and TV reception.

Europe (CE Declaration of Conformity)

This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

VCCI (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス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。

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 guide.

BSMI (Taiwan)

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

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策

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: <http://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 2002/95/EC. 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 Biphenyls 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.

2.2 Product Regulatory Compliance Markings

This product is marked with the following product certification markings:

Table 1: Product Regulatory Compliance Markings





REGULATORY COMPLIANCE	REGION	MARKING
cULus Listing Marks	USA / Canada	
CE Mark	Europe	
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.
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	 R43039 <div style="border: 1px solid black; padding: 2px; width: fit-content;">警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策</div>
ICES	Canada	This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Table 1: Product Regulatory Compliance Markings (Continued)

REGULATORY COMPLIANCE	REGION	MARKING
Recycling Package Mark	Other than China	
GOST-R Marking	Russia	