QuantaPlex Series

T21P-4U

4U High Density High Computing Storage Server
User's Guide

Version: 1.0

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Version 1.0 / March 27, 2015

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TABLE OF CONTENT

About the System

Introduction 1-1

Package Contents 1-4

Tour of the System 1-5

System Overview 1-5

Operator Panel 1-6

System Rear View 1-8

LED Status Definitions 1-14

Operator Panel LED 1-14

LAN LED 1-15

Top Access HDD LED 1-15

Rear Access HDD LED 1-17

2.5" SATA SSD (7mm) in MB Sled 1-18

Fan module LED 1-19

PSU LED 1-20

Regulatory and Compliance Information

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)

	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.
	Indicates four or more people are required to safely handle the system.
	Restricted Access Location: The system is intended for installation only in a Server Room or Computer Room where both these conditions apply: • 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 soley 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 INORDER 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, sercure 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 (Tma) 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.

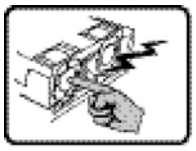
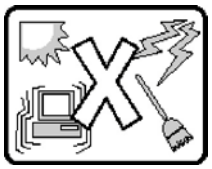
General Information

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 referes to the term *Rack* or *Open Rack* as described and used in the Open Compute Project definition.

Before servicing this system, it is recommened 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

	The power system in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.
	The system is designed to operate in a typical office environment. Choose a site that is: ● 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.
	WARNING! 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.
	Heavy object. Indicates four or more people are required to safely handle the system.

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

QuantaPlex T21P-4U is a compact and versatile 2-Socket and up to 70 (top access) +8 (rear access)- 12Gb/s 3.5" HDD server. It is based on the dual Intel® Xeon® processor E5-2600 v3 product family and offers up to 16x DDR4 memory and three PCIe expansion devices to deliver enterprise-grade performance. It is an ideal front-end web, data caching, search and application server.

Ultra-Dense 4U Disk Expansion Unit

As an ultra-dense, scalable, and cost-effective disk expansion unit, QuantaPlex T21P-4U features 70 hot-plug 3.5"/ 2.5", SAS/SATA, HDDs, 2.5" SSDs in a 4U enclosure. Major components including hot-plug power supplies and fans are 2+2 and 9+1 redundant with high availability. The design is optimized for the general-purpose needs of enterprise and service provider datacenters where the lowest operational cost-per-watt and smallest footprint are critical to achieving the desired economics.

High Density

QuantaPlex T21P-4U supports 70 hot-plug 3.5"/2.5", SAS/SATA, HDDs, 2.5" SSDs in a 4U enclosure, and optional 8 hot-plug 3.5"/2.5" HDDs, 2.5" SSDs in rear HDD sled with up to 624 TB of storage capacity.

Flexibility

QuantaPlex T21P-4U provides flexible and scalable disk configuration and combination. It supports 2.5" and/or 3.5" ,SAS and/or SATA, HDD and/or 2.5" SSD, and different disk capacity options. Users can configure various disk options to address their unique needs and performance requirements.

Reliability & High Availability

QuantaPlex T21P-4U supports 2+2 high-efficiency redundant power supplies and five hot-plug dual rotor fan modules (9+1 redundant), ensuring reliability and continuous availability in mission-critical datacenter environments. Ultra-high storage densities can present substantial mechanical engineering challenges from the sheer mass of rotating media. Interference from vibration caused by hard disk rotation is isolated in the sheer to assure reliability and high performance across a range of loading and access scenarios.

Serviceability & Manageability

With its innovative coverless, top access HDD design, QuantaPlex T21P-4U significantly reduces service and maintenance complexity.

Specifications

Table 1.1: System Specifications

SPECIFICATIONS	DESCRIPTION
Form factor	4U rack mount
Dimensions	W x H x D (inch): 17.6 x 6.9 x 35.9 W x H x D (mm): 447 x 175.3 x 912
Processor	**Processor type:** Intel® Xeon® processor E5-2600 v3 product family **Max. TDP support:** ● 135W **Number of processors:** 2 **Internal Interconnect:** 6.4 / 8.0 / 9.6 GT/s **L3 Cache :** Up to 45 MB
Chipset	Intel® C610
Memory	**Total slots:** 16 **Capacity:** Up to 512GB RDIMM / Up to 1024GB LRDIMM **Memory type:** 2133 MHz DDR4 RDIMM / LRDIMM **Memory size:** 32GB, 16GB, 8GB RDIMM / 64GB, 32GB LRDIMM
Storage controller	**Onboard (Intel® C610):** ● 2x 7-pin SATA connectors for one SATADOM only or 2x 2.5" SATA SSDs connection ● SATA RAID 0, 1, 10 **Optional controller:** ● Quanta LSI® 3008 12Gb/s SAS mezzanine, RAID 0, 1, 10 ● Quanta LSI® 3108 12Gb/s RAID mezzanine, RAID 0, 1, 5, 10 (RAID 6 with additional RAID key) ● Detailed options please refer to "ordering info" or "CCL"
Networking	**LOM:** ● Intel® I350 dual-port GbE ● Dedicated GbE management port **Optional NIC:** (more options refer to the CCL) ● Intel Single/Dual port 1G/10G BASE-T Mezz ● MellanoxSingle port 40G Mezz ● OCP LAN Single/Dual 10G/40G Mezz ● Detailed options please refer to "ordering info" or "CCL"
Expansion slots	● Riser1 (PCIex8, CPU0) / Riser2 (PCIex8, CPU0) / Riser3 (PCIex16, CPU1) ● OCP mezzanine slot (PCIe x8)
Storage	**For 2 Motherboard Sleds SKU:** ● 70x 3.5" / 2.5" hot-plug ● 2x 2.5" hot-plug SSD for OS installation per node **For 1 Motherboard Sled + 1 Rear HDD Sled SKU:** ● 78x 3.5" / 2.5" hot-plug ● 2x 2.5" hot-plug SSD for OS installation per node
Onboard storage	Upto 1x SATADOM (optional, only available when SATA SSDs on MB sled are not installed)

Table 1.1: System Specifications (Continued)

SPECIFICATIONS	DESCRIPTION
Video	Integrated Aspeed AST2400 with 8MB DDR3 video memory
Rear I/O	• 2x USB 3.0 ports • 1x VGA port • 1x RS232 serial port • 2x GbE port • 1x GbE RJ45 management port
TPM	Yes (optional)
Power supply	• 2+2 1200W high efficiency redundant PSUs, 100-240Vac, 12A-8A, 50/60Hz; • Detailed options please refer to "ordering info" or "CCL"
Rating (per PSU inlet)	100-240Vac, 10-6A, 50/60Hz
Fan	5x(4x8056 + 1x6056) dual rotor fan modules (9+1 redundant);
System management	IPMI v2.0 Compliant, on board "KVM over IP" support
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: 20% to 85%RH. • Non-operating relative humidity: 40% to 90%RH

1.2 Package Contents

- (1) T21P-4U system
- (2) processor heat sinks
- (2) power supply units
- (2) power cord (optional)
- (1) utility CD (This guide included)
- (1) rail kit (Instruction sheet included)

Note:

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

1.3 Tour of the System

System Overview

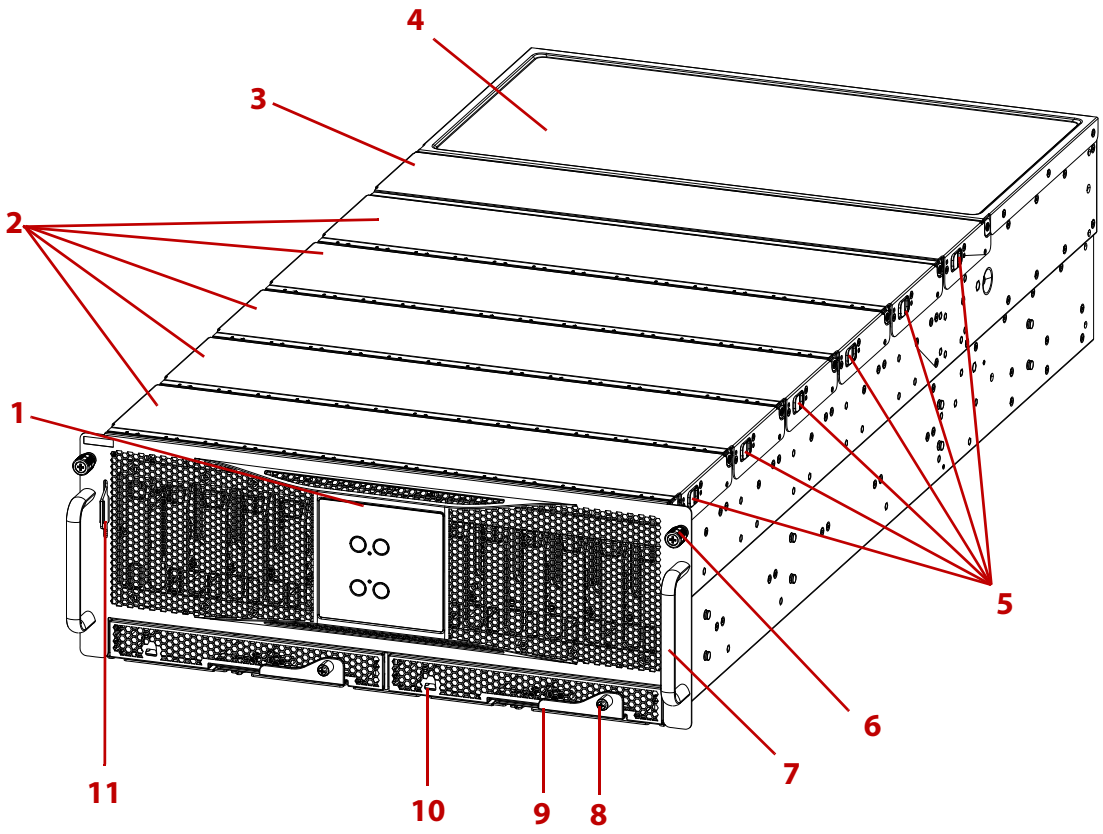


Figure 1-1. System Component Overview

Table 2: Component Overview

NO.	ITEM	DESCRIPTION
1	Operator Panel	Operator Panel includes the following: ● Reset button ● Power button with LED ● ID button with LED ● System Status LED ● HDD array LED ● PSU Status LED ● Rear HDD Status LED (only for certain models) ● Fan Status LED
2	HDD array doors	HDD array door 1~ HDD array door 5; Houses (14) 3.5" HDDs or 2.5" HDDs/ SSDs
3	Fan door	Houses (4) 8056 + (1) 6056 Fan modules
4	Rear chassis	Supports Rear HDD Sled (Node1)+ MB Sled (Node2) or MB Sled (Node1)+MB Sled (Node2).

Table 2: Component Overview (Continued)

NO.	ITEM	DESCRIPTION
5	Release button	Push to release the door lock
6	Thumb screw	x2 thumb screws to secure chassis to rack
7	Chassis handle	Hold to remove chassis from the rack
8	HDD Backplane Tray handle captive screw	Use tool to remove the captive screw
9	HDD Backplane Tray handle	Hold to remove the HDD backplane tray from the chassis
10	Micro USB port	Connection for service like HDD BP Expander only
11	Asset Tag	Used to record system information, such as: MAC and IP addresses

Operator Panel

For purposes of this procedure, the operator panel is used for the numbering indicators.

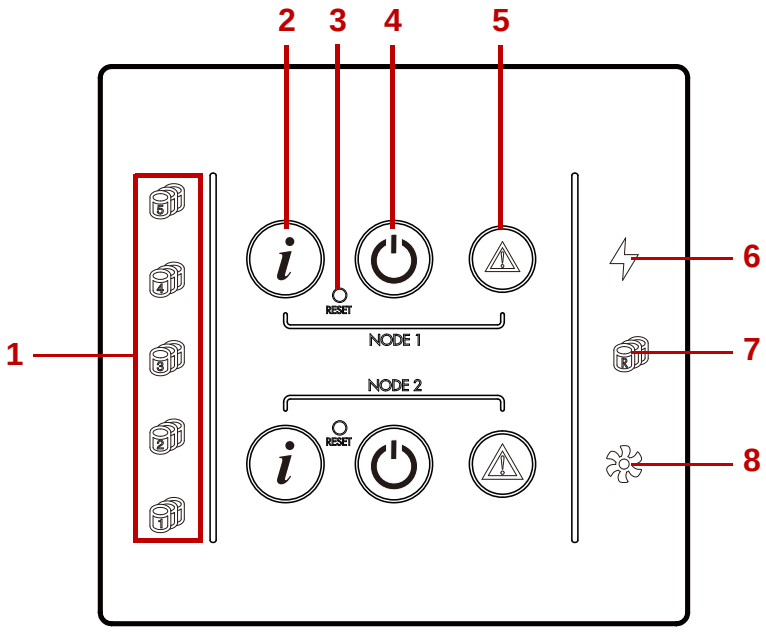


Figure 1-2. Operator Panel

Table 3: Operator Panel View

NO.	NAME	DESCRIPTION
1	HDD array LED Status LED	Displays the Status of HDDs in HDD array 1 ~ 5
2	ID button with LED	Press to activate ID LED to identify the MB Sled (This feature is disabled when Rear HDD Sled is installed in Node1)

Table 3: Operator Panel View (Continued)

NO.	NAME	DESCRIPTION
3	Reset button	Press to soft reset the Node 1 or Node 2 (This feature is disabled when Rear HDD Sled is installed in Node1)
4	Power button with LED	Power Node 1 / Node 2 On/Off (This feature is disabled when Rear HDD Sled is installed in Node1)
5	System Status LED	Provides critical and non-critical failure notification (This feature is disabled when Rear HDD Sled is installed in Node1)
6	PSU Status LED	Provides notification for power supply unit
7	Rear HDD Status LED	Provides notification of HDD on Rear HDD Sled (only for certain models)
8	Fan Status LED	Provides notification for Fan modules

System Rear View

This section provides the rear view of the system.

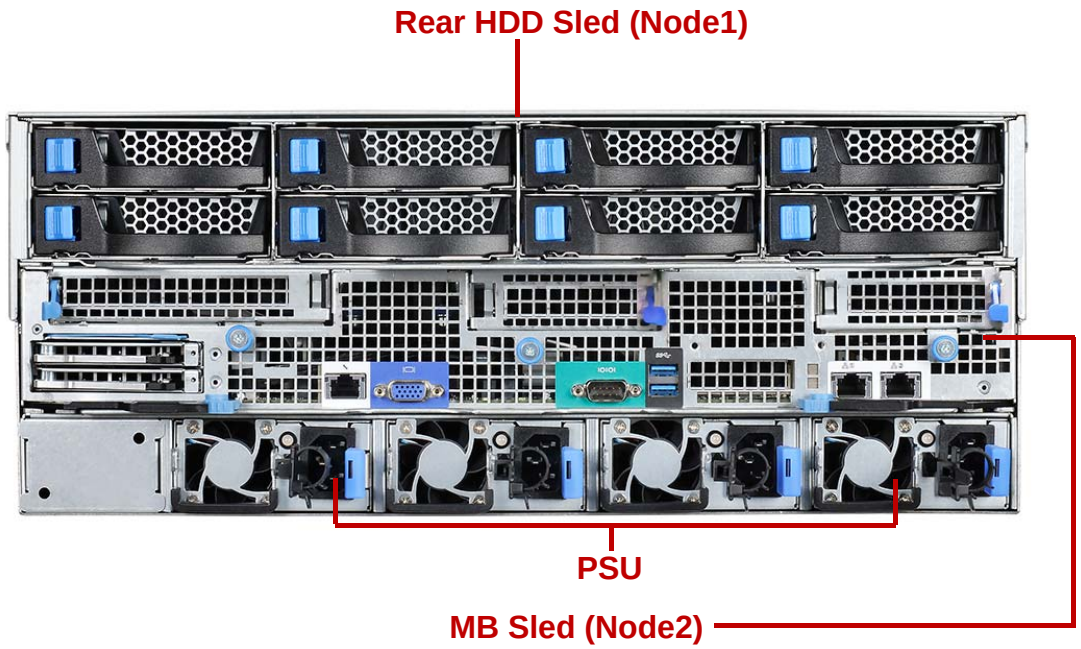


Figure 1-3. Rear View (Rear HDD Sled + MB Sled)

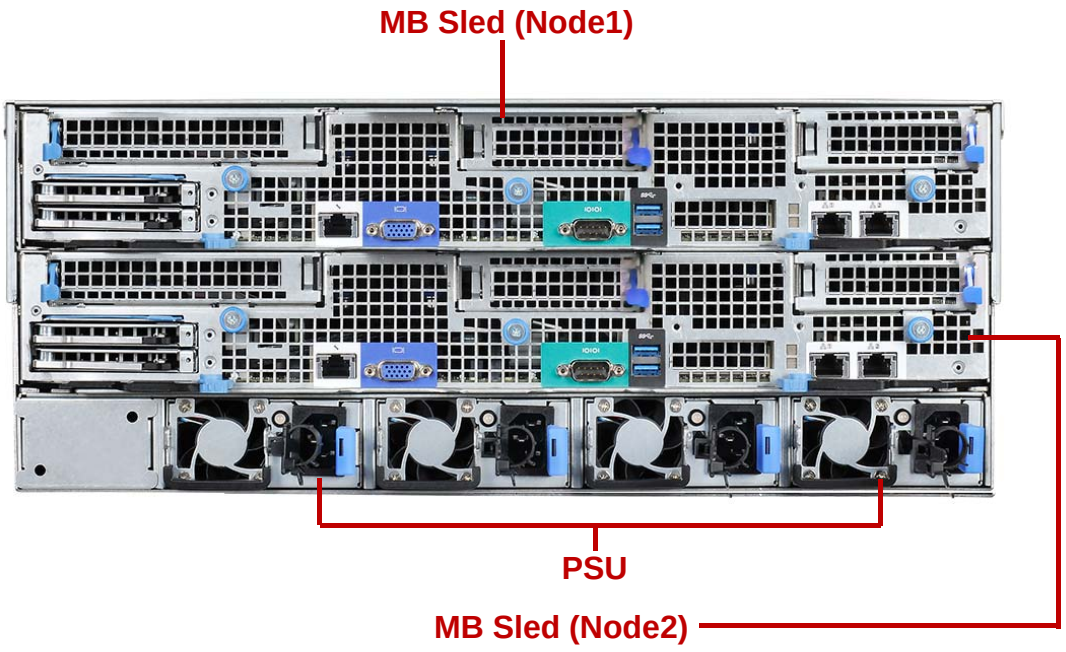


Figure 1-4. Rear View (MB Sled + MB Sled)

Rear HDD Sled

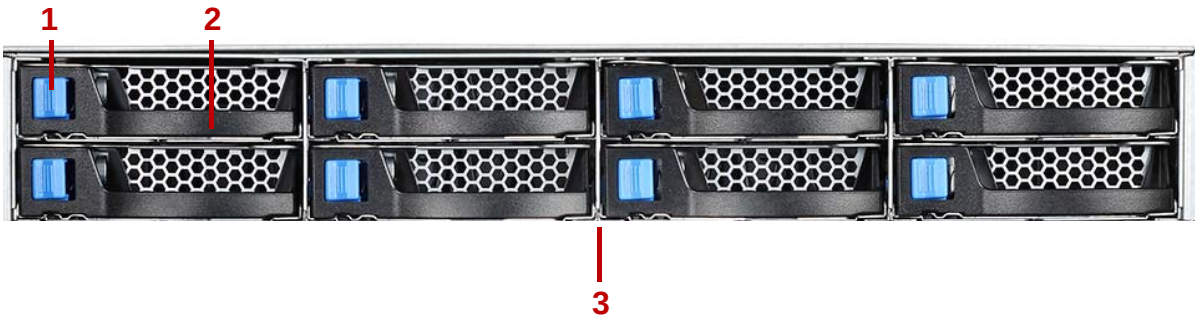


Figure 1-5. Rear HDD Sled

Table 4: System Rear View

NO.	FEATURE	DESCRIPTION
1	Release Button	Press to release the HDD carrier
2	Handle of HDD carrier	Press the release button and hold the handle of the HDD carrier. Pull out from the Rear HDD Sled chassis
3	Handle of Rear HDD Sled	Hold to pull the Rear HDD Sled out from the system chassis

CAUTION!

HDD MODULES ARE HOT TO THE TOUCH WHEN REMOVED FROM THE SYSTEM. PROTECTIVE GEAR IS RECOMMENDED TO PREVENT PERSONAL INJURY OR DAMAGE TO THE HARDWARE.

MB Sled

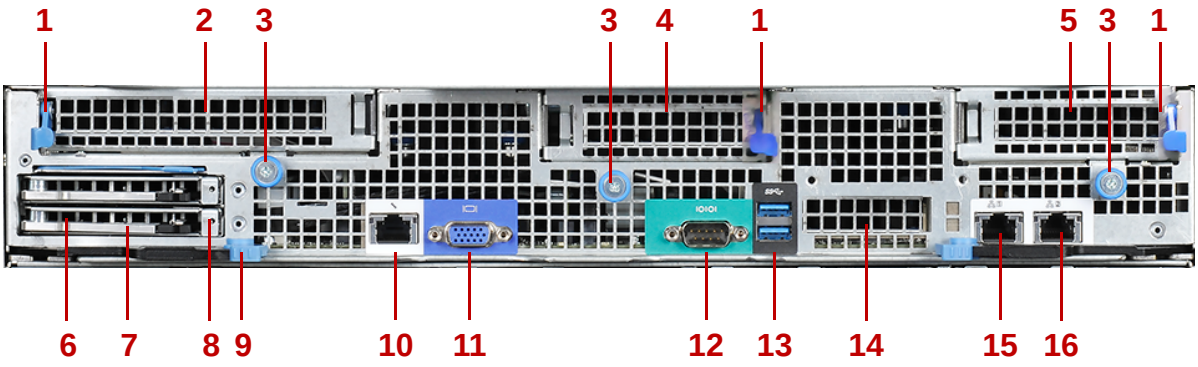


Figure 1-6. MB Sled

Table 5: MB Sled I/O Defintition

NO.	NAME	DESCRIPTION
1	Tool-less expansion slot secure lock	Secure the bracket of PCIe Card in the riser bracket assembly firmly with tool-less design
2	Expansion slot 3	Supports PCIe Gen3 x16, Full-Height, Half-Length expansion card

Table 5: MB Sled I/O Defintition (Continued)

NO.	NAME	DESCRIPTION
3	Thumb screw	Secure the riser bracket assembly to MB sled
4	Expansion slot 2	Supports PCIe Gen3 x16, Low Profile expansion card or Quanta SAS mezzanine card
5	Expansion slot 3	Supports PCIe Gen3 x8, Low Profile expansion card
6	SSD tray	Supports 7mm 2.5" SATA SSD x2
7	SSD carrier handle	Press to release the lock of SSD carrier handle, hold the handle and pull the carrier out from the SSD tray
8	SSD Status LED	Displays the status of SSD
9	MB sled release latch	x2 release latches to secure the MB sled tray to system chassis; press to release the latches and hold the handle then pull the MB sled out from the system chassis
10	Dedicated NIC	Dedicated GbE RJ45 connector
11	VGA connector	Maximum display resolution: 1920x1200 32bpp@60Hz (reduced blanking)
12	COM port A	DB9 port (Serial_A) for debug or terminal concentrator
13	USB port	2x USB 3.0 ports
14	OCP mezz slot	Supports PCIe Gen3 x16, OCP mezzanine card
15	NIC1	GbE RJ45 connector
16	NIC2	GbE RJ45 connector

Power Sub-System

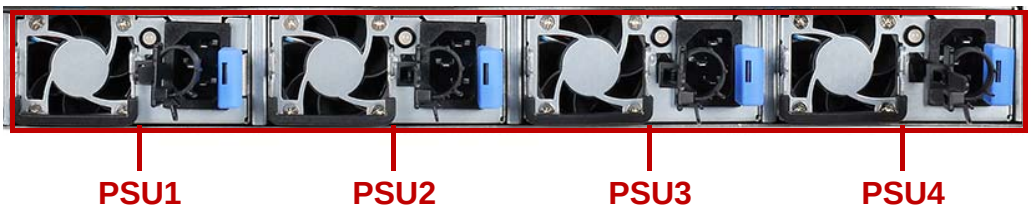


Figure 1-7. PSU to System Module Description

Four power supply units are supplied in the system. 2+2 PSUs are available for redundacy functionality.

Table 6: Power Supply Units by Model

PSU	AC INPUT
2+2 High efficiency 1200 W redundant hot-plug PSU	100-240Vac, 12A-8A, 50/60Hz

Component Placement (1 Motherboard Sled + 1 Motherboard Sled SKU)

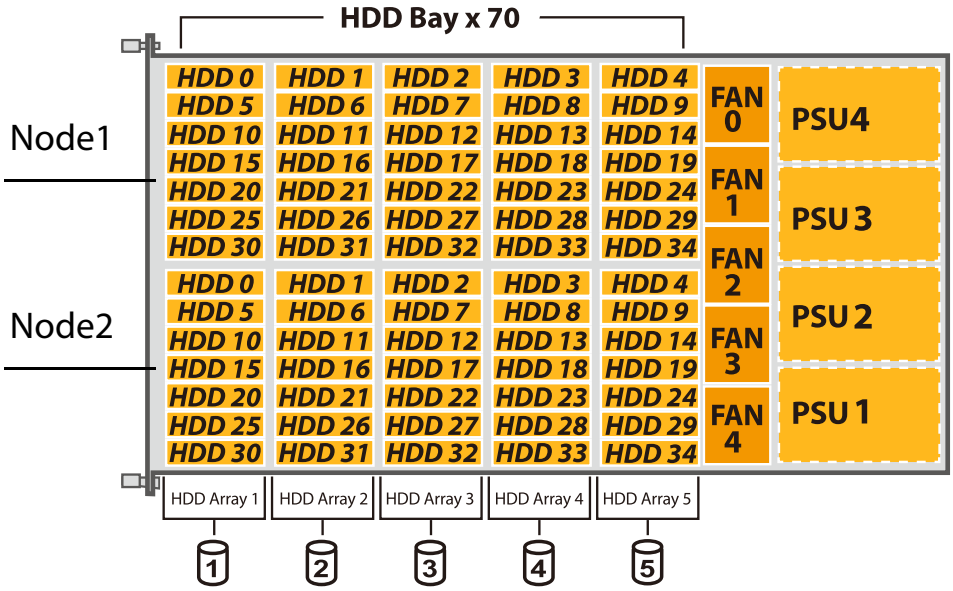


Figure 1-8. Component Placement Schema

Component Placement (1 Rear HDD Sled + 1 Motherboard Sled SKU)

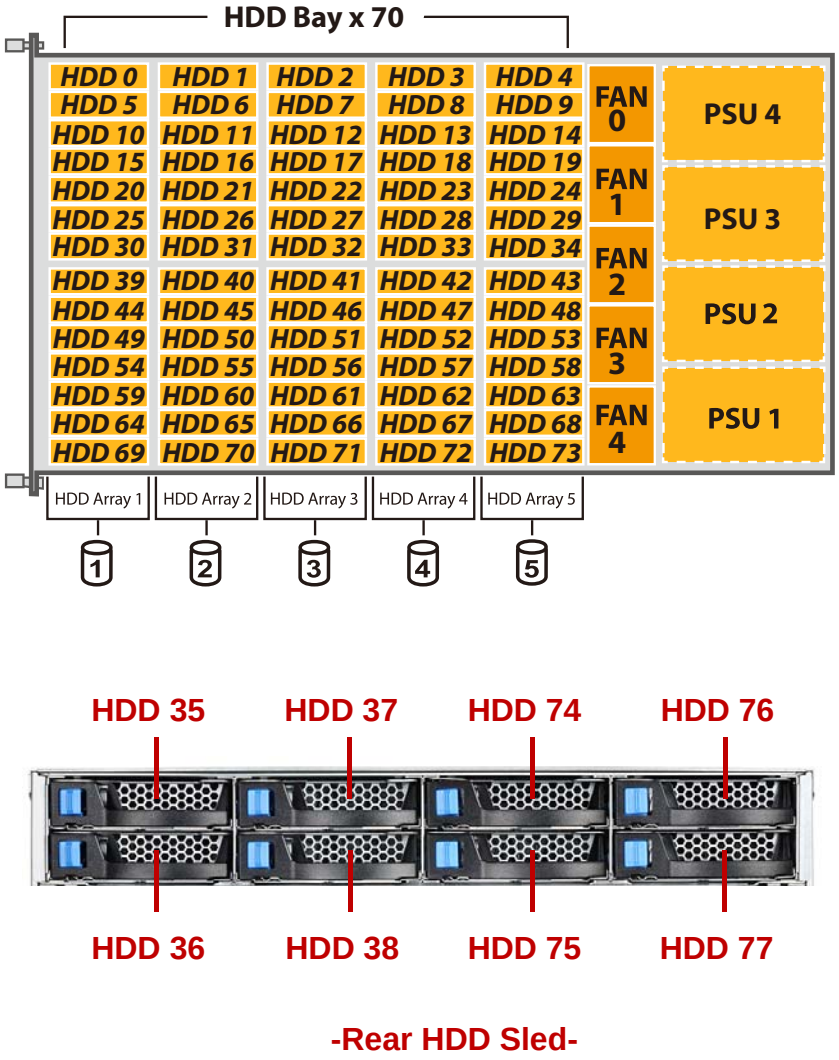


Figure 1-9. Component Placement Schema

HDD Partiton Informaton for Motherboard Sled + Motherboard Sled SKU.

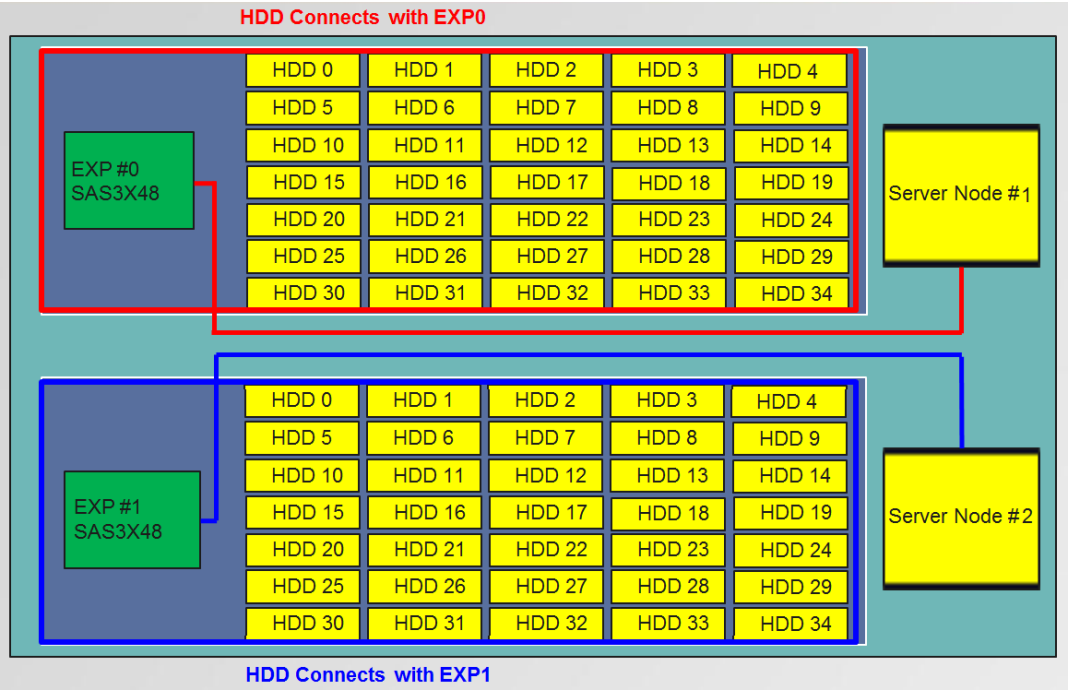


Figure 1-10. HDD Partition Information for Motherboard Sled + Motherboard Sled SKU

LED Status Definitions

Operator Panel LED

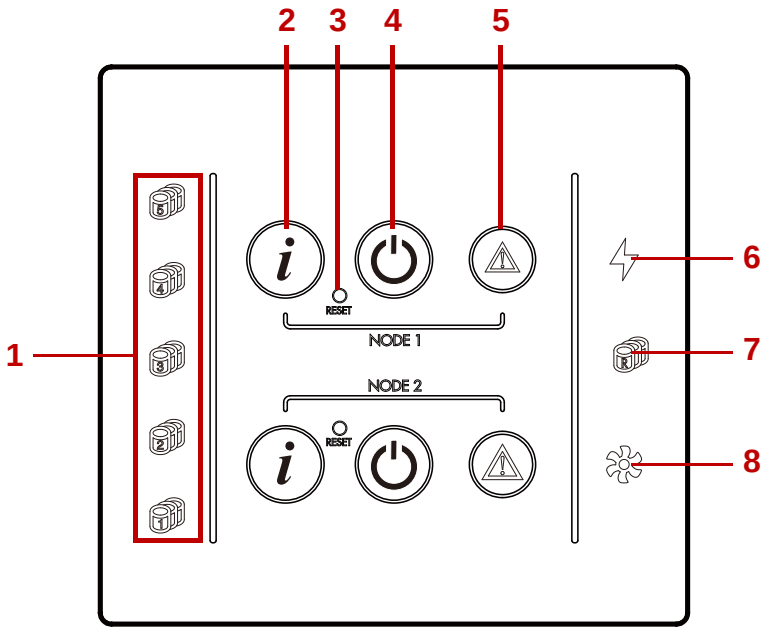


Figure 1-11. Operator Panel LEDs

Table 7: 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 array status	Amber	On	HDD Row# failed
		Off	HDD Row# good
PSU status LED	Amber	On	PSU failed
		Off	PSU good

Table 7: Front Control Panel LED Behavior (Continued)

NAME	COLOR	CONDITION	DESCRIPTION
Rear HDD status LED	Amber	On	Rear HDD failed
		Off	Rear HDD good
Fan Status LED	Amber	On	Fan failed
		Off	Fan good

LAN LED

The system mainboard includes an optional dual GbE network with GbE 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.

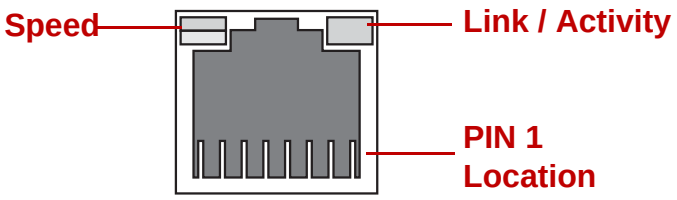


Figure 1-12. RJ45 LAN Connector

Table 8: RJ45 LED Description

CONDITION	SPEED	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

Top Access HDD LED

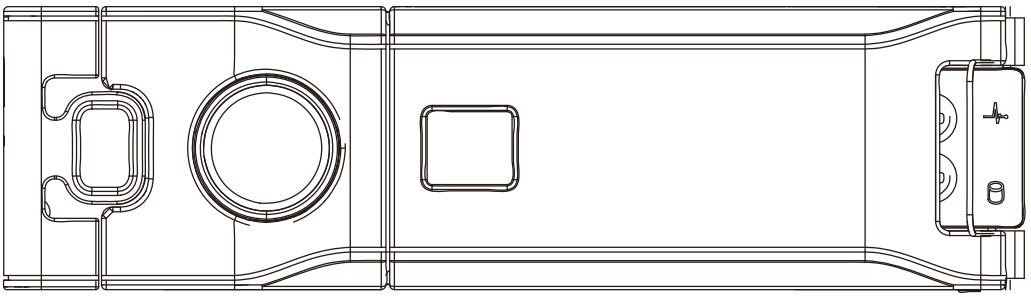


Figure 1-13. Top Access HDD LED

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

Table 9: HDD LED Status Behavior

ICON	NAME	COLOR	CONDITION	DESCRIPTION
	HDD Status	Blue	On	Drive is online
		Blue (Blinking)	Twice per second	Identification
			Once per second	Rebuilding
	HDD Fault	Amber	On	HDD failure
	HDD Activity	Blue	Blinking	HDD access is active
			Off	No access

WARNING!

Pinching injuries: Do not touch the edge of HDD when closing the mounting bracket.

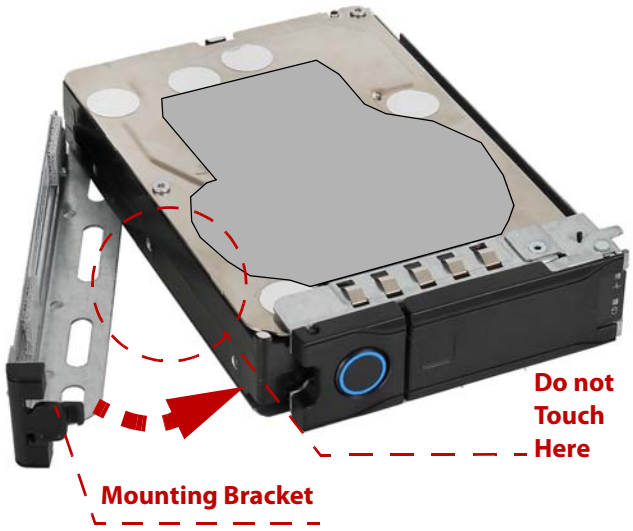


Figure 1-14. Top Access HDD carrier

Rear Access HDD LED

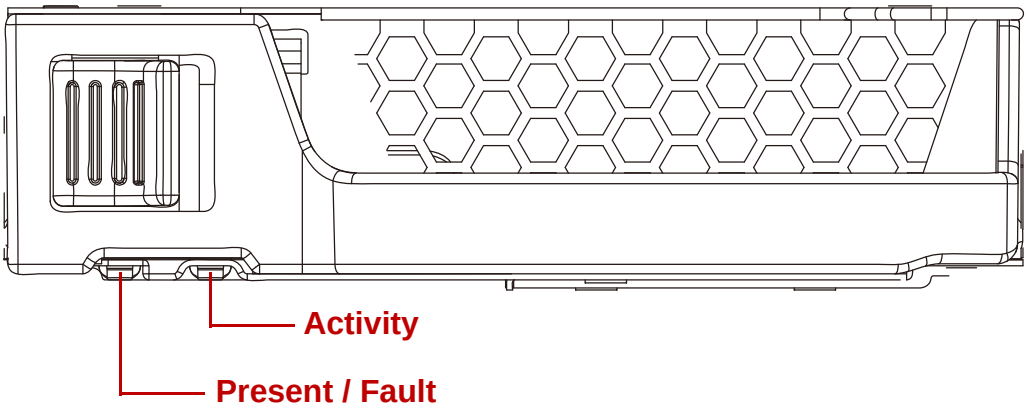


Figure 1-15. Rear Access HDD LED

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

Table 10: HDD LED Status Behavior

NAME	COLOR	CONDITION	DESCRIPTION
HDD Status	Blue	On	Drive is online
	Blue Blinking	Twice per second	Identification
		Once per second	Rebuilding
HDD Fault	Amber	On	HDD failure
HDD Activity	Blue	On	HDD access is active
		Off	No access

WARNING!

HDD modules are hot to touch when removed from the system. Protective gear is recommended to prevent personal injury or damage to the hardware.

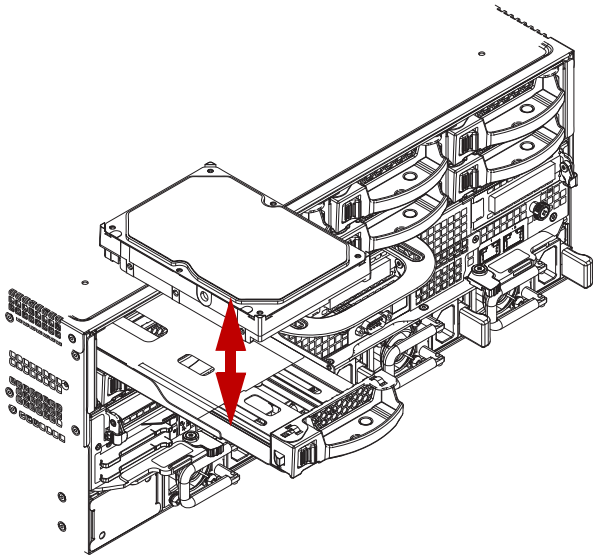


Figure 1-16. Rear Access HDD carrier

2.5" SATA SSD (7mm) in MB Sled

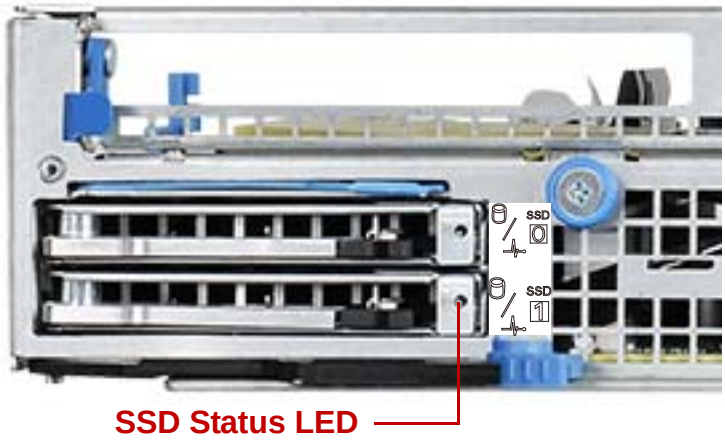


Figure 1-17. Rear Access HDD LED

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

Table 11: SSD LED Status Behavior

ICON	COLOR	CONDITION	DESCRIPTION
SSD 0	Blue	On	Drive is online and access is active
SSD 1	Amber	On	Drive is online and SSD failure

Fan module LED

There are four 8056 and one 6056 dual-rotor fan modules in the fan cage to cool down the system. It features 9+1 redundancy to support this system.

Figure 1-18. Fan module LED

The following LED behavior table represents LED condition when a fan module is installed and system is power on.

Table 12: Fan LED Status Behavior

COLOR	CONDITION	DESCRIPTION
Amber	On	Fan failed
	Off	Fan good

PSU LED

There are 2+2 power supply units supplied in the system. 2+2 PSUs are available for redundacy functionality.PSUs four 8056 and one 6056 fan modules in the fan cage to cool down the system.

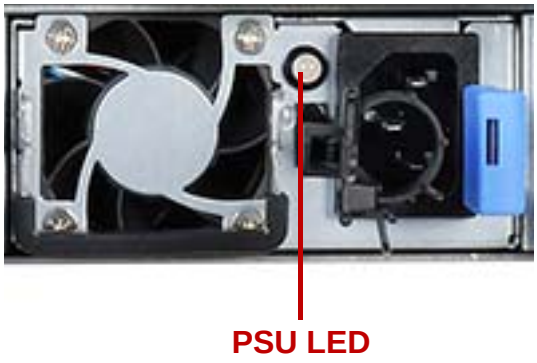


Figure 1-19. PSU LED

The following LED behavior table represents LED condition when a PSU module is installed and system is power on.

Table 13: Fan LED Status Behavior

COLOR	CONDITION	DESCRIPTION
Amber	On	PSU failed
Green	On	PSU good

Regulatory and Compliance Information

Chapter 2

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

Server Safety Information

To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this document and observe all warnings and precautions in this guide before installing or maintaining your server product.

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

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

You must adhere to the guidelines in this guide and the assembly instructions in your server manuals 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.

Safety Warnings and Cautions

To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following safety instructions and information. The following safety symbols may be used throughout the documentation and may be marked on the product and / or the product packaging.

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.
	Indicates to unplug all AC power cord(s) to disconnect AC power.
	Please recycle battery.
	The rail racks are designed to carry only the weight of the server system. Do not use rail-mounted equipment as a workspace. Do not place additional load onto any rail-mounted equipment.
	Indicates four or more people are required to safely handle the system.

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 supply cord(s), because they serve as the product's main power disconnect.
- Provided with either two independent AC power sources or two independent phases from a s single source.

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.

Power and Electrical Warnings

Caution: The power button, indicated by the stand-by power marking, DOES NOT completely turn off the system AC power, 5V standby power is active whenever the system is plugged in. To remove power from system, you must unplug the AC power cord from the wall outlet. Your system may use more than one AC power cord. Make sure all AC power cords are unplugged. Make sure the AC power cord(s) is / are unplugged before you open the chassis, or add or remove any non hot-plug components.

Do not attempt to modify or use an AC power cord if it is not the exact type required. A separate AC cord is required for each system power supply.

Some power supplies in servers use Neutral Pole Fusing. To avoid risk of shock use caution when working with power supplies that use Neutral Pole Fusing.

The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.

When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the server.

To avoid risk of electric shock, turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it.

Power Cord Warnings

If an AC power cord was not provided with your product, purchase one that is approved for use in your country.

Caution: To avoid electrical shock or fire, check the power cord(s) that will be used with the product as follows:

- *Do not attempt to modify or use the AC power cord(s) if they are not the exact type required to fit into the grounded electrical outlets.*
- *The power cord(s) must meet the following criteria:*
  - *The power cord must have an electrical rating that is greater than that of the electrical current rating marked on the product.*
  - *The power cord must have safety ground pin or contact that is suitable for the electrical outlet.*
  - *The power supply cord(s) is / are the main disconnect device to AC power. The socket outlet(s) must be near the equipment and readily accessible for disconnection.*
  - *The power supply cord(s) must be plugged into socket-outlet(s) that is /are provided with a suitable earth ground.*

System Access Warnings

Caution: To avoid personal injury or property damage, the following safety instructions apply whenever accessing the inside of the product:

- *Turn off all peripheral devices connected to this product.*
- *Turn off the system by pressing the power button to off.*
- *Disconnect the AC power by unplugging all AC power cords from the system or wall outlet.*
- *Disconnect all cables and telecommunication lines that are connected to the system.*
- *Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.*
- *Do not access the inside of the power supply. There are no serviceable parts in the power supply. Return to manufacturer for servicing.*
- *Power down the server and disconnect all power cords before adding or replacing any non hot-plug component.*
- *When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing the power supply from the server.*

Caution: If the server has been running, any installed processor(s) and heat sink(s) may be hot.

Unless you are adding or removing a hot-plug component, allow the system to cool before opening the covers. To avoid the possibility of coming into contact with hot component(s) during a hot-plug installation, be careful when removing or installing the hot-plug component(s).

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

Note: *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 a server 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 server(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 (Tma) 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 overcurrent 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 antistatic 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. 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.

Other Hazards

Battery Replacement

Caution: There is the danger of explosion if the battery is incorrectly replaced. When replacing the battery, use only the battery recommended by the equipment manufacturer.

Dispose of batteries according to local ordinances and regulations.

Do not attempt to recharge a battery.

Do not attempt to disassemble, puncture, or otherwise damage a battery.

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 installed. Operating the system without the covers in place can damage system parts. To install the covers:

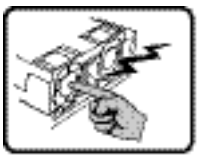
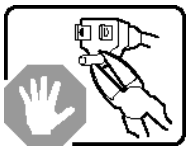
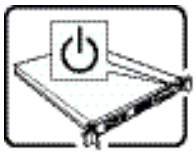
- *Check first to make sure you have not left loose tools or parts inside the system.*
- *Check that cables, add-in cards, and other components are properly installed.*
- *Attach the covers to the chassis according to the product instructions.*

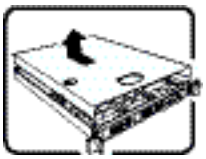
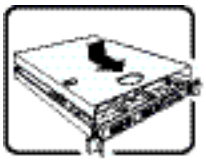
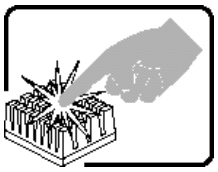
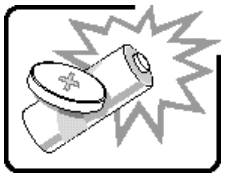
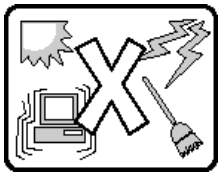
Laser Peripherals or Devices

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 have are not serviceable*
- *Return to manufacturer for servicing*

Use certified Optical Fiber Transceiver Class I Laser Product

	The power supply in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.
	Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.
	The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply. The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.
	SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps: 1. Turn off all peripheral devices connected to the system. 2. Turn off the system by pressing the power button. 3. Unplug all AC power cords from the system or from wall outlets. 4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system. 5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system-any unpainted metal surface-when handling components. 6. Do not operate the system with the chassis covers removed.

	After you have completed the six SAFETY steps above, you can remove the system covers. To do this: 1. Unlock and remove the padlock from the back of the system if a padlock has been installed. 2. Remove and save all screws from the covers. 3. Remove the cover(s).
	For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers: 1. Check first to make sure you have not left loose tools or parts inside the system. 2. Check that cables, add-in cards, and other components are properly installed. 3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly. 4. Insert and lock the padlock to the system to prevent unauthorized access inside the system. 5. Connect all external cables and the AC power cord(s) to the system.
	A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.
	Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.
	The system is designed to operate in a typical office environment. Choose a site that is: • 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 supply cord(s), because they serve as the product's main power disconnect.

	The rail racks are designed to carry only the weight of the server system. Do not use rail-mounted equipment as a workspace. Do not place additional load onto any rail-mounted equipment.
	Heavy object. Indicates four or more people are required to safely handle the system.

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Product Regulatory Compliance Markings

Regulatory Compliance	Region	Marking
cULus Listing Mark	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.
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	
Recycling Package Mark	Other than China	
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.
RCM	Australia	

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 product.

警告使用者：
此為甲類資訊技術設備，於居住環境中使用時，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:

A 급 기기(업무용 정보통신기기)
이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며,
만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

English translation of the notice above:

“A” class equipment (info / technology equipment for business purpose)

As this equipment has undergone EMC registration for business purpose, the seller and/or the buyer is asked to beware of this point and in case a wrongful sale or purchase has been made, it is asked that a change to household use be made.

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.