Site Requirements Document

4U60 Storage Enclosure G460-J-12 November 2015

1ET0164

Revision 1.1

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Contents

Revision History

Date	Revision	Comment
October 2015	Revision 1.0	Initial version
November 2015	Revision 1.1	Updates to content

1 Document Summary

Topics:

- Scope
- Intended Audience
- References

The following chapter defines the *scope*, *intended audience*, and *references* related to the 4U60 Storage Enclosure Site Requirements Document.

1.1 Scope

The following document provides the site specific requirements necessary to install the .

1.2 Intended Audience

The following document is intended for users that require a better understanding of the site requirements involved in the delivery, unpacking, inspection, and care of the 4U60 Storage Enclosure.

1.3 References

- *Installation Guide*
- *Site Survey*

2 For More Information

Topics:

- Points of Contact

The following chapter identifies the contact information for support on the 4U60 Storage Enclosure.

2.1 Points of Contact

For further assistance with an HGST product, contact Cloud Infrastructure Business Unit (CIBU) support. Please be prepared to provide the following information: Serial Number (S/N), product name, model number, and a brief description of the issue.

Telephone:

Region	Telephone Numbers	Support Hours and Additional Information
United States/International	1-408-717-7766	24 hours a day, 7 days a week
North America	1-844-717-7766	24 hours a day, 7 days a week Toll-free

Email:
support@hgst.com

Website:
www.hgst.com/support

3 Disclaimers

Topics:

The following chapter describes the Regulatory Statement of Compliance, Safety Compliance, and Electromagnetic Compatibility Agency Requirements for the 4U60 Storage Enclosure.

3.1 Regulatory Statement

Product Name: **4U60 Storage Enclosure**
Regulatory Model: **G460-J-12**
Electromagnetic Compatibility Emissions: **Class A**

This product has been tested and evaluated as Information Technology Equipment (ITE) at accredited third-party laboratories for all safety, emissions and immunity testing required for the countries and regions where the product is marketed and sold. The product has been verified as compliant with the latest applicable standards, regulations and directives for those regions/countries. The suitability of this product for other product categories other than ITE, may require further evaluation.

The product is labeled with a unique regulatory model and regulatory type that is printed on the label and affixed to every unit. The label will provide traceability to the regulatory approvals listed in this document. The document applies to any product that bears the regulatory model and type names including marketing names other than those listed in this document.

3.1.1 Restricted Access Location

The HGST 4U60 Storage Enclosure is intended for installation in a server room or computer room where at least one of the following conditions apply:

• access can only be gained by **service persons** or by **users** who have been instructed about the restrictions applied to the location and about any precautions that shall be taken and/or

• 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.

3.1.2 Safety Compliance

The following table outlines how the 4U60 Storage Enclosure is designed to pass the product safety requirements:

Country/Region	Authority or Mark	Standard	Status
Australia/New Zealand	CB report, CB certificate	AS/NZS 60950.1	TBD
Canada/North America	NRTL	CSA C22.22 No. 60950-1-07	In Progress
Customs Union/Russia, Kazakhstan, Belarus, Armenia	EAC	TR CU 004/2011	TBD
European Union	CE	EN 60950-1	In Progress
International		IEC60950, CB report and Certificate to include all country national deviations	In Progress
United States/North America	NRTL	UL 60950-1	TBD

Country/Region	Authority or Mark	Standard	Status
Mexico	NYCE or NOM	NOM-019-SCFI-1998	TBD
Brazil	INMETRO	IEC 60950-1	TBD
Taiwan	BSMI	CNS14336	TBD
Ukraine	UKrTEST or equivalent	4467-1:2005	TBD
Moldova	INSM	SM SR EN60950-1	TBD
Serbia	KVALITET	SRPS EN60950:2010	TBD
India	BIS	IS 13252 (Part 1):2010	TBD

Table 1: Product Safety Compliance

3.1.3 Electromagnetic Compatibility Agency Requirements

The following table outlines how the 4U60 Storage Enclosure is being designed to comply with the Electromagnetic Compatibility agency requirements:

Country/Region	Authority or Mark	Standard	Status
Australia/New Zealand	C-tick or A-tick	AS/NZS CISPR22	In Progress
Canada/North America	Industry Canada	ICES-003	In Progress
Customs Union/Russia, Kazakhstan, Belarus, Armenia	EAC	TR CU 020/2011	In Progress
European Union	CE	EN55022, EN55024 including EN61000-3-2, EN61000-3-3	In Progress
International		CISPR22, CISPR24	In Progress
Japan	VCCI	V-3:2014	In Progress
United States/North America	FCC	FCC Part 15	In Progress
Taiwan	BSMI	CNS13438	In Progress
Korea	MSIP	KN22, KN24	In Progress
Ukraine	UKrTEST or equivalent	4467-1:2005	In Progress
Serbia	KVALITET	CISPR22	In Progress
Brazil	INMETRO		In Progress

Table 2: Product Electromagnetic Compatibility/Immunity Compliance

4 Safety and Regulatory

Topics:

The following chapter provides safety and regulatory information for the 4U60 Storage Enclosure.

4.1 Optimizing Location

Failure to recognize the importance of optimally locating your product and failure to protect against electrostatic discharge (ESD) when handling your product can result in lowered system performance or system failure.

Do not position the unit in an environment that has extreme high temperatures or extreme low temperatures. Be aware of the proximity of the unit to heaters, radiators, and air conditioners.

Position the unit so that there is adequate space around it for proper cooling and ventilation. Consult the product documentation for spacing information.

Keep the unit away from direct strong magnetic fields, excessive dust, and electronic/electrical equipment that generate electrical noise.

4.2 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 do not touch fan blades, may result in injury.

Indicates disconnect all power sources before servicing.

4.3 Electrostatic Discharge

⚠ **CAUTION**

Electrostatic discharge can harm delicate components inside HGST products.

Electrostatic discharge (ESD) is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures.

Wear an ESD wrist strap for installation, service and maintenance to prevent damage to components in the product. Ensure the antistatic wrist strap is attached to a chassis ground (any unpainted metal surface). If possible, keep one hand on the frame when you install or remove an ESD-sensitive part.

Before moving ESD-sensitive parts place them in ESD static-protective bags until you are ready to install the part.

4.4 Rackmountable Systems

CAUTION

Always install rack rails and storage enclosure according to 4U60 Storage Enclosure product documentation. Follow all cautions, warnings, labels, and instructions provided within the rackmount instructions.

Reliable earthing of rack-mounted equipment should be maintained.

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.

Observe the maximum rated ambient temperature, which is specified in the product documentation.

For safe operation of the equipment, installation of the equipment in a rack should be such that the amount of air flow is not impeded so that the safe operation of the equipment is not compromised.

4.5 Power Connections

Be aware of the ampere limit on any power supply or extension cables being used. The total ampere rating being pulled on a circuit by all devices combined should not exceed 80% of the maximum limit for the circuit.

CAUTION   The power outlet must be easily accessible close to the unit.

⚠ Always use properly grounded, unmodified electrical outlets and cables. Ensure all outlets and cables are rated to supply the proper voltage and current.

⚡ This unit has more than one power supply connection; both power cords must be removed from the power supplies to completely remove power from the unit. There is no switch or other disconnect device.

4.6 Power Cords

⚠ Use only tested and approved power cords to connect to properly grounded power outlets or insulated sockets of the rack's internal power supply.

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

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

- The power cord must have an electrical rating that is greater than that of the electrical current rating marked on the product.
- 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 supply cord(s) must be plugged into socket-outlet(s) that is /are provided with a suitable earth ground.
- 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.

4.7 Safety and Service

⚠ All maintenance and service actions appropriate to the end-users are described in the product documentation. All other servicing should be referred to a HGST-authorized service technician.

⚠⚡ To avoid shock hazard, turn off power to the unit by unplugging both power cords before servicing the unit. Use extreme caution around the chassis because potentially harmful voltages are present.

⚡ When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the 4U60 Storage Enclosure.

⚡ 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.

⚠⚡🚫 Use caution when accessing part of the product that are labeled as potential shock hazards, hazardous access to moving parts such as fan blades or caution labels.

5 HGST Regulatory Statements

Topics:

The following chapter provides regulatory statements for the 4U60 Storage Enclosure.

HGST Storage Enclosures are marked to indicate compliance to various country and regional standards.

> **Note:** *Potential equipment damage:* Operation of this equipment with cables that are not properly shielded and not correctly grounded may cause interference to other electronic equipment and result in violation of Class A legal requirements. Changes or modifications to this equipment that are not expressly approved in advance by HGST will void the warranty. In addition, changes or modifications to this equipment might cause it to create harmful interference.

5.1 FCC Class A Notice

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

> **Note:** 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 it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Any modifications made to this device that are not approved by HGST may void the authority granted to the user by the FCC to operate equipment.

5.2 FCC Verification Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

> **Note:** 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 and can radiate radio frequency energy, and if not installed and used in accordance with the 4U60 Storage Enclosure User Guide, it may cause harmful interference to radio communications.

5.3 ICES-003 Class A Notice—Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numerique de la classe A est conforme à la norme NMB-003 du Canada.

5.4 CE Notices (European Union), Class A ITE

Marking by the symbol indicates compliance of this system to the applicable Council Directives of the European Union, including the Electromagnetic Compatibility Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC). A "Declaration of Conformity" in accordance with the applicable directives has been made and is on file at HGST Europe.

5.5 Europe (CE Declaration of Conformity)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadian des Communications.

5.6 Japanese Compliance Statement, Class A ITE

The following Japanese compliance statement pertains to VCCI EMI regulations:

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:

This is a Class A product based on the Technical Requirement of the Voluntary Control Council for Interference by Information Technology (VCCI). In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective actions.

5.7 Taiwan Warning Label Statement, Class A ITE

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。

English translation:

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.

5.8 KCC Notice (Republic of Korea Only), Class A ITE

기 종 별	사 용 자 안 내 문
A급 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:

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you may exchange it for a non-business device.

6 Site Preparation Specifications

Topics:

The following chapter provides the preparation specifications for the 4U60 Storage Enclosure.

6.1 Dock Delivery

During a dock delivery, if the facility does not have a dock, they are required to schedule a delivery truck that contains a lift gate.

6.2 Ramp Delivery

During a ramp delivery, it is important to have some additional assistance in moving the enclosure on the pallet jack until it is on level flooring.

7 Tools and Hardware

Topics:

- Required Equipment for Installation

The following chapter provides information on tools and hardware that will be needed for shipping the 4U60 Storage Enclosure.

7.1 Required Equipment for Installation

Before you begin the installation, ensure that you have the following items:

- Number 2 Phillips-head screwdriver with torque measuring capabilities

  Note: A 8-inch to 12-inch long screwdriver is recommended for the install of the rail kit.

- Level

- ESD wrist strap or other grounding device
- Antistatic mat or antistatic foam

8 Unpacking the 4U60 Storage Enclosure

Topics:

The following chapter will provide a instructions on how to unpack the 4U60 Storage Enclosure.

8.1 Requirements for Unpacking the 4U60 Storage Enclosure

To unpack the 4U60 Storage Enclosure you are required to have one of the following:

- Proper lifting equipment, such as:
  - Lifting straps
  - Enclosure lifting jack
- Three additional persons

> **Warning:** Heavy Object. To avoid muscle strain or back injury, use lifting aids and proper lifting techniques when removing or replacing. Please refer to OSHA standards as necessary.

If you are unable to meet any of the lift requirements, you must uninstall the hard disk drives from the 4U60 Storage Enclosure before installing into a rack. If you have to uninstall the hard disk drives, please refer to: (Optional) Uninstalling the Hard Disk Drives

.

8.2 Inspecting the 4U60 Storage Enclosure

Do not unpack the enclosure until you are ready to install it. If the final installation site will not be ready for some time, keep the enclosure in its shipping container to prevent accidental damage.

When you unpack the shipping container, check the Hardware Checklist to ensure that you received all the required items.

Inspect all items for shipping damage. If anything appears to be damaged, or if you encounter problems installing your enclosure, refer to the Points of Contact on page 8 to contact Cloud Infrastructure Business Unit customer service.

For safety and regulatory information, see the Safety and Regulatory on page 11 section.

9 Installing the 4U60 Storage Enclosure Hardware

Topics:

The following chapter provides instruction on how to install the 4U60 Storage Enclosure.

9.1 Installing the 4U60 Storage Enclosure

For instructions on installing the 4U60 Storage Enclosure, refer to the *Installation Guide*.

10 Inspecting the 4U60 Storage Enclosure

Topics:

The following chapter provides instruction on how to inspect the 4U60 Storage Enclosure.

- Inspecting the Enclosure

10.1 Inspecting the Enclosure

Do not unpack the enclosure until you are ready to install it. If the final installation site will not be ready for some time, keep the enclosure in its shipping container to prevent accidental damage.

When you unpack the shipping container, check the Hardware Checklist to ensure that you received all of the required items.

Inspect all of the items for shipping damage. If anything appears to be damaged, or if you encounter problems installing your enclosure, refer to the Points of Contact on page 8 to contact Elastic Storage Platforms customer service.

For safety and regulatory information, see the Safety and Regulatory on page 11 section.

11 General Site Requirements

Topics:

The following chapter provides a general site requirements for the 4U60 Storage Enclosure.

11.1 Introduction

The 4U60 Storage Enclosure is a 4U, high-density Hard Disk Drive (HDD) enclosure. The enclosure is designed to house up to a full configuration of 60 Ultrastar He8 helium drives and to maximize the performance of these drives, under all operating conditions.

The system contains the following high level features:

Hardware	Details	Number of Component
4U Storage enclosure	4U rack-mounted storage enclosure with slide rail and cable management assembly	1
Canisters Slots	2U half-width SAS Expander Canister–JBOD application (12G version)	2
Power Interface Board	Connects the power supplies to the drive board	1
Drive Board	• Connects the power supplies (with integrated fans) via power interface board, drives, and ESM. • Fully compliant with SAS 3.0 specification for operation up to 12Gbps.	1
3.5-inch HDD with carrier	• **Configuration**: 60 disk drives contained within top accessible chassis. • Hot swappable	60 Ultrastar He8 helium HDDs

Hardware	Details	Number of Component
	• Two status LEDs per drive slot, Activity and Fault • Ejector handle allows for easy installation and removal of HDDs	
Power Supply Unit (PSU)	• 2U half-width dual 1+1 redundant, 1650W AC power supplies • 200 ~ 240 VAC (1650W) input, 47Hz – 63Hz • +12V and +5V outputs with +5V standby power • 2 integrated fans powered by redundant power rail • Compliant with 80 Plus efficiency Gold level • +/- 5% Voltage margin control on 5V and 12V rails • Trouble history implementation • 5v and 12v DC output at 1650W	2
Fans	• N+1 redundant cooling • any one fan can fail and the system will continue to operate	4 (2 in each PSU)

Table 3: High Level Features Specifications

11.2 Enclosure Environmental Requirements

The enclosure based upon the drive maximum environmental specifications will be designed around the following environmental requirements:

Non-operating	4U60 Storage Enclosure
Temperature	-40°C to 70°C
Temperature Gradient	30°C per hour
Temperature De-rating	1°C per 300m above 3000m
Relative Humidity	8% to 90% non-condensing
Relative Humidity Gradient	30% per hour maximum
Altitude	-300m to 12,000m de-rated 300m per 1°C above 40°C
Altitude Gradient	22860m per hour maximum

Table 4: Non-operating Environmental Requirements

Operational	4U60 Storage Enclosure
Temperature	5°C to 40°C
Temperature Gradient	20°C per hour
Temperature De-rating	1°C per 125m above 950m

Operational	4U60 Storage Enclosure
Relative Humidity	8% to 90% non-condensing
Relative Humidity Gradient	30% per hour maximum
Altitude	-300m to 3048m

Table 5: Operational Environmental Requirements

11.3 Ground Shipping

The delivery of the 4U60 Storage Enclosure through ground shipping should be accomplished by a shipping company that has the following available:

- Air ride delivery truck to reduce the amount of vibration and impact shock during transit.
- Proper strapping methods to ensure the enclosure wont shift during transit.
- Proper padding to reduce damage from other shipping units within the delivery truck.
- A lift gate.

11.3.1 Communication

All shipping company packaging questions and communications are to be coordinated through HGST Purchasing and/or Logistics. First time shipments should be audited by the shipper to verify the 4U60 Storage Enclosure product packaging conforms and does not exhibit any issues which may cause damage or delay during the shipment.

Any shipping company requiring deviation from requirements contained in this specification must receive authorization from HGST Procurement and/or Logistics.

11.4 Site Environment

The 4U60 Storage Enclosure is intended to be installed in a rack. The location of your enclosure and the layout of your equipment rack or wiring room are extremely important considerations for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels, can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to both front and rear of the enclosure.

When planning your site layout and equipment locations, remember the precautions described in the Site Configuration on page 24 section to help avoid equipment failures and reduce the possibility of environmentally caused problems. If you are currently experiencing problems or an unusually high number of errors with your existing equipment, these precautions may help you isolate the cause of the failures and prevent future problems.

11.5 Site Configuration

The following precautions will help you plan an acceptable operating environment for your enclosure and will help you avoid environmentally caused equipment failures:

- Ensure that the room where your enclosure operates has adequate air circulation. Electrical equipment generates heat. Without adequate air circulation, ambient air temperature may not cool equipment to acceptable operating temperatures.
- To avoid damage to the enclosure, always follow ESD-prevention procedures described in the Preventing Electrostatic Discharge Damage section. Damage from static discharge can cause immediate or intermittent equipment failure.
- Once the enclosure is installed in the rack, ensure that the chassis cover and module rear panels are secure. The enclosure is designed to allow cooling air to flow within it through specially designed sleds.

11.6 Airflow Consideration

The user needs to ensure both the front and rear of the 4U60 Storage Enclosure stay clear of any materials that may block or disrupt the airflow in any way. Disrupting the airflow can cause the enclosure to run the fans at an excessive RPM, and in the worst case, start to shut down the system due to an overheating event.

The following rack airflow principles should be considered for best results:

- Controlled air conditioners that are located in the facility where the enclosure will be installed.
- The airflow in and out of the equipment must not be restricted.

11.6.1 Cooling the Enclosure

The 4U60 Storage Enclosure has an advanced thermal algorithm that monitors all of the temperature sensors in the system. The enclosure makes adjustments to the fan speeds based upon the thermal sensors. The fan algorithm takes into account the component and the warning and critical threshold limits set by SES. If any temperature sensor gets to the warning limit, the fans speeds will increase to cool the component. If the critical threshold is crossed for a determinate amount of time, the system will begin to shut down components in order to prevent damage. If the enclosure encounters low temperatures, the system will reduce fan speed in an attempt to conserve power and not over-cool the enclosure.

This algorithm is agnostic to effects of altitude and humidity. The algorithm simply works based on temperatures within the system with emphasis on reducing power consumption.

11.7 Rack Requirements

The rack mount requirements are based on the 4U standards. Rack spaces are equipped to give the enclosure ample power and connectivity allowing them to perform as expected. They also provide effective airflow, cooling for the devices, and allow for easy access for routine maintenance.

The following table displays the 4U standard measurement for mounting the 4U60 Storage Enclosure:

Physical (Chassis)	
Height	6.88 inches (174.8 mm)
Width	16.69 inches (424 mm)
Depth	33.5 inches (850 mm)
Weight	198 lbs (89.81 Kg) (with drives installed)

Table 6: Physical Specifications

For proper rack installation of the 4U60 Storage Enclosure, please mount the enclosure according to the following drawing:

Figure 1: Assembly in the Rack
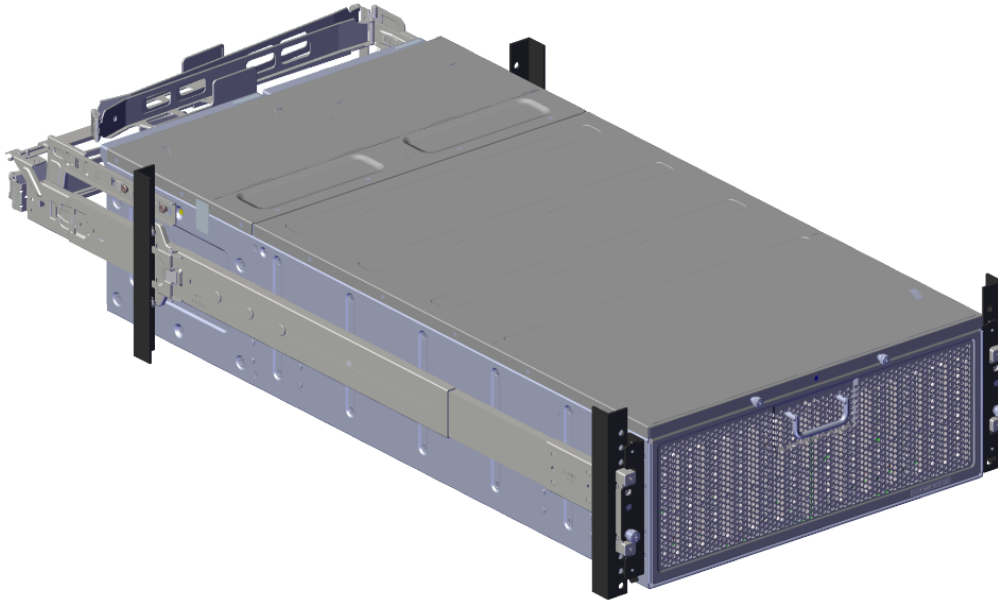
11.8 Space Requirements

The space requirements for the 4U60 Storage Enclosure are based on a 4U rackmount space. For more information, see the Rack Requirements on page 25 section.

11.9 Alternating Current Input

The following table describes the A/C Input specification for the 4U60 Storage Enclosure enclosure.

Power	
Alternating Current (AC) Power Supply (per power supply, 2 total)	
Wattage	1650W 80 + Gold rated
Voltage	200–240VAC (1650W max), auto-ranging, 50/60 Hz
Maximum inrush current	After AC power is applied to the power supply, any initial inrush current surge or spike of **10** milliseconds or less must not exceed **45** amps peak.

Table 7: Power Specifications

11.10 Power Cord Specification

HGST products are provided with the power cord and user documentation suitable for the intended country of delivery. If a power cord is not provided, purchase an approved set for use in your country. Products that are relocated to other countries should use nationally certified power cords and plugs to ensure safe operation of the product.

The following table describes the power cord specifications for the 4U60 Storage Enclosure:

Location	Specifications (V, A, length)	Part Number
North America Guidelines	125V, 15A, 6 feet	NEMA 5-15/C13
International Guidelines	250V, 10A, 2 Meters	IEC6320 C13/C14

Table 8: Power Cord Specifications

Note: Country and region-specific power cord options are available, for assistance please contact your local HGST office. For contact information, see: Points of Contact on page 8.

11.11 Serial Attached SCSI Cable Specification

The SAS cables allow for the drives to communicate bidirectionally with the server. The flexibility of SAS facilitates system-level configurations such as, the flexibility of SAS facilitates system level connection to HBAs and RAID controllers.

11.12 Host Connectivity

Connect the 4U60 Storage Enclosure to the host, using high quality miniSAS HD cables.

The following table displays the list of power cables approved by HGST:

Type	Part Number	Dimension (overmold)	Length
BIZlink Technology Inc.	BC314-BC313-1.5M-UL	C13 to C14	1.5 meters
Celestica San Jose	R0893-C0011-01	C13 to C14	1.5 meters
Well Shin Technology CO LTD	0096-0011	C13 to C14	1.5 meters

Table 9: Approved Power Cables

The following table displays the list of SAS cables approved by HGST:

Type	Part Number	Length
Elpeus HD Mini-SAS (SFF-8644) to QSFP+(SFF-8436)	SAS2-44361-2	2 meters
Elpeus HD Mini-SAS (SFF-8644) to QSFP+(SFF-8436)	SAS2-44361-3	3 meters
Elpeus HD Mini-SAS (SFF-8644) to QSFP+(SFF-8436)	SAS2-44362-5	5 meters

Table 10: Approved SAS Cables

The following table displays the list of Expansion cables approved by HGST:

Type	Part Number	Length
Elpeus SFP+(SFF-8436) to QSFP +(SFF-8436), 2m	CB22322-2	2 meters

Table 11: Expansion Cables

11.13 Identification of Assembled Enclosure

The following figure displays the major components of an assembled enclosure:

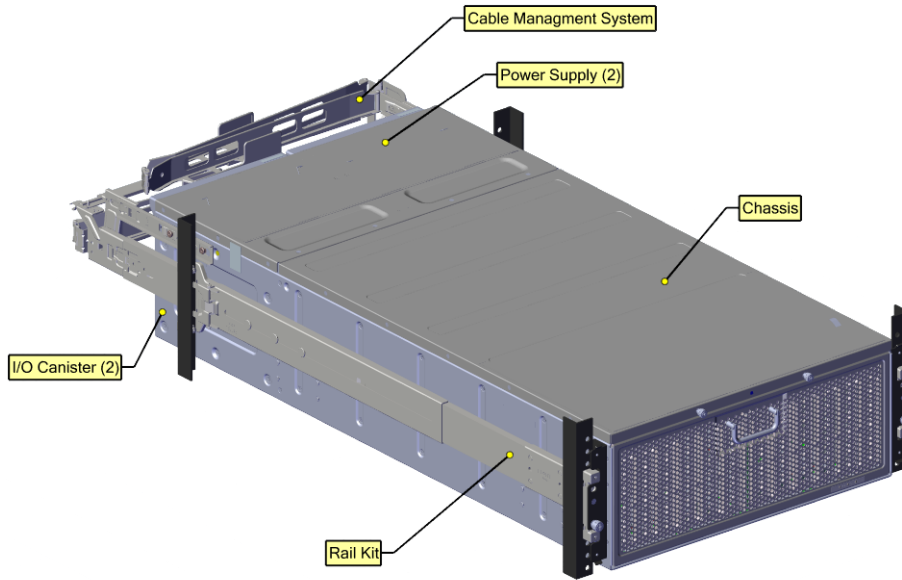**Figure 2: Identification of Assembled Enclosure**

Cable Managment System

Power Supply (2)

Chassis

I/O Canister (2)

Rail Kit

Figure 3: Identification of Assembled Enclosure (Rear)
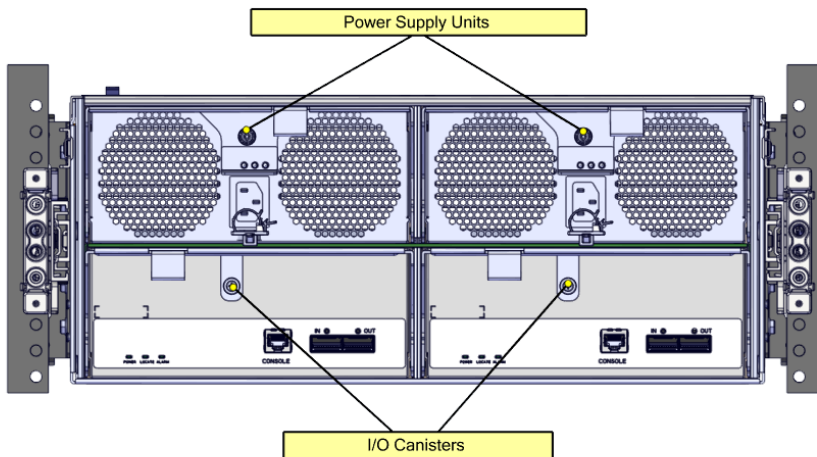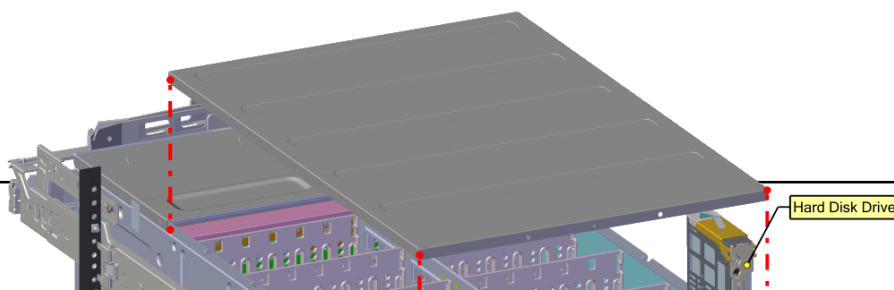

Power Supply Units

I/O Canisters

Figure 4: Identification of Assembled Enclosure (Hard Drive Assembly)

Hard Disk Drive

11.14 Site Inspection Checklist

The following checklist is intended to be used for inspection of the enclosure:

No.		Yes	No	Comment or Date
Facility				
1.	Is floor protection available for delivery?			
Server Room				
2.	Is there adequate space for maintenance needs? **Note:** For more information, see: Rack Requirements on page 25.			
3.	Is access to the site or server room restricted?			
4.	Is there and A/C outlet near the installation area for servicing needs?			
5.	Are there channels or cutouts for cable routing?			
6.	Are customer supplied cables available and of the proper type?			
Power and Lighting				
7.	Are lighting levels adequate for maintenance?			
8.	Are A/C outlets available for servicing needs? (for example, vacuuming)?			
9.	Does the input voltage correspond to equipment specifications?			
10.	Does the input frequency correspond to equipment specifications?			
11.	Is power conditioning equipment installed?			
12.	Is there a dedicated branch circuit for equipment?			
13.	Are the input circuit breakers adequate for equipment loads?			
Safety				

No.		Yes	No	Comment or Date
14.	Is there an emergency power shut-off switch?			
15.	Is a fire protection system installed in the server room?			
16.	Is antistatic flooring installed?			
17.	Do any equipment servicing hazards exist (loose ground wires, poor lighting, or others)?			
Cooling				
18.	Can cooling be maintained?			
19.	Can temperature changes be maintained according to equipment specifications?			
20.	Can humidity levels be maintained?			
21.	Are air conditioning filters installed and clean?			

Table 12: Inspection Checklist

11.15 Delivery Survey

Special instructions or recommendations should be documented. The following list gives examples of special instructions or issues:

• Packaging restrictions at the facility (for example, size and weight limitations)
• Special delivery procedures
• Special equipment required for installation (for example, tracking or hoists)
• What time the facility is available for installation (after the equipment is unloaded)
• Special security requirements applicable to the facility

Preparation for Delivery		
1.	What are the hours the facility is open for deliveries?	a.m. or p.m.?
2.	Can delivery be done during the day during normal business hours?	Yes or No
3.	Are appointments required?	Yes or No
4.	Are there any security or building access requirements?	Yes or No
5.	On what floor in building will the equipment be installed?	
6.	If equipment is not going on the first floor, is there an elevator?	Yes or No

	Note: For elevator specifics, please see the Elevator section below.	
7.	Is the path from the loading dock to the computer room or server room robust enough to support the weight of the configured system?	Yes or No

Dock Delivery

8.	Is the dock large enough for a semitrailer?	Yes or No
9.	What is the location of the dock?	North, south, east, or west
10.	What is the street name if different than company address?	

Street Delivery

11.	What is the location of the access door?	North, south, east, or west
12.	What is the street name, if different than company address? (cross street)	

13.	What is the height of access door?	
14.	What is the width of access door?	
15.	Are there any required special permits? Please list the type and agency obtained from.	

Elevator

16.	What is the capacity of the elevator?	pounds or kilograms
17.	What is the depth of the elevator?	feet or meters
18.	What is the height of the elevator?	feet or meters
19.	What is the width of the elevator?	feet or meters

Stairs

20.	How many flights of stairs are there?	
21.	What is the width of the stairwells?	feet or meters

Installation Space

22.	Is there a delivery/unpacking/staging area?	Yes or No
23.	What sort of equipment maneuvering is required to gain access?	
24.	Is there a 4U space in the rack the enclosure is being installed?	Yes or No

Table 13: Delivery Checklist

Notes:

Table 14: Additional Notes

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