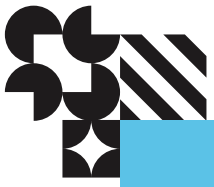

Rack Specification Document

HGST Active Archive System SA-7000

September 2015

1ET0041

Revision 1.1

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3403 Yerba Buena Road
San Jose, CA 95135
Produced in the United States

One MB is equal to one million bytes, one GB is equal to one billion bytes, one TB equals 1,000GB (one trillion bytes) and one PB equals 1,000TB when referring to storage capacity. Usable capacity will vary from the raw capacity due to object storage methodologies and other factors.

References in this publication to HGST products, programs or services do not imply that HGST intends to make these available in all countries in which HGST operates.

Product information is provided for information purposes only and does not constitute a warranty.

Information is true as of the date of publication and is subject to change. Actual results may vary. This publication is for general guidance only. Photographs may show design models.

Contents

List of Tables

1 Document Summary

Topics:

The following chapter defines the *scope*, *intended audience*, and *references* related to the Active Archive System Rack Specification.

1.1 Scope

The Active Archive System rack is a HGST designed storage appliance. HGST is responsible for the system architecture, software, and storage arrays.

1.2 References

- *Product Specification Document*
- *FRU Replacement Guide*

2 Product Overview

Topics:

This chapter provides a product overview of the Active Archive System.

2.1 Introduction

The Active Archive System is a unit that is vertically integrated with object storage software, networking, servers and storage in an industry standard 42U rack.

The Active Archive System is comprised of the following major components, all of which have a number of replaceable units:

- Storage Interconnect
- Controller Nodes
- Storage Nodes
- Storage Interconnect
- Power Distribution Units (PDUs)
- Storage Enclosure Basic Storage Arrays

Note: In addition to the major components, the system includes the rack, cables, rack panels, hardware, labels, power cords, and sleds.

3 For More Information

Topics:

This chapter provides points of contact for the Active Archive System.

3.1 Points of Contact

For further assistance with the Active Archive System, contact Elastic Storage Platforms 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

4 Cabinet

Topics:

The following chapter provides an overview of the Active Archive System rack specifications.

Celestica will source a cabinet to install all the customer specified equipment into. This frame will be a very strong structure designed for shipping this data center quality grade equipment in a fully loaded configuration.

The frame will be a standard 42U high by 600mm wide by 1025 mm deep cabinet supplied with 19"W EIA rack mount rails, a shock skid pallet system and associated packaging to protect the housed equipment

4.1 Cabinet Requirements

The cabinet is expected to comply with the following requirements and special requests:

- Cabinet front mounting rails must be set back into the frame by 80mm from the front face of the rack frame. This is to provide an ample cable management gap between the frame rail and the mounting rail for front face cabled equipment. The rear rail is to be set 720mm from the front mounting rail, mounting surface to mounting surface.
- No front or rear doors will be required but the capability to hang them will be required.
- Square punched holes that accept cage nuts will be required for the front and rear mounting rails.
- Anchoring capabilities in the frame for attaching to the data center floor will be required.
- Leveling feet and casters are required.
- The frame must be capable of supporting 2,600 lbs payload.
- The frame is required to pass all the environmental and transportation testing by the customer. Vibration testing at 0.8G rms random vibration on the damped pallet system is required among other shock and safety tests according to the standards in section 1.5 below.
- Black painted rack is preferred. Vendor can suggest their standard colors for evaluation.
- Removable side panels are required.
- A 3D CAD model of the rack is required from the vendor to place components and check fit and function. Step format or equivalent is preferred.
- Enclosure may have spot, seam, and fillet welded construction. Outside welds shall have ground corners and seams.
- Two Horizontal 1U PDUs with 208V nominal output, 30 A, 3 phase. See the Power Distribution Unit Specifications section.
- Vendor is expected to work jointly with Celestica to identify cable management accessories that are designed for the cabinet and will neatly dress the cables in the rack.
- A pallet design from the rack vendor is preferred, but it must meet the needs of shipping a fully loaded rack at 2,600 lbs. Vendor to advise if they have the design capabilities or a standard pallet that could accomplish the expected goal. The pallet must pass all UL requirements as well as the transportation requirements based on our testing. Some tuning

of the damping material in the pallet system may be required. The vendor will work jointly with Celestica to provide samples for re-testing if necessary.

4.2 Physical Dimensions and Weight

Rack:

The following table displays the dimensions of the Active Archive System:

Table 1: Active Archive System Dimensions

Hardware	Dimensions and Weight
Active Archive System	(height x width x depth) 82.52 inches x 23.62 inches x 40.35 inches 2,041 millimeters x 600 millimeters x 1,025 millimeters
	(weight) 2,250 lbs. 1,020 kg.

4.3 Packaging Design

It is preferred that the rack be assembled and shipped to Celestica on a damped pallet packaging system. The system will need to meet the final requirements of shipping a fully loaded cabinet to the end customer.

The packaging system is expected to comply with all customer environmental and transportation requirements. Testing requirements should be considered. The packaging will be designed to ensure that a fully loaded frame arrives at any customer site with no damage. It will be designed so that the heavy frame can be easily de-skidded in a safe manner for installation at the customer site.

To make sure it complies with all the requirements of drop, shock, storage, and safety, skid design will be very critical for this type of loading. This includes tipping tests.

Rack vendors will inform Celestica if they have the capability to design a pallet of this caliber.

4.4 Power Requirements

The power requirements of the Active Archive System are displayed in the following table:

Table 2: Active Archive System Power Requirements

Hardware	Power
Power Supply	Redundant intelligent PDUs
Power Consumption - typical	7,890 Watts

Hardware	Power
Power Consumption - maximum	10,484 Watts

Table 3: Active Archive System Power Cords

PDU Type	Visual Representation	Plug Standard	Outlet Standard	Frequency	Phase	Amps (per phase)	Supply Range
Delta	 L15-30P	NEMA L15-30P	L15-30R	50/60Hz	3-Phase	30A	200-240V
WYE		IEC 60309 16A 4P+E plug	IEC 60309 16A 4P+E outlet	50/60Hz	3-Phase	16A	380-415V

4.5 Rack Specific Compliance and Certifications

The following displays the rack specific compliance:

- ISTA #E 2006 Test #3 and #4
- UL Listed 2416
- UL-STD-94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
- EIA 310-E Compliant
- Flammability: Unless otherwise specified, plastic material used in the construction of the item shall be Rated 94V-0 or better per UL-STD-94

The following displays the rack specific certifications:

- Certificate of compliance to 12603A Shock (Rotational Edge Drop) test
- Certificate of compliance to 12603B Incline Impact Tes
- Certificate of compliance to 12603C Random Vibration

4.6 Regulatory Statement of Compliance

Product Name: **Active Archive System**
Regulatory Model: **SA-7000 series**
EMC 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.

4.6.1 Safety Compliance

The following table outlines how the Active Archive System is being designed to pass the product safety requirements:

Table 4: Product Safety Compliance

Country/Region	Authority or Mark	Standard
Australia/New Zealand	CB report, CB certificate	AS/NZS 60950.1
Canada/North America	NRTL	CSA C22.22 No. 60950-1-07
Customs Union/Russia, Kazakhstan, Belarus, Armenia	EAC	TR CU 004/2011
European Union	CE	EN 60950-1
International		IEC60950, CB report and Certificate to include all country national deviations
United States/North America	NRTL	UL 60950-1
Mexico	NYCE or NOM	NOM-019-SCFI-1998
Brazil	INMETRO	IEC 60950-1
Taiwan	BSMI	CNS14336
Ukraine	UKrTEST or equivalent	4467-1:2005
Moldova	INSM	SM SR EN60950-1
Serbia	KVALITET	SRPS EN60950:2010
India	BIS	IS 13252 (Part 1):2010

4.7 Operating Environment

The following table displays the operating conditions of the Active Archive System.

Table 5: Operating Environment

Operating	Active Archive System
Temperature	20° to 40°C de-rated 2% per 1,000 feet altitude increase
Humidity	8% to 90% (non-condensing)

4.8 Storage Environment

The following table displays the operating conditions of the Storage Enclosure Basic.

Table 6: Storage Environment

Storage	Storage Enclosure Basic
Temperature	-40°C to +66°C
Humidity	Up to 95%

4.9 Weight

Rack:

The following table displays the weight of the Active Archive System:

Table 7: Active Archive System Weight

Hardware	Dimensions (Width x Height x Depth)
Active Archive System	2,250 lbs. 1,020 kg.

Note: The weight mentioned previous is the total unpacked weight after delivery.

Controller (SM 1028U-TR4T+):

The following table displays the weight of the Controller:

Table 8: Active Archive System Weight

Hardware	Dimensions (Width x Height x Depth)
Controller	Net weight is 26lbs. Gross weight is 41 lbs **Note:** The gross weight of the controller is based on the combined weight of the server, accessories kit, rail kit, and packaging

Storage (SM 1018R-WC0R):

The following table displays the weight of the Storage server:

Table 9: Active Archive System Weight

Hardware	Dimensions (Width x Height x Depth)
Storage server	Net weight is 25lbs. Gross weight is 40lbs **Note:** The gross weight of the storage server is based on the combined weight of the server, accessories kit, rail kit, and packaging

4.10 Marking

Assembly shall be labeled. Item shall be legibly and permanently marked in ink with Celestica's part number and part revision, along with the supplier name or symbol and manufacturer’s date code.

4.11 Workmanship

Item shall be uniform in quality and free from defects that adversely affect life, serviceability, performance, or appearance.

4.12 Packaging and Shipping

Item shall be properly packaged to prevent damage during handling, transit, and storage. Frame is expected to be mounted on skid, strapped cardboard sleeve, and corner protected by plastic bag. Minimum marking data on container shall include the supplier name or symbol, supplier part number, Celestica, LLC part number, date code, and purchase order number.

4.13 Quality Assurance Provisions

The following list displays the quality assurance provisions:

1. General
   - **A. Manufacturing Process**: Suppliers shall demonstrate control of their manufacturing processes and ensure and continuously improve the quality and reliability of product supplied to Celestica.
   - **B. Change of Product**: It is expected that suppliers will continuously improve product performance, cost, quality, and reliability, which may require changes to design, material, and/or processes. Suppliers shall notify Celestica, in writing, a minimum of 90 days prior to making any changes which affect form, fit, or function, or manufacturing site. When changes are made the supplier shall perform any necessary testing to ensure that the requirements of this specification are met before supplying any affected product to Celestica. Test data shall be made available to Celestica upon request.
2. Requirements
   - **A. Quality Assurance System**: Suppliers shall use a total quality system appropriate for their business.
   - **B. Process Control Requirements**: Suppliers shall develop and maintain manufacturing processes in a state of statistical control. Data that verifies the consistency of the processes and the product produced shall be provided to Celestica upon request.
   - **C. Process Capability**: Processes shall be analyzed to ensure that they are capable of producing product that meets specified values, with minimal variation.
   - **D. Acceptance Criteria**: The supplier shall be responsible for meeting all the requirements of this specification. Celestica reserves the right to conduct audits, inspection and testing at any time to verify compliance.
   - **E. Reliability Requirements**: The supplier shall ensure that no latent defects are induced or present in the product.

4.14 Supplier Quality Management

The following list displays the supplier quality management:

1. **Quality Plan**: The supplier shall develop and implement all Quality and Reliability plans necessary to meet the Quality and Reliability requirements.
2. **Quality Programs**: Supplier quality management programs are established by contractual agreement, such as a Basic Order Agreement (BOA), or a Supplier Quality Agreement.

A Regulatory Compliance Notices

Topics:

The following chapter describes the regulatory compliance notices for the Active Archive System storage appliance.

A.1 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 Active Archive System Hardware User Guide, it may cause harmful interference to radio communications.

A.2 ICES-003 (Canada)

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.

English translation of the notice previous:

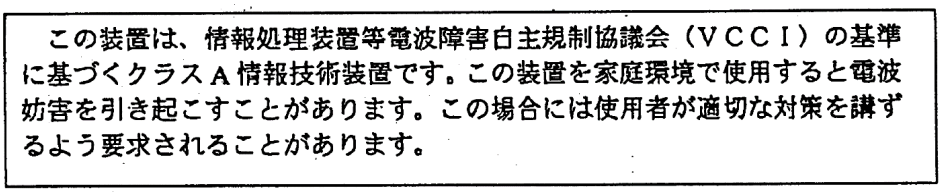
This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Canadian Department of Communications.

A.3 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.

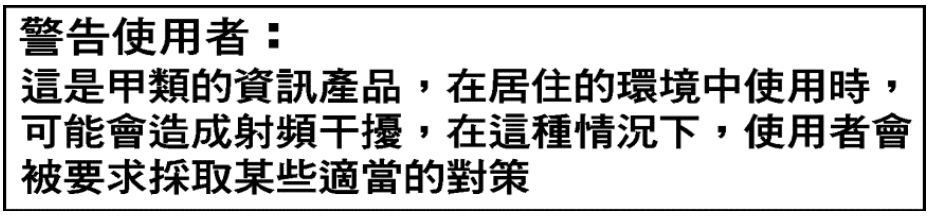
A.4 VCCI (Japan)



English translation of the notice previous:

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.

A.5 BSMI (Taiwan)



English translation of the notice previous:

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

Active Archive System Glossary

A

AC	**Alternating Current**
ACMA	**Australian Communications and Media Authority**

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B

BIOS	**Basic Input/Output System**
BIS	**Business Information System**
BIST	**Built-In Self-Test**
BMC	**Baseboard Management Controller**
BOM	**Bill of Materials**
BSMI	**Bureau of Standards, Metrology and Inspection**

Top of B | Top of Glossary

C

CDB	**Computer Data Bus**
CLI	**Command Line Interface**
CS	**Climate Saver**

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D

DC	**Direct Current**

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E

EC	**Engineering Change**
EEPROM	**Electrically Erasable Programmable Read-Only Memory**
EMC	Electromagnetic Compatibility
EMI	**Electromagnetic Interference**
ESD	**Electrostatic Discharge**
EVPD	**Enable Vital Product Data**

Top of E | Top of Glossary

F

FCC	**Federal Communications Commission**
FRU	**Field Replaceable Unit**
FW	**Firmware**

Top of F | Top of Glossary

G

GBE	**Gigabit Ethernet**
GPIO	**General-Purpose Input/Output**
GUI	**Graphical User Interface**

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H

HD	**Hard Drive**
HDD	**Hard Disk Drive**

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I

ICT	**In-circuit Test**
IEC	**International Electrotechnical Commission**
I/O	**Input/Output**
IOC	**Input/Output Controller**
IOM	**I/O Module**
IPMI	**Intelligent Platform Management Interface**

Top of I | Top of Glossary

J

JBOD	**Just a Bunch of Disks**

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K

KVALITET	Spell out acronym here

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L

LED	**Light-Emitting Diode**
LPC	**Low Pin Count**
LPH	**Low Profile Hybrid**
LUN	**Logical Unit Number**

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M

MAC	**Media Access Control**
miniSAS	**Mini Statistical Analysis System**

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O

OS	**Operating System**
OUI	**Organizationally Unique Identifier**

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P

PCB	**Printed Circuit Boards**
PCI	**Peripheral Component Interconnect**
PDB	**Power Distribution Board**
PDU	**Power Distribution Unit**
PMBus	**Power Management Bus**
POST	**Power On Self Test**
PSU	**Power Supply Unit**
PHY	**Physical Layer**
PWM	**Pulse-Width Modulation**
PWR	**Power**

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R

ROC	**Recovery Oriented Computing**
RTC	**Real Time Clock**

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S

SAS	**Serial Attached SCSI**
SATA	**Serial Advanced Technology Attachment**
SBB	**Storage Bridge Bay**
SCSI	**Small Computer System Interface**
SDK	**Software Development Kit**
SEP	**SCSI Enclosure Processor**
SES	**SCSI Enclosure Services**
SMART	**Self-Monitoring, Analysis and Reporting Technology**
SMP	**Server Message Block**
SMB	**Server Message Block**
SPI	**Serial Peripheral Interface**
SSP	**Serial SCSI Protocol**

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T

TCA	**Telecommunications Computing Architecture**

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U

UART	**Universal Asynchronous Receiver/Transmitter**

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V

VBOD	**Virtualized Bunch of Disks**
VPD	**Vital Product Data**

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W

WOL	**Wake On LAN**
WOS	**Wake On SAS**

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X

XDP **XML Data Package**

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