

# Hitachi Virtual Storage Platform 5000 Series

90-02-0x or later

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## Hardware Guide

This document describes the hardware components, lists the physical and operational specifications, and provides general operating information for the VSP 5000 series storage systems.

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## Preface

This guide provides technical information about the Hitachi Virtual Storage Platform 5000 series storage systems.

Please read this document carefully to understand how to use this product, and maintain a copy for reference purposes.

## Safety and environmental information



**Caution:** Before operating or working on the Virtual Storage Platform 5000 series storage system, read the safety and environmental information in [Safety requirements](#) and [Regulatory Compliance \(on page 72\)](#).

## Intended audience

This document is intended for system administrators, Hitachi Vantara representatives, and authorized service providers who install, configure, and operate Virtual Storage Platform 5000 series storage systems.

Readers of this document should be familiar with the following:

- Data processing and RAID storage systems and their basic functions.
- The Virtual Storage Platform 5000 series storage systems and the *Product Overview*.
- The Storage Navigator software.
- The concepts and functionality of storage provisioning operations in the use of Hitachi Dynamic Provisioning, Hitachi Dynamic Tiering software, and Hitachi Data Retention Utility.

## Product version

This document revision applies to storage system microcode version 90-02-0x or later.

## Release notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document. Release notes are available on Hitachi Vantara Support Connect: <https://knowledge.hitachivantara.com/Documents>.

## Changes in this revision

- Added support for the 15 TB NVMe and 1.9TB SSD drives.
- Updated electrical specifications to include racks that support 6 PDUs.





## Document conventions

This document uses the following typographic conventions:

Convention	Description
<b>Bold</b>	<ul style="list-style-type: none"> <li>▪ Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click <b>OK</b>.</li> <li>▪ Indicates emphasized words in list items.</li> </ul>
<i>Italic</i>	<ul style="list-style-type: none"> <li>▪ Indicates a document title or emphasized words in text.</li> <li>▪ Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: <code>pairdisplay -g group</code></li> </ul> <p>(For exceptions to this convention for variables, see the entry for angle brackets.)</p>
Monospace	Indicates text that is displayed on screen or entered by the user. Example: <code>pairdisplay -g oradb</code>
< > angle brackets	<p>Indicates variables in the following scenarios:</p> <ul style="list-style-type: none"> <li>▪ Variables are not clearly separated from the surrounding text or from other variables. Example: <code>Status-&lt;report-name&gt;&lt;file-version&gt;.csv</code></li> <li>▪ Variables in headings.</li> </ul>

Convention	Description
[ ] square brackets	Indicates optional values. Example: [ a   b ] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a   b } indicates that you must choose either a or b.
vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [ a   b ] indicates that you can choose a, b, or nothing. { a   b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to important or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

## Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10 <sup>3</sup> ) bytes
1 megabyte (MB)	1,000 KB or 1,000 <sup>2</sup> bytes
1 gigabyte (GB)	1,000 MB or 1,000 <sup>3</sup> bytes
1 terabyte (TB)	1,000 GB or 1,000 <sup>4</sup> bytes

Physical capacity unit	Value
1 petabyte (PB)	1,000 TB or 1,000 <sup>5</sup> bytes
1 exabyte (EB)	1,000 PB or 1,000 <sup>6</sup> bytes

Logical capacity values (for example, logical device capacity, cache memory capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB Open-systems: <ul style="list-style-type: none"> <li>▪ OPEN-V: 960 KB</li> <li>▪ Others: 720 KB</li> </ul>
1 KB	1,024 (2 <sup>10</sup> ) bytes
1 MB	1,024 KB or 1,024 <sup>2</sup> bytes
1 GB	1,024 MB or 1,024 <sup>3</sup> bytes
1 TB	1,024 GB or 1,024 <sup>4</sup> bytes
1 PB	1,024 TB or 1,024 <sup>5</sup> bytes
1 EB	1,024 PB or 1,024 <sup>6</sup> bytes

## Accessing product documentation

Product user documentation is available on Hitachi Vantara Support Connect: <https://knowledge.hitachivantara.com/Documents>. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

## Getting help

[Hitachi Vantara Support Connect](https://support.hitachivantara.com/en_us/contact-us.html) is the destination for technical support of products and solutions sold by Hitachi Vantara. To contact technical support, log on to Hitachi Vantara Support Connect for contact information: [https://support.hitachivantara.com/en\\_us/contact-us.html](https://support.hitachivantara.com/en_us/contact-us.html).



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**Thank you!**

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# Chapter 1: Hitachi Virtual Storage Platform 5000 series overview

The Virtual Storage Platform 5000 series storage system is a high-performance, large-capacity data storage system. The storage system consists of a controller chassis, one or more drive chassis, and internal PCIe switches with copper or optical interfaces and is powered by a new multi-node architecture available in 2, 4, 8, and 12 controller systems.

The Virtual Storage Platform 5000 series is shipped to customers as factory-integrated storage systems installed in a Hitachi Universal rack, with all components mounted and cabled, and all software and software licenses installed by Hitachi Vantara representatives. All systems incorporate state-of-the-art virtualization, data-management, and fault-tolerant technologies.

## Features

The Virtual Storage Platform 5000 series (VSP 5000 series) storage systems are high-performance, large-capacity, enterprise RAID storage systems that reliably deliver more data faster than ever for open-systems and mainframe applications. VSP 5000 series features all-flash and hybrid models that can scale up in capacity and also scale out for performance, allowing for massive consolidation of workloads for cost savings and providing unparalleled performance, efficiency, and reliability.

**Key features****▪ Agility and scalability**

There are four VSP 5000 series models: VSP 5100, VSP 5500, VSP 5100H, and VSP 5500H. The VSP 5100 all-flash array (AFA) is a scale-up enterprise storage platform with one pair of controller nodes supporting open and mainframe workloads. The VSP 5500 AFA starts with a single node pair and scales out to three node pairs to provide up to 69 PB of raw capacity and 21 million IOPS of performance. Both models are also available as hybrid arrays, VSP 5100H and VSP 5500H, that support a mixed environment of NVMe solid-state devices (SSDs) (VSP 5500 models only), serial-attached SCSI (SAS) SSDs, Hitachi flash module drives (FMDs), and SAS hard disk drives (HDDs).

**▪ All-flash performance accelerated by NVMe technology**

NVMe drives provide high throughput and low latency to achieve high response performance, enabling large volumes of data to be processed rapidly with response times as low as 70 microseconds.

**▪ Reliability and resiliency**

Leveraging hot-swappable components, nondisruptive maintenance and upgrades, and outstanding data protection, VSP 5000 series offers complete system redundancy and is backed by a 100% data availability guarantee. VSP 5000 series's active-active controller architecture protects against local faults and performance issues, and hardware redundancy eliminates all active single points of failure, no matter how unlikely, to provide the highest level of reliability and data availability.

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## Chapter 2: Hardware overview

The storage system consists of a controller chassis using a multi-node architecture that deploys a copper or optical link, as well as the basic rack layouts similar to previous model.

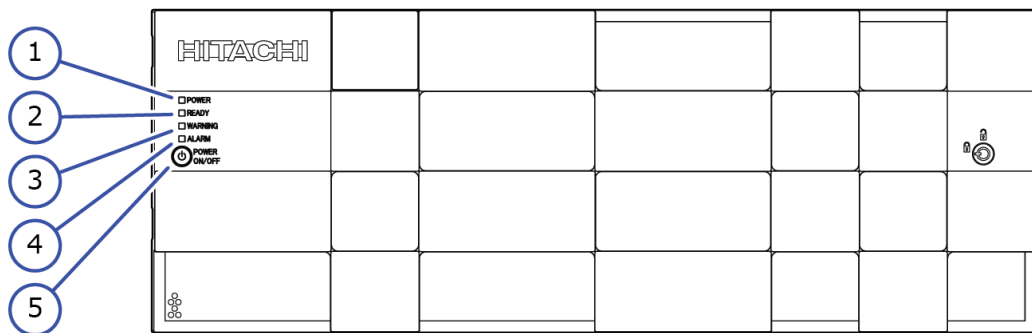
### Hardware components

The storage system consists of a controller chassis comprising controller boards, drive chassis in which drives are installed, and a node interconnect switch consisting of interconnect switches and an SVP. The storage system also supports cache memory (DIMM) and cache flash memory (CFM).

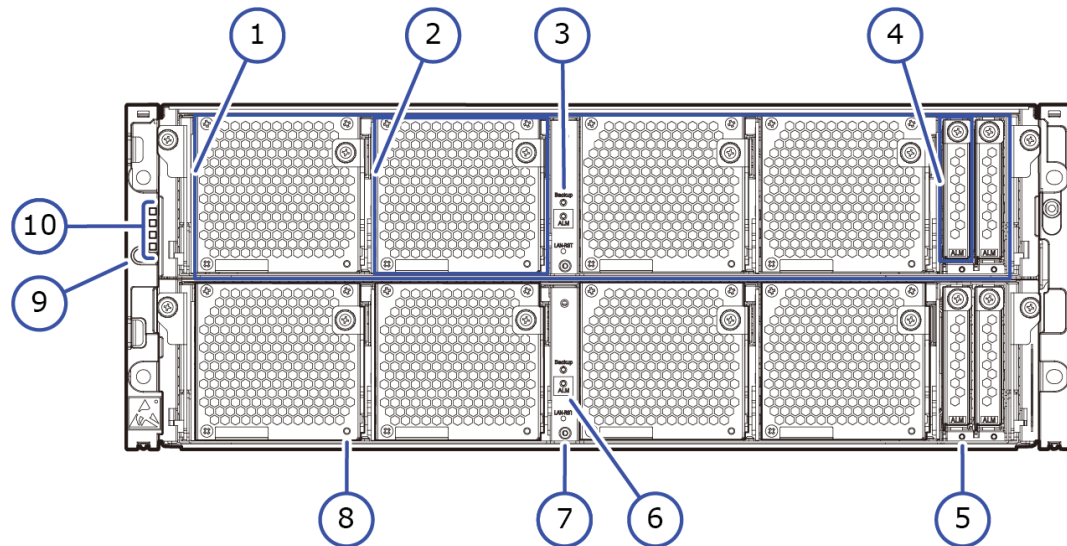
The controller chassis, drive chassis, and node interconnect switch are installed in a 19-inch Hitachi Universal rack.

### Controller chassis

The controller chassis consists of a controller board, front-end module, back-end module, fabric-acceleration module, power supply, and cache flash memory. Controllers are storage system components that cache and manage data, and provide hosts with a coherent, virtualized view of the system. A controller chassis contains two nodes with a 4U controller each, making the chassis 8U high. A storage system can contain 2 to 6 nodes, depending on the storage system model.

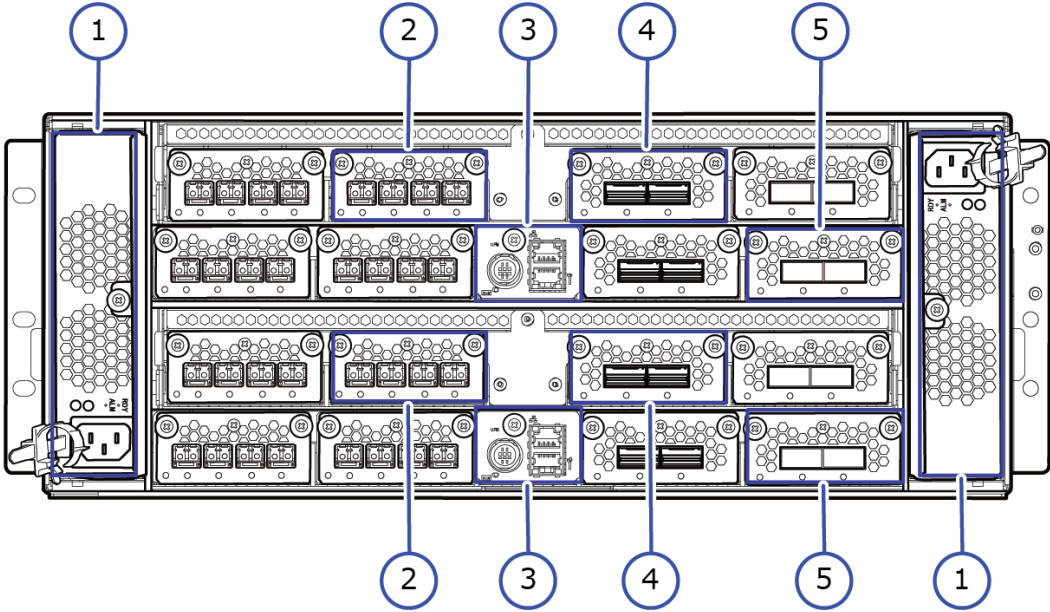


Number	Item	Description
1	POWER LED	Green: Storage system is powered on. Amber: Storage system is receiving power.
2	READY LED	Green: Normal operation.
3	WARNING LED	Off: Normal operation. Amber: Component requires maintenance. Blink: Failure requires maintenance. <b>Note:</b> When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100. LED might turn off during user maintenance.
4	ALARM LED	Off: Normal operation. Red: Processor failure (system might be down). For assistance, contact customer support: <a href="https://support.hitachivantara.com/en_us/contact-us.html">https://support.hitachivantara.com/en_us/contact-us.html</a> .
5	POWER ON/OFF (main switch)	Powers the storage system.

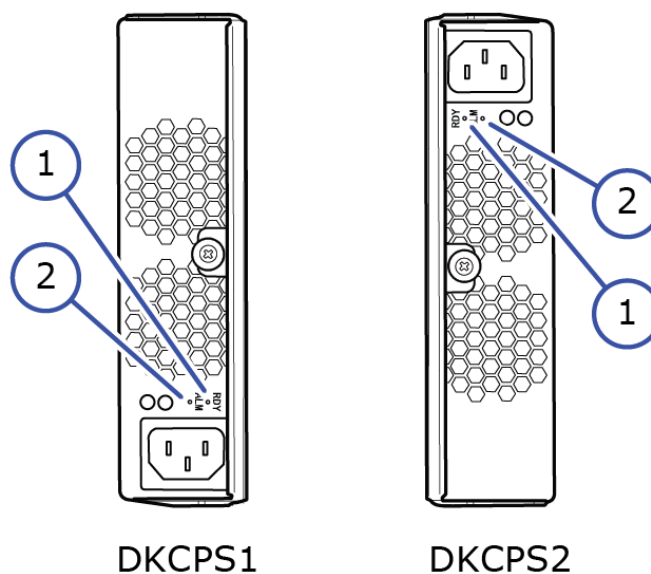


Number	Item	Description
1	Controllers	Controller 1 (bottom) and Controller 2 (top).
2	Backup module	N/A
3	BACKUP LED	Green: Power restoration in progress following power outage. Fast blink green: Restoring. Slow blink green: Restoring, or sequential shutdown in progress.
4	Cache flash memory	N/A
5	ALM LED (for cache flash memory)	Red: Cache flash memory can be removed.
6	CTL ALM LED	Red: Controller can be removed. Blink red: Failure with the power supply unit of the controller. Amber: LAN reset switch was pressed.
7	LAN-RST switch	Use only when instructed by customer support.
8	STATUS LED (for BKMF)	Green: Charging of the battery in the backup module is complete. Red: Backup module can be removed. Blink red one time: Main battery failure. Blink red two times: Backup battery failure.

Number	Item	Description
		Blink red three times: Both batteries failed or preventive maintenance replacement of batteries can run.  Off: Battery is not mounted, battery-mounting failure occurred, or firmware is being upgraded. Off is normal status for configurations without batteries.
9	POWER ON/OFF (main switch)	Powers the storage system.
10	POWER, READY, WARNING, and ALARM LEDs	<b>Note:</b> When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100.



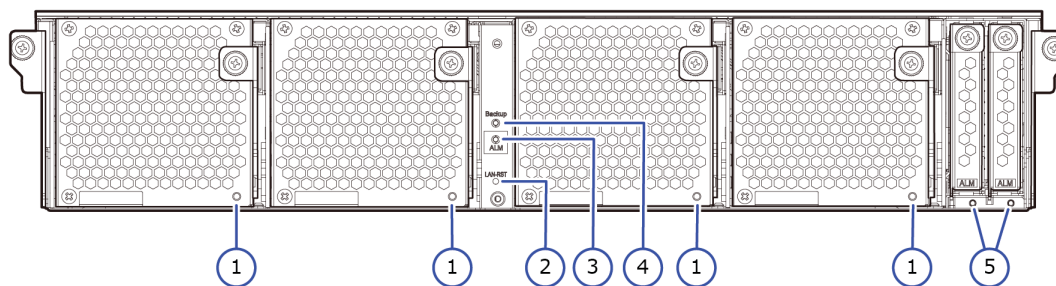
Number	Item
1	Power supply unit
2	Back-end director
3	LAN blade
4	Fabric-Acceleration Module
5	Front-end director



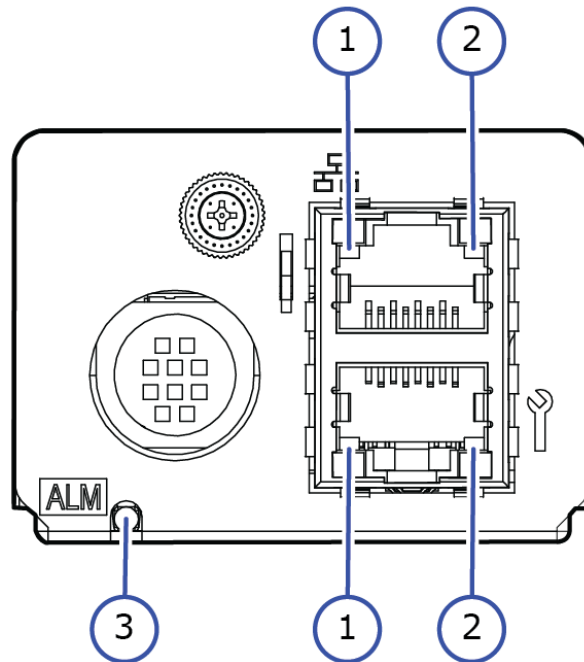
Number	Item	Description
1	ALM / RDY LED	Red: Power supply unit can be replaced.
2	RDY LED	Green: Normal operation.

## Controller board



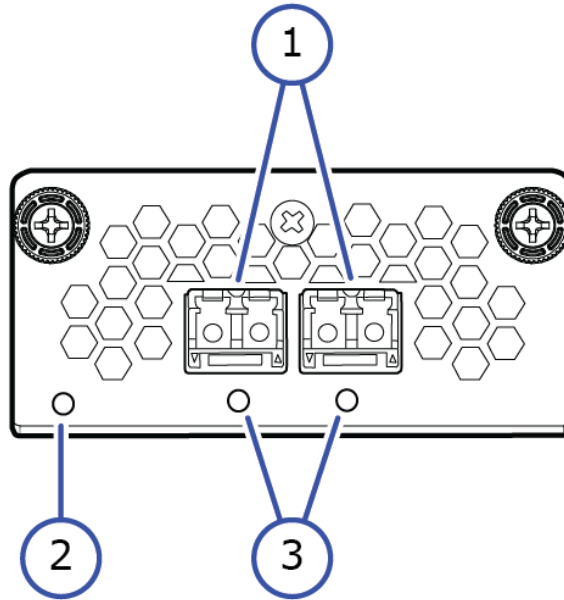


Number	Item	Description
1	STATUS	<p>LED Off: Battery is uninstalled, installed improperly or BKMF firmware is replaced (in case of a configuration with no battery installed, the LEDs for BKMF-10 and BKMF-20 go out).</p> <p>Green On: Battery is fully charged.</p> <p>Green Blinking: Battery is charged or discharged.</p> <p>Red On: BKMF has an error.</p> <p>Red Blinking: BKMF can be removed. A failure occurred in the battery or preventive maintenance replacement of the batteries is possible.</p>
2	LAN-RST	<p>This is a switch for GUM reset.</p> <p>If GUM reboot fails, reset GUM forcibly from the hardware.</p>
3	CTL ALM	<p>Red On: The controller board is ready to be removed (when the maintenance work requiring insertion and removal of the controller board is performed). A failure is detected in the controller board (when the maintenance work mentioned above is not performed).</p> <p>Red Blinking: A failure is detected in the controller board, cache memory, or cache flash memory (CFM).</p> <p>Amber On: Indicates that the LAN RESET switch is pressed.</p>
4	BACKUP STS	<p>Green On : Indicates that power outage has occurred or power restoration is in progress after power outage.</p> <ul style="list-style-type: none"> <li>▪ Fast blinking (On and off are repeated at 0.1-second intervals.): The data is being restored.</li> <li>▪ Slow blinking (On and off are repeated at 0.5-second intervals.): A planned power off is being executed or the data is being stored.</li> </ul>
5	ALARM	<p>Red On: Cache Flash Memories are removable.</p>



Number	Item	Description
1	ACT/LINK LED	Amber: Link status/data transfer status.
2	SPEED LED	On: Link speed = 1 Gbps. Off: Link speed = 10 Mbps/100 Mbps.
3	LAN ALARM LED	Red: The removal of the LAN Board is possible.

### 10-Gbps iSCSI board(optical)



Number	Item	Description
1	ISCSI connectors	Connect to Ethernet cables.
2	STATUS LED	Green: Front end module is in the power-on state. Red: Front end module has an error.
3	PORT LED	Red: SFP has an error. Blue: Normal link status. Blink blue: Front end module is in communication status.



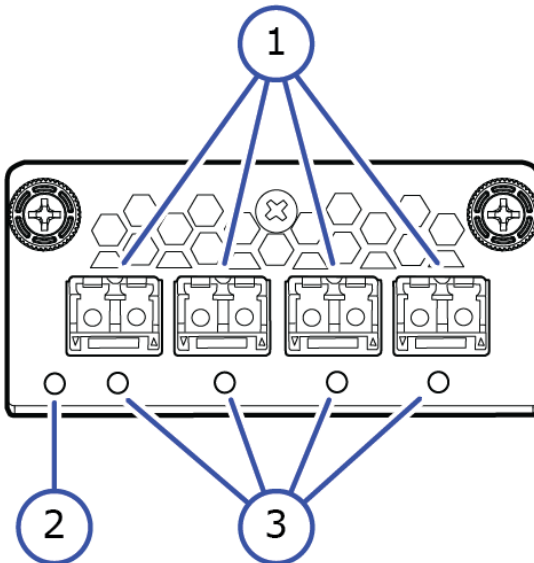
**Note:** The VSP 5000 series storage systems do not support iSCSI link aggregation.

*Port assignments for 10-Gbps iSCSI board*

Number	Port 1	Port 2
CHB-01A	1A	3A
CHB-01B	1C	3C

Number	Port 1	Port 2
CHB-01E	1E	3E
CHB-01F	1G	3G
CHB-02A	1B	3B
CHB-02B	1D	3D
CHB-02E	1F	3F
CHB-02F	1H	3H
CHB-11A	2A	4A
CHB-11B	2C	4C
CHB-11E	2E	4E
CHB-11F	2G	4G
CHB-12A	2B	4B
CHB-12B	2D	4D
CHB-12E	2F	4F
CHB-12F	2H	4H

16-Gbps or 32-Gbps Fibre Channel (4-port) board



**Table 1 16-Gbps, 32-Gbps Fibre Channel**

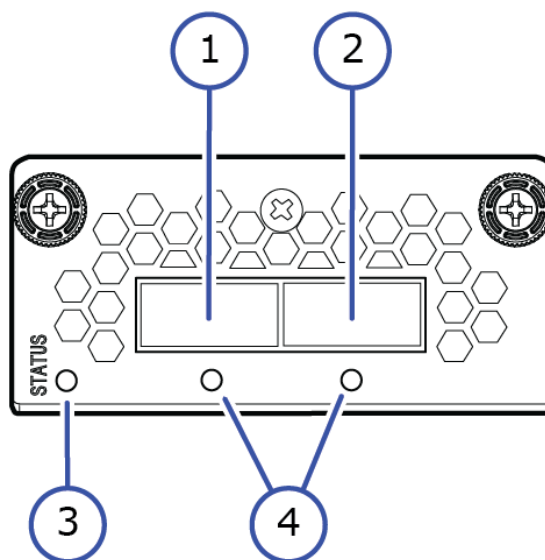
Number	Item	Description
1	Fibre Channel connectors	Connect to Fibre Channel cables.
2	STATUS LED	Green: Front end module is in the power-on state. Red: Front end module has an error.
3	PORT LED	Red: Small form-factor pluggable can be removed. Blue: Normal link status at 16-Gbps (16-Gbps). Blue: Normal link status at 32-Gbps (32-Gbps). Green: Normal link status at 4-Gbps or 8-Gbps (16-Gbps). Green: Normal link status at 8-Gbps or 16-Gbps (32-Gbps).

*Port assignments for 16-Gbps or 32-Gbps Fibre Channel board*

Number	Port 1	Port 2	Port 3	Port 4
CHB-01A	1A	3A	5A	7A
CHB-01B	1C	3C	5C	7C
CHB-01E	1E	3E	5E	7E
CHB-01F	1G	3G	5G	7G
CHB-02A	1B	3B	5B	7B
CHB-02B	1D	3D	5D	7D
CHB-02E	1F	3F	5F	7F
CHB-02F	1H	3H	5H	7H
CHB-11A	2A	4A	6A	8A
CHB-11B	2C	4C	6C	8C

Number	Port 1	Port 2	Port 3	Port 4
CHB-11E	2E	4E	6E	8E
CHB-11F	2G	4G	6G	8G
CHB-12A	2B	4B	6B	8B
CHB-12B	2D	4D	6D	8D
CHB-12E	2F	4F	6F	8F
CHB-12F	2H	4H	6H	8H

Back-end module

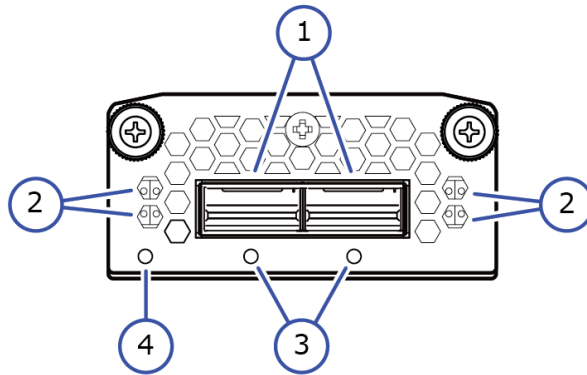


Number	Item	Description
1	PATH 0 connector	Connect to a drive tray.
2	PATH 1 connector	Connects to a drive tray.
3	STATUS LED	Green: Back end module is in the power-on state. Red: Back end module can be removed safely.
4	PORT LED	Blue: Link status is normal.

**Port assignments for the back-end module**

Number	Port 0	Port 1
DKB-01D	01D-0	01D-1
DKB-01H	01H-0	01H-1
DKB-02D	02D-0	02D-1
DKB-02H	02H-0	02H-1
DKB-11D	11D-0	11D-1
DKB-11H	11H-0	11H-1
DKB-12D	12D-0	12D-1
DKB-12H	12H-0	12H-1

**Fabric-acceleration module**



Number	Item	Description
1	Ports	
2	TBD	Blinking (Yellow): The target port is incorrectly connected. On (Yellow): Any of the ports is incorrectly connected. Green: Not used.
3	PORT (LINK/LOCATE)	On (Blue): Linked state.

Number	Item	Description
		Blinking (Red): A failure has occurred. The port is blocked. On (Red): The cable can be removed. Off: Link down state.
4	STATUS	On (Green): The module is powered on. On (Red): The module can be removed. Off: The module is powered off.

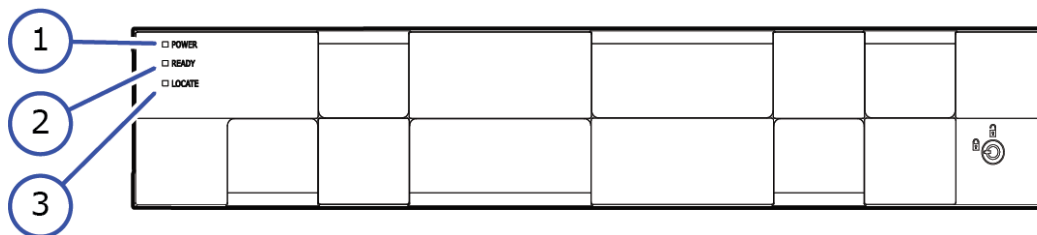
*Port assignments for fabric-acceleration module*

Fabric-Acceleration Module Number	Port 0	Port 1
HIE-01C	HIE-01C-0	HIE-01C-1
HIE-01G	HIE-01G-0	HIE-01G-1
HIE-02C	HIE-02C-0	HIE-02C-1
HIE-02G	HIE-02G-0	HIE-02G-1
HIE-11C	HIE-11C-0	HIE-11C-1
HIE-11G	HIE-11G-0	HIE-11G-1
HIE-12C	HIE-12C-0	HIE-12C-1
HIE-12G	HIE-12G-0	HIE-12G-1

## Drive box

Drive boxes are compact storage enclosures that can hold a large numbers of disk drives in a small rack space (EIA-standard rack units).





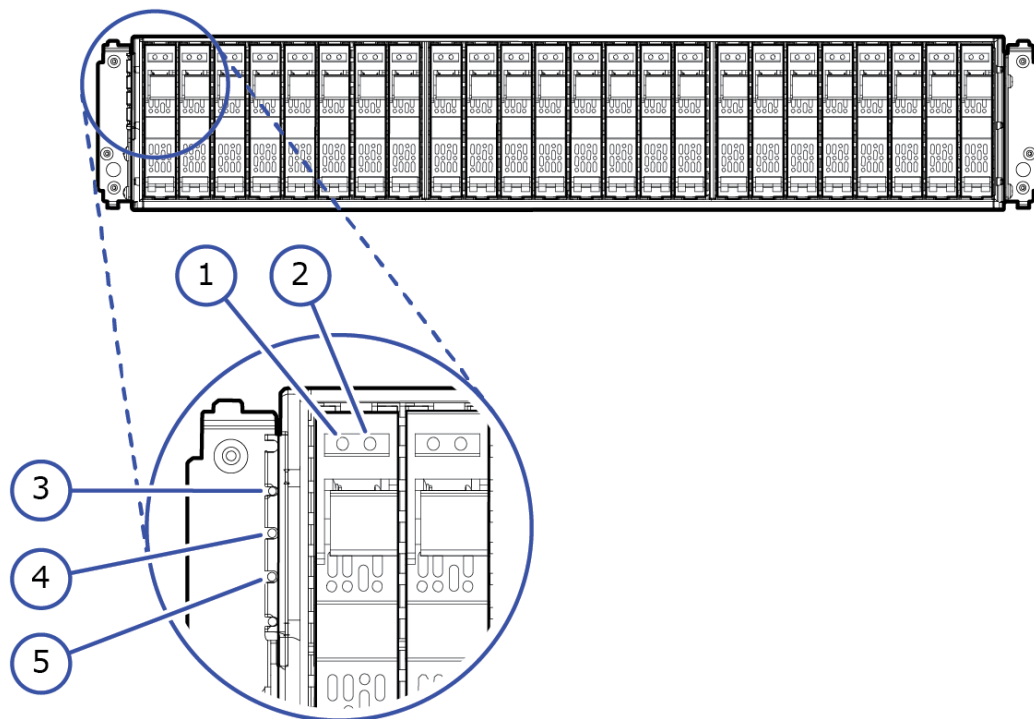
Number	Item	Description
1	POWER LED	Green: Storage system is powered on.
2	READY LED	Green: Normal operation.
3	LOCATE LED	Amber: Failure requires maintenance. The LED can be lit/turned off by the Maintenance Utility.

The storage system supports the following drives:

#### Drive Box for SBX

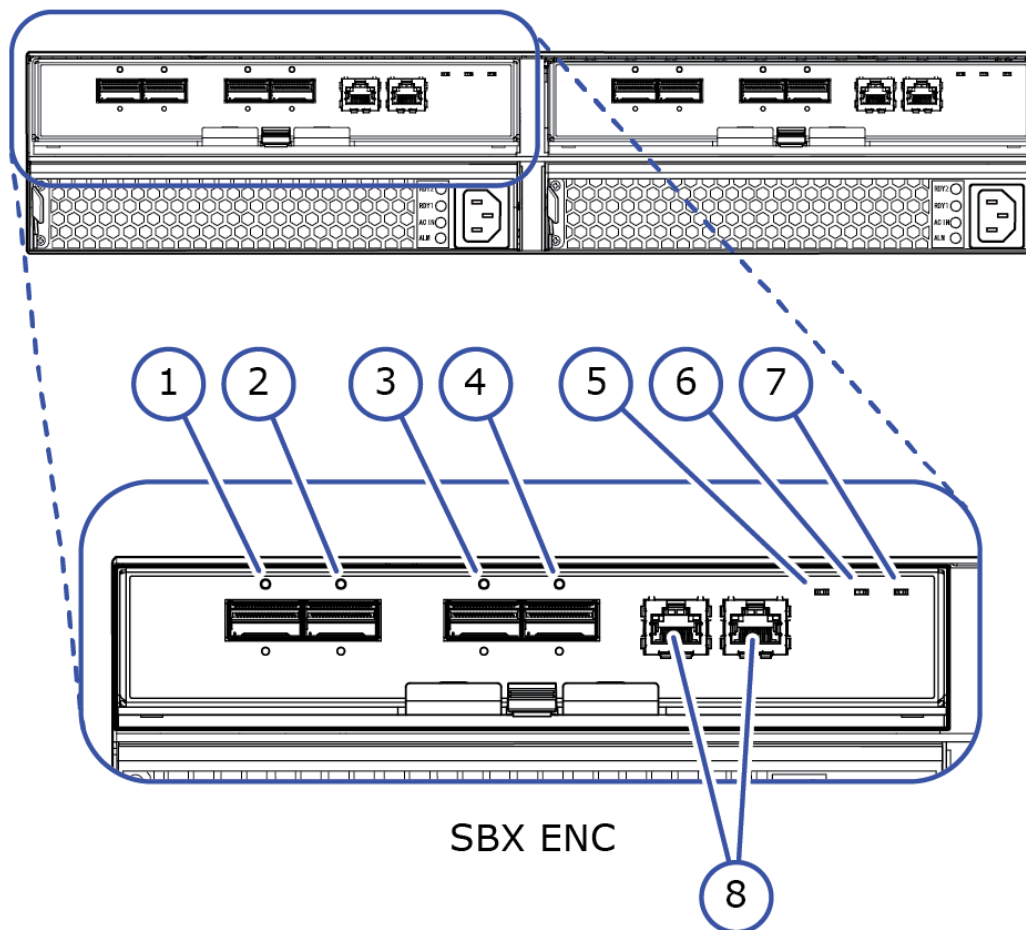
The media chassis for SBX contains four 2U drive boxes in which 2.5-inch disk drives and the 2.5-inch flash drives are installed. Each drive box consists of two enclosures and two power supplies with a built-in cooling fan.

The SBX holds 96 2.5-inch small form factor SAS/SSD drives or NVMe drives



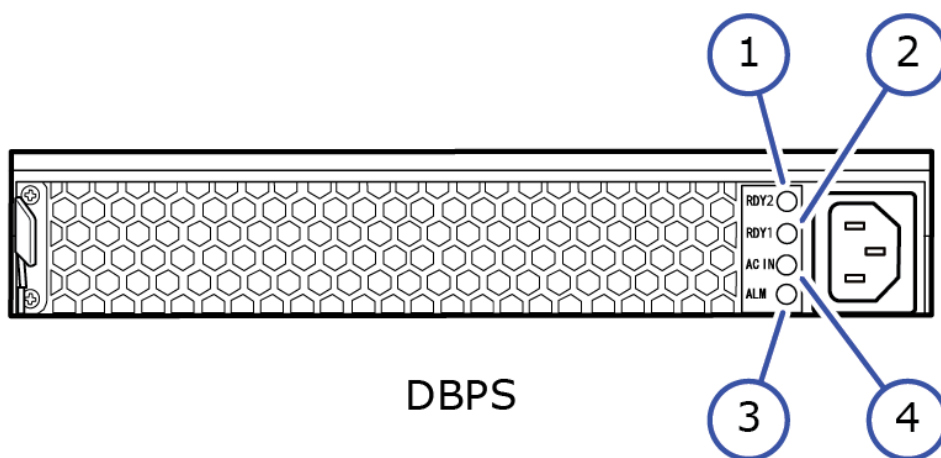
Number	Item	Description
1	ALM	Red: Indicates that the removal of the HDD/SSD is possible when the storage system is powered on.
2	ACT	Green: Indicates that the HDD/SSD is powered on. Blinking Green: Indicates that the HDD/SSD is active. The blink speed may differ between HDDs and SSDs; however, this does not indicate a disk error or failure.
3	POWER	Green: Indicates that the power supply is supplied to the storage system.
4	READY	Green: Indicates that the ENC is operating normally.

Number	Item	Description
5	LOCATE	Amber: Indicates the location of the chassis that detects a failure.  The LED can be lit/turned off by Maintenance Utility.



Number	Item	Description
1	PATH (IN side)	Green: Indicates that the IN side is linked up.
2	PATH (OUT side)	Green: Indicates that the OUT side is linked up.
3	PATH (IN side)	Green: Indicates that the IN side is linked up.

Number	Item	Description
4	PATH (OUT side)	Green: Indicates that the OUT side is linked up.
5	POWER	Green: Indicates that the power is supplied to the ENC.
6	LOCATE	Amber: A LED to specify the chassis location on the rear of the chassis.  The LED can be lit/turned off by Maintenance Utility.
7	ALARM (REPLACE)	Red: Lights up when replacement of the ENC is possible.
8	Consol port	Not in use



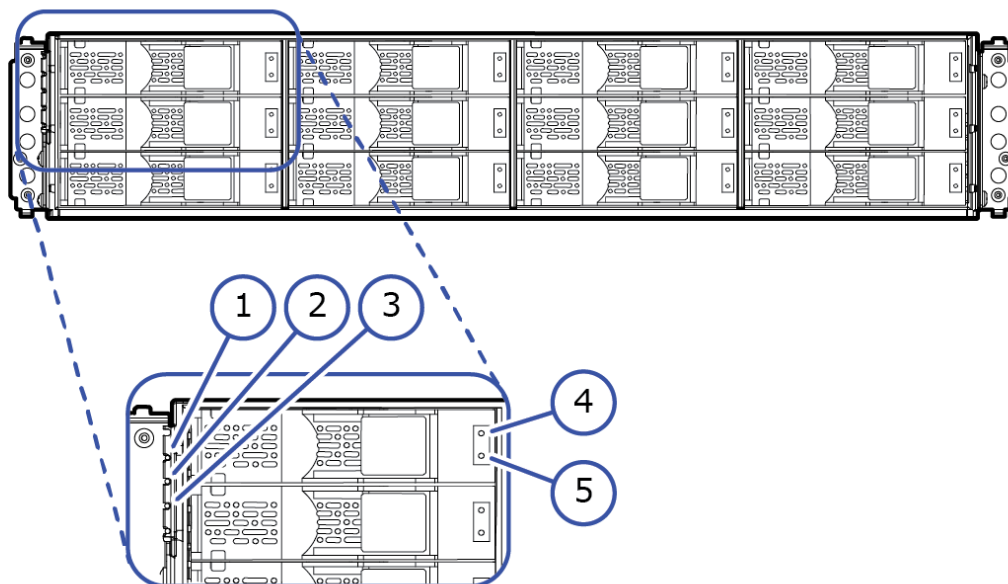
Number	Item	Description
1	RDY2	Green: Normal operation Off: Erroneous operation or out of operation
2	RDY1	Green: Normal operation Off: Erroneous operation or out of operation

Number	Item	Description
3	AC IN	Green: Indicates that AC input is normal.
4	ALM (REPLACE)	Red: Indicates when the power supply can be replaced.

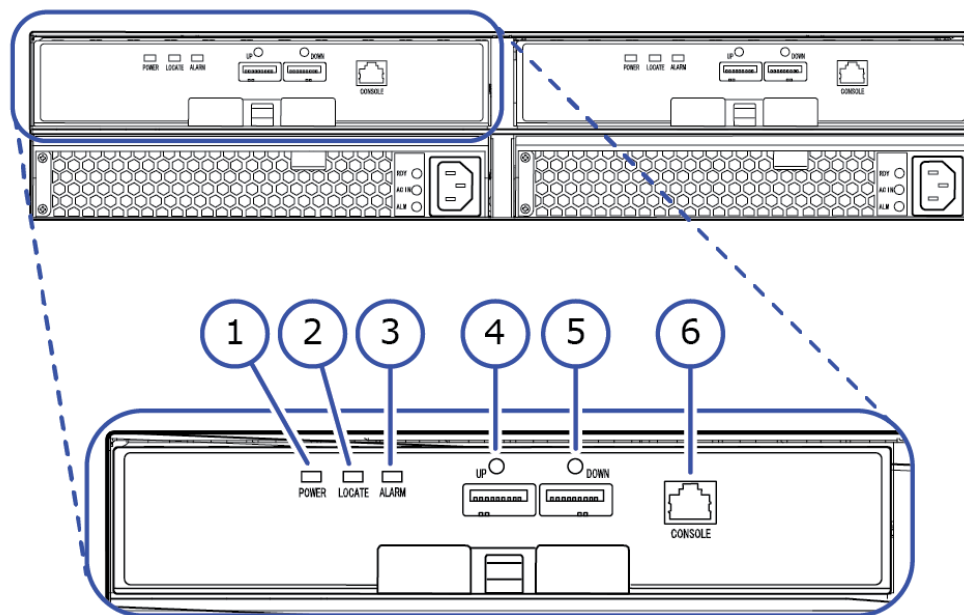
### Drive Box for UBX

The media chassis for UBX contains eight 2U drive boxes in which 3.5-inch disk drives are installed. Each drive box consists of two ENC's and two power supplies with a built-in cooling fan.

The UBX holds 96 3.5-inch large form factor SAS/SSD drives

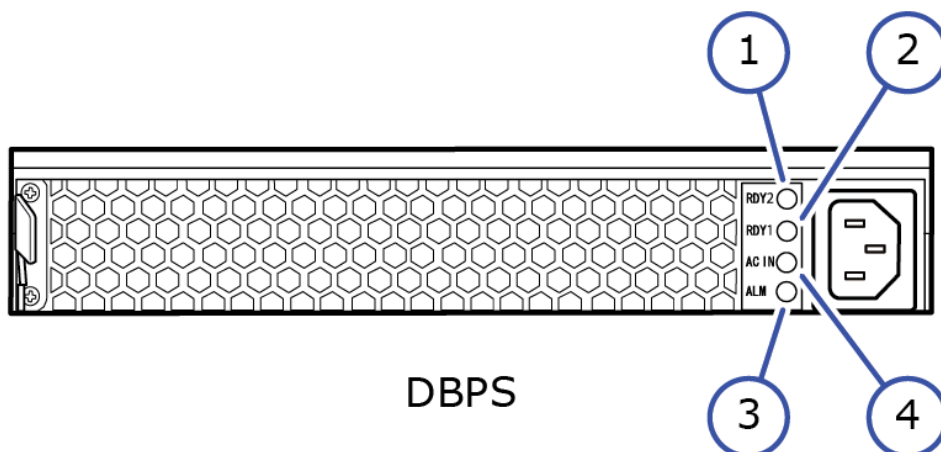


Number	Item	Description
1	POWER	Green: Indicates that the power supply is supplied to the storage system.
2	READY	Green: Indicates that the ENC is operating normally.
3	LOCATE	Amber: Indicates the location of the chassis that detects a failure.  The LED can be lit/turned off by Maintenance Utility.
4	ACT	Green: Indicates that the HDD/SSD is powered on.  Blinking Green: Indicates that the HDD/SSD is active.  The blink speed may differ between HDDs and SSDs; however, this does not indicate a disk error or failure.
5	ALM	Red: Indicates that the removal of the HDD/SSD is possible when the storage system is powered on.



UBX ENC

Number	Item	Description
1	POWER	Green: Indicates that the power is supplied to the ENC.
2	LOCATE	Amber: A LED to specify the chassis location on the rear of the chassis. The LED can be lit/turned off by Maintenance Utility.
3	ALARM (REPLACE)	Red: Lights up when replacement of the ENC is possible.
4	PATH (IN side)	Green: Indicates that the IN side is linked up.
5	PATH (OUT side)	Green: Indicates that the OUT side is linked up.
6	Consol port	Not in use



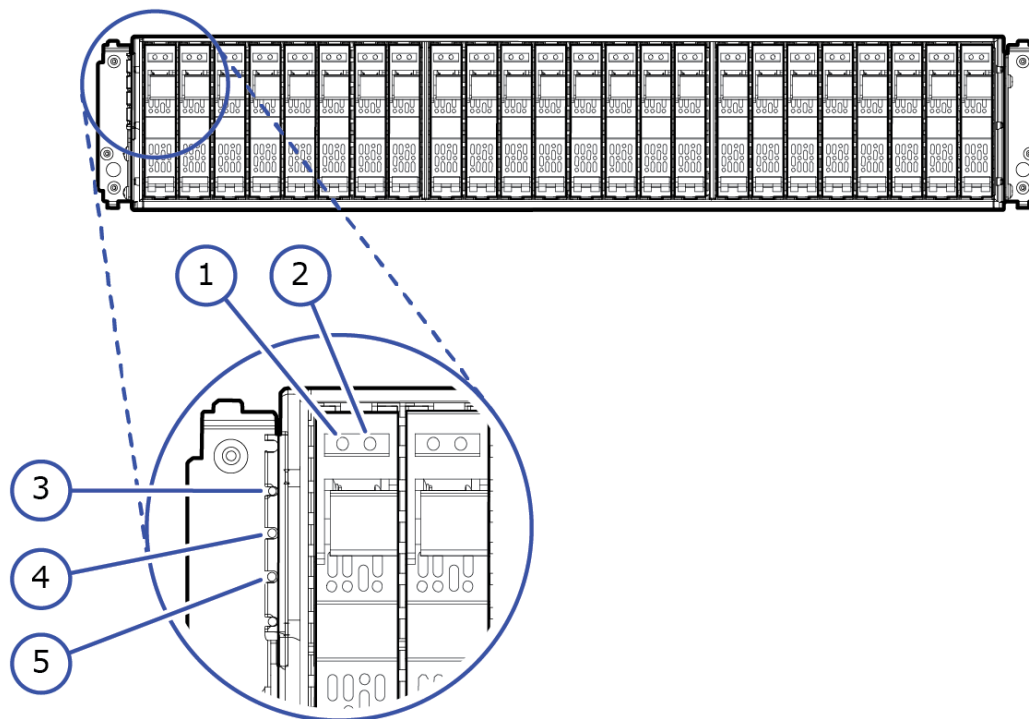
Number	Item	Description
1	RDY2	Green: Normal operation Off: Erroneous operation or out of operation
2	RDY1	Green: Normal operation Off: Erroneous operation or out of operation
3	AC IN	Green: Indicates that AC input is normal.
4	ALM (REPLACE)	Red: Indicates when the power supply can be replaced.

### Drive Box for NBX

The media chassis for NBX contains four 2U drive boxes in which 2.5-inch NVMe drives are installed. Each drive box consists of two ENC and two power supplies with a built-in cooling fan.

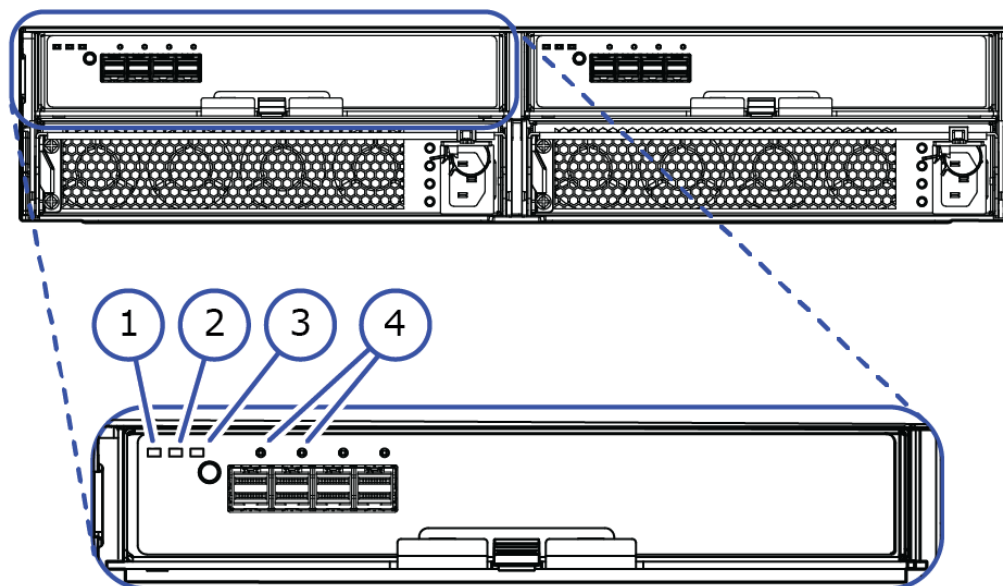
The NBX holds 98 Hitachi Flash (FMD) drives





Number	Item	Description
1	ALM	Red: Indicates that the removal of the HDD/SSD is possible when the storage system is powered on.
2	ACT	Green: Indicates that the HDD/SSD is powered on. Blinking Green: Indicates that the HDD/SSD is active. The blink speed may differ between HDDs and SSDs; however, this does not indicate a disk error or failure.
3	POWER	Green: Indicates that the power is supplied to the ENC.
4	READY	Green: Indicates that the ENC is operating normally.

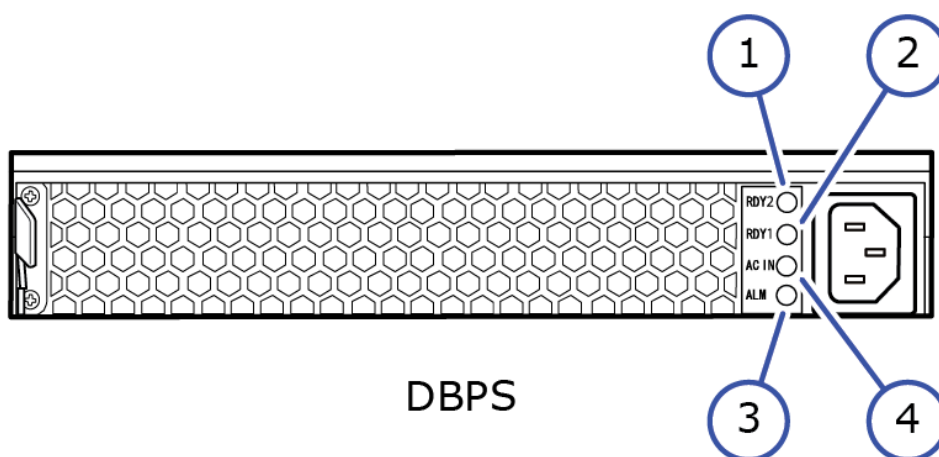
Number	Item	Description
5	LOCATE	Amber: A LED to specify the chassis location on the rear of the chassis.  The LED can be lit/turned off by Maintenance Utility.



NBX ENC

Number	Item	Description
1	POWER	Green: Indicates that the power is supplied to the ENC.
2	LOCATE	Amber: A LED to specify the chassis location on the rear of the chassis.  The LED can be lit/turned off by Maintenance Utility.
3	ALARM	Red: Indicates that the removal of the HDD/SSD is possible when the storage system is powered on.

Number	Item	Description
4	LINK	Blue: Indicates that PCIe between DKBN and ENC is linked up.

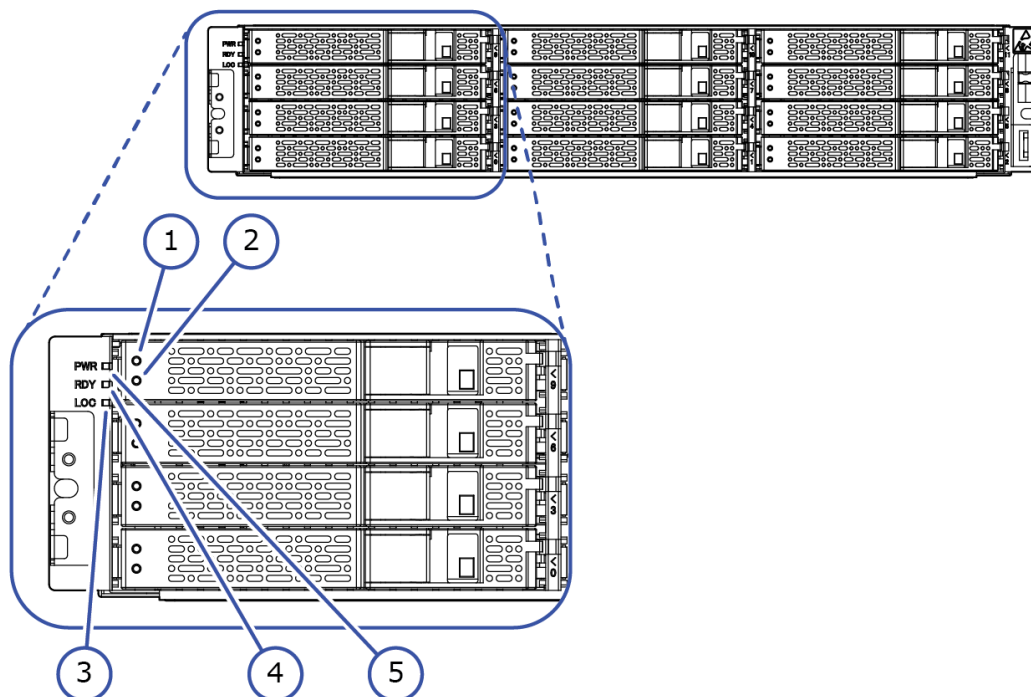


Number	Item	Description
1	RDY2	Green: Normal operation Off: Erroneous operation or out of operation
2	RDY1	Green: Normal operation Off: Erroneous operation or out of operation
3	AC IN	Green: Indicates that AC input is normal.
4	ALM (REPLACE)	Red: Indicates when the power supply can be replaced.

### Drive Box for FBX

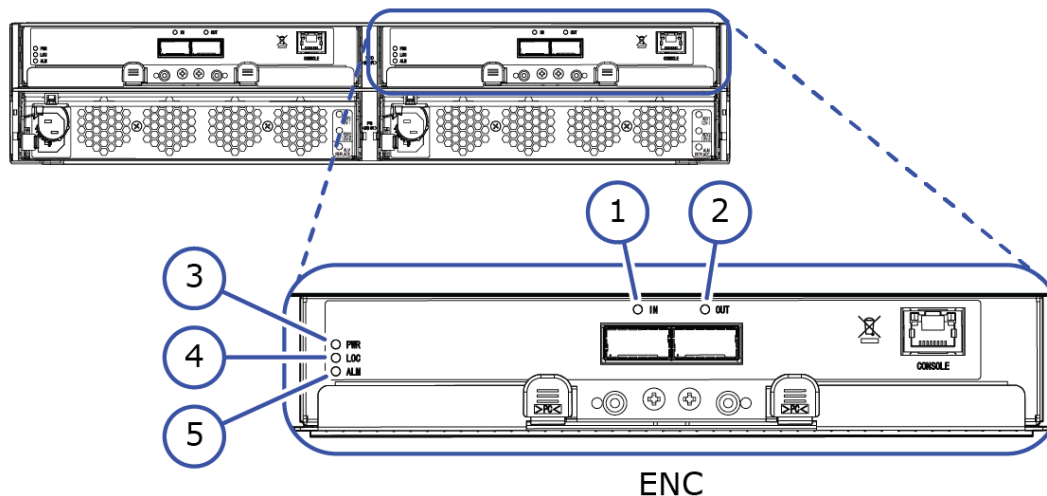
The media chassis for FBX contains four 2U drive boxes in which FMD drives are installed. Each drive box consists of two ENC's and two power supplies with a built-in cooling fan.

The FBX holds 48 Hitachi Flash (FMD) drives

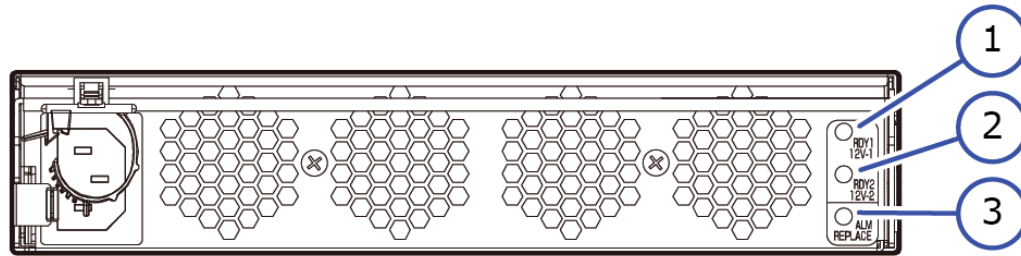


Number	Item	Description
1	ACT	Green: Indicates FMD status.  Blinking Green: Indicates that the FMD is active.  The blink speed may differ between FMD LEDs; however, this does not indicate a disk error or failure.
2	ALM	Red: Indicates that the removal of the FMD is possible when the storage system is powered on.
3	POWER	Green: Indicates that the power supply is supplied to the storage system.
4	READY	Green: Indicates that the ENC is operating normally.

Number	Item	Description
5	LOCATE	Amber: Indicates the location of the chassis that detects a failure.  The LED can be lit/turned off by Maintenance Utility.



Number	Item	Description
1	PATH (IN side)	Green: Indicates that the IN side is linked up.
2	PATH (OUT side)	Green: Indicates that the OUT side is linked up.
3	POWER	Green: Indicates that the power is supplied to the ENC.
4	LOCATE	Amber: A LED to specify the chassis location on the rear of the chassis.  The LED can be lit/turned off by Maintenance Utility.
5	ALARM (REPLACE)	Red: Lights up when replacement of the ENC is possible.



DBPS

Number	Item	Description
1	RDY 1	Green: Normal operation Off: Erroneous operation or out of operation
2	RDY 2	Green: Normal operation Off: Erroneous operation or out of operation
3	ALM REPLACE	Red: Indicates when the power supply can be replaced.

## Disk drive and flash drive

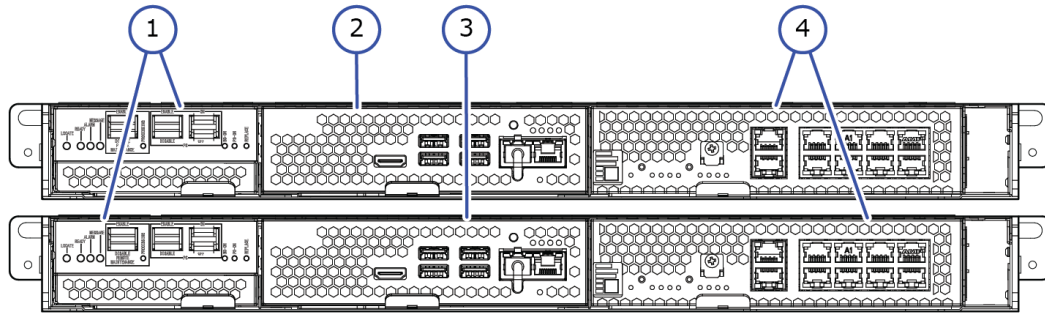
The disk drives and flash drives supported by the storage system are shown below.

Group	Interface	Size (inch)	Transfer rate (Gbps)	Revolution Speed (min <sup>-1</sup> ) or Flash Memory Technology	Capacity
HDD	NL-SAS	3.5	12	7,200	▪ 14TB
HDD	SAS	2.5	12	10,000	▪ 2.4TB
SSD	SAS	2.5	12	MLC/TLC	▪ 960GB ▪ 1.9TB ▪ 3.8TB ▪ 7.6TB ▪ 15.3TB ▪ 30TB

Group	Interface	Size (inch)	Transfer rate (Gbps)	Revolution Speed (min <sup>-1</sup> ) or Flash Memory Technology	Capacity
SSD	NVMe	2.5	8	TLC	<ul style="list-style-type: none"> <li>▪ 1.9TB</li> <li>▪ 3.8TB</li> <li>▪ 7.6TB</li> <li>▪ 15.3TB</li> </ul>

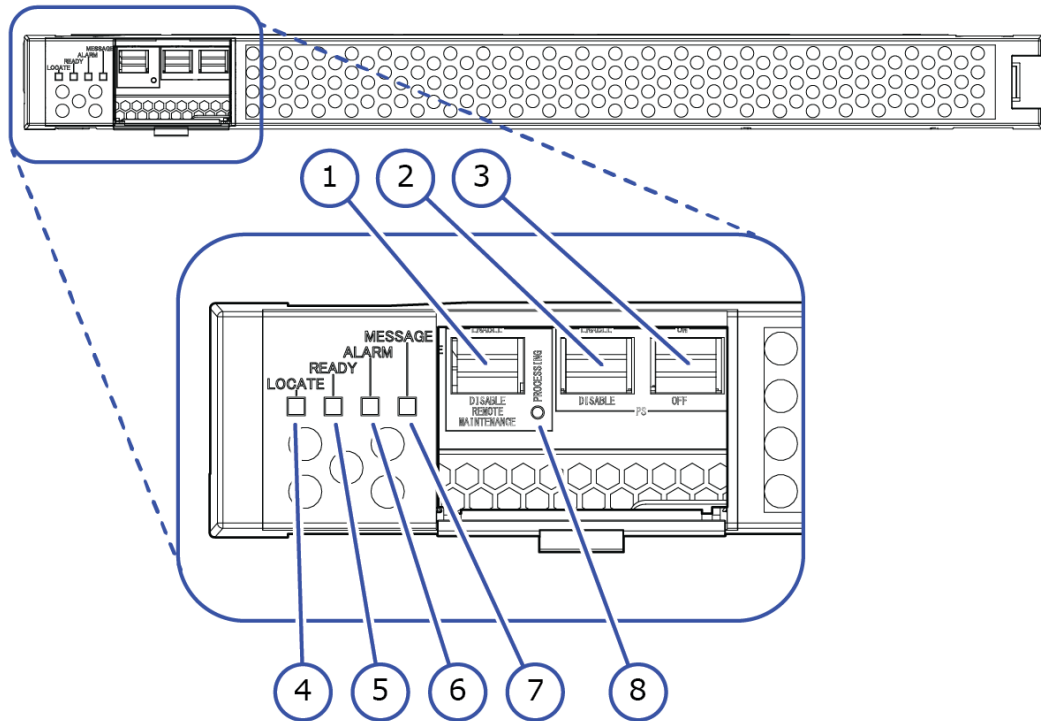
## Node interconnect switch

The node interconnect switch is a 1U switch chassis that contains interconnect and management components. A node interconnect switch consists of two interconnect switches, a service processor (SVP), an ethernet switch (SSVP), an operation panel, and two power supplies with a built-in cooling fan. The primary and secondary node interconnect switches must be installed in the storage system. For the secondary node interconnect switch, SVP and SSVP are optional.



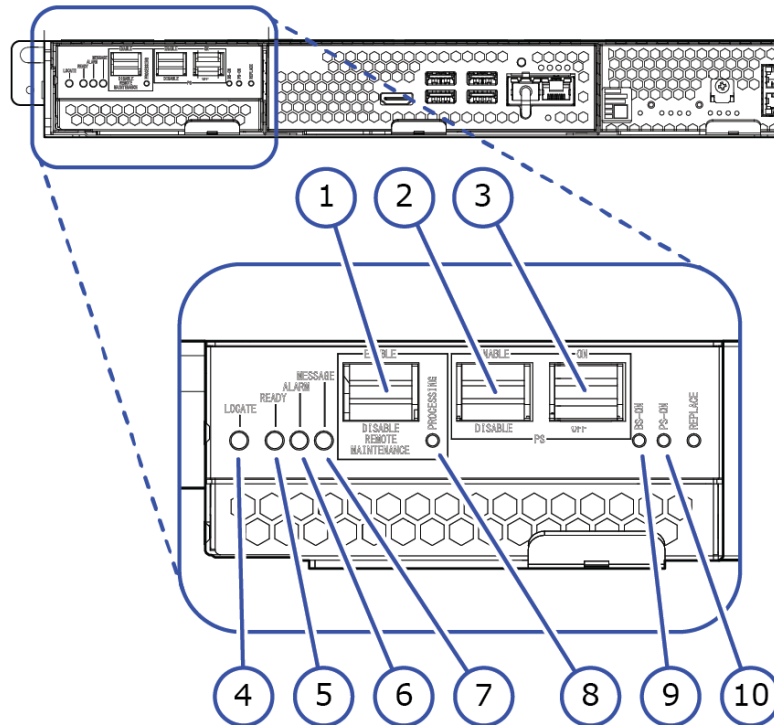
Identifier	Name	Description
1	Operation Panel	The operation panel show system status with LED, and controls power on and off of the storage system.
2	Backup Service Processor	A redundant SVP in case main SVP fails.
3	Main Service Processor	The SVP provides status information about the storage system.
4	Ethernet Switch (SSVP)	The SSVP is a LAN hub that connects the SVP to each controller chassis, optional SSVP, and maintenance PC.





Number	Item	Description
1	REMOTE MAINTENANCE ENABLE/DISABLE	Used to enable or disable the remote maintenance of the storage system.  ENABLE : Remote maintenance is allowed.  DISABLE : Remote maintenance is not allowed.
2	PS SW ENABLE	Move this switch to the ENABLE position to allow the PS ON/PS OFF switch to power on or power off the storage system..
3	PS ON/PS OFF	To power on or off the storage system, move this switch while holding the PS SW ENABLE switch in the ENABLE position.
4	LOCATE	Amber: The node interconnect switch needs maintenance.

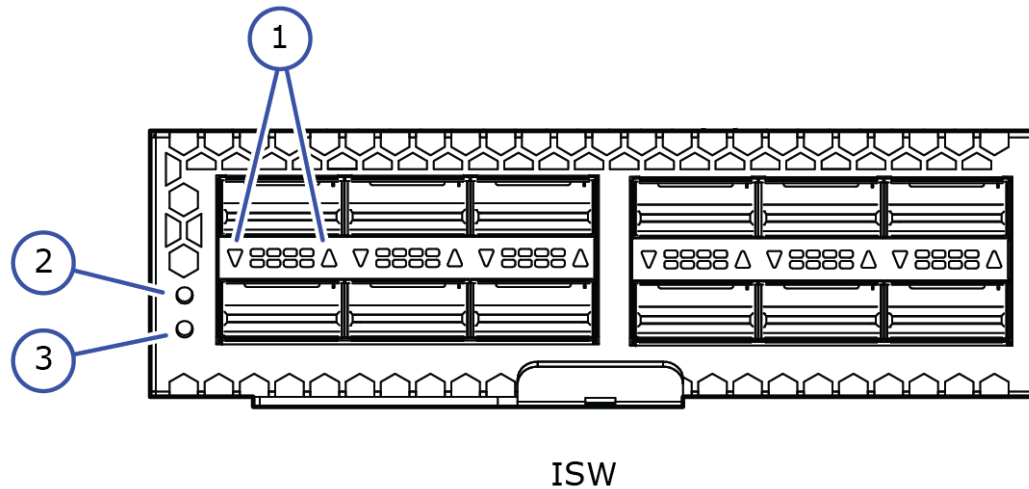
Number	Item	Description
		Off: Normal condition.
5	READY	Green: I/O operation on the channel interface is possible. Off: Not ready.
6	ALARM	Red: The storage system is down, or an MP block occurred. Off: Not in the alarm status.
7	MESSAGE	Amber: The storage system is down, or an MP block occurred. The storage system detected a failure, and a SIM related to the failure was reported to the SVP. The LED continues to light until the maintenance personnel changes the SIM attribute to 'complete'. One blinking amber: SVP became faulty in a single SVP configuration. Two blinking amber: SVPs became faulty in a dual SVP configuration. If one of the two SVPs becomes faulty in a dual SVP configuration, this LED does not blink.
8	REMOTE MAINTENANCE PROCESSING	Amber: Remote maintenance (ASSIST) is being operated.



Number	Item	Description
1	REMOTE MAINTENANCE ENABLE/DISABLE	Used to enable or disable the remote maintenance of the storage system.  ENABLE : Remote maintenance is allowed.  DISABLE : Remote maintenance is not allowed.
2	PS SW ENABLE	Move this switch to the ENABLE position to allow the PS ON/PS OFF switch to power on or power off the storage system..
3	PS ON/PS OFF	To power on or off the storage system, move this switch while holding the PS SW ENABLE switch in the ENABLE position.

Number	Item	Description
4	LOCATE	Amber: The node interconnect switch needs maintenance. Off: Normal condition.
5	READY	Green: I/O operation on the channel interface is possible. Off: Not ready.
6	ALARM	Red: The storage system is down, or an MP block occurred. Off: Not in the alarm status.
7	MESSAGE	Amber: The storage system is down, or an MP block occurred. The storage system detected a failure, and a SIM related to the failure was reported to the SVP. The LED continues to light until the maintenance personnel changes the SIM attribute to 'complete'.  One blinking amber: SVP became faulty in a single SVP configuration.  Two blinking amber: SVPs became faulty in a dual SVP configuration. If one of the two SVPs becomes faulty in a dual SVP configuration, this LED does not blink.
8	REMOTE MAINTENANCE PROCESSING	Amber: Remote maintenance (ASSIST) is being operated.
9	BS ON	Amber: The auxiliary power supply in the storage system is powered on.
10	PS ON	Green: The storage system is powered on.

## Interconnect switch

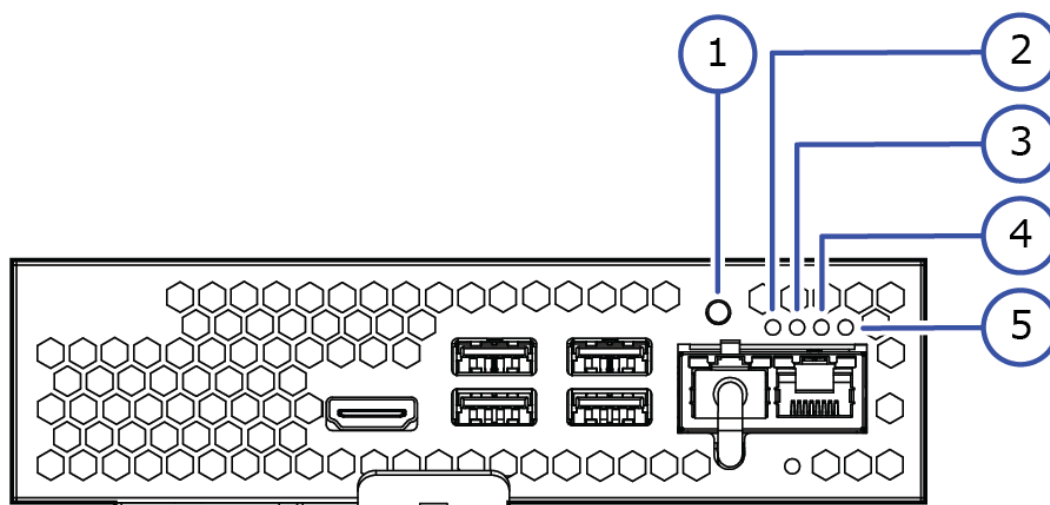


Number	Item	Description
1	PORT	Red: The cable needs maintenance Blinking Red: Error state (not linked state) Blinking Amber/Green): Error state (linked state) Green: Normal state (linked state) Off: Link down state.
2	ALARM	On: An error has occurred.
3	POWER	On: The ISW is powered on.

## Service Processor

The SVP monitors storage system operations by collecting statistics and reporting this information to the Hitachi Remote Ops monitoring system.

If an optional second SVP is installed, the primary SVP is the active unit while the secondary SVP acts as a hot standby. If the primary SVP fails, the hot standby SVP takes over within three minutes. In this way, the dual-SVP configuration eliminates single points of failure with the SVP.



## SVP

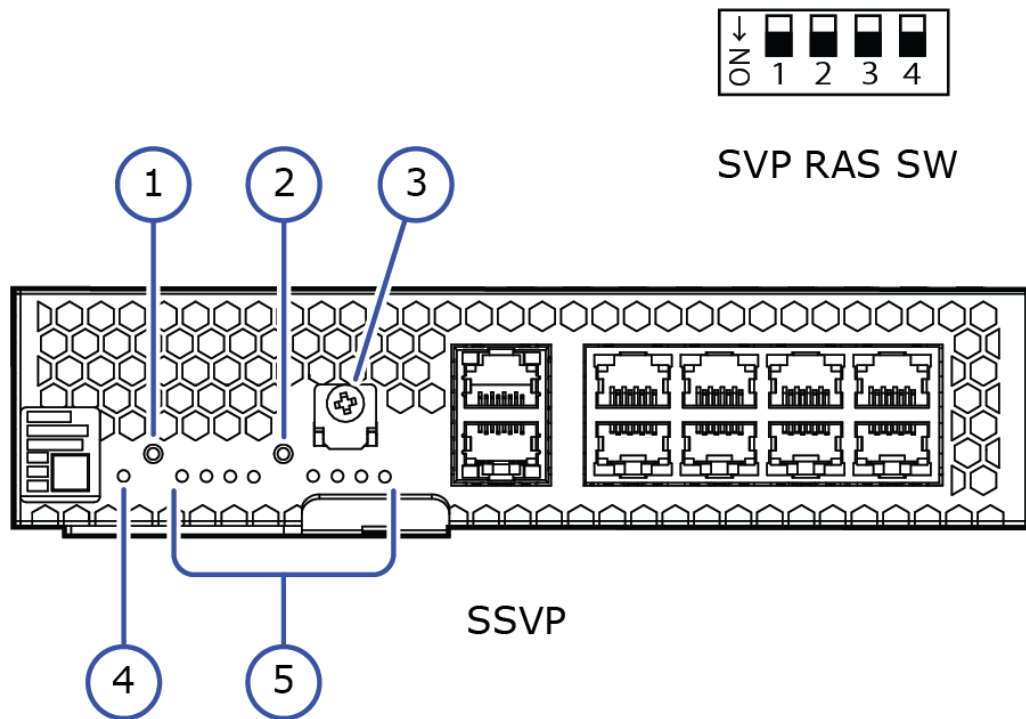
Number	Item	Description
1	SVP PS ON/OFF	Used to power on or off the SVP power supply. Holding down this switch shuts down the power supply.
2	SVP POWER	Green: The SVP power supply is powered on.
3	SVP DCIN	Green: The SVP is receiving DC power.
4	SVP HDD	Green: The HDD in the SVP is being accessed.
5	SVP SHUT DOWN	Red: The SVP can be removed when the storage system is powered on.

The table lists the technical specifications of the service processor.

Component	Specifications
Operating System	Windows 10 IoT Enterprise 2016 LTSC

Component	Specifications
CPU	Intel® Pentium® N4200 2.5GHz Processor
Internal Memory	8GB
Disk drive	256GB (SATA3.0 mSATA)
LAN	On-Board 10Base-T/ 100Base-TX /1000Base- T x 2 Port
HUB	10Base-T/ 100Base-TX / 1000Base-T x 10 Port
USB	Version 2.0/3.0 x 4 ports
*Because the SVP has no monitor or keyboard, a maintenance PC must be connected to the SVP to view the information collected by the SVP.	

## Ethernet Switch(SSVP)



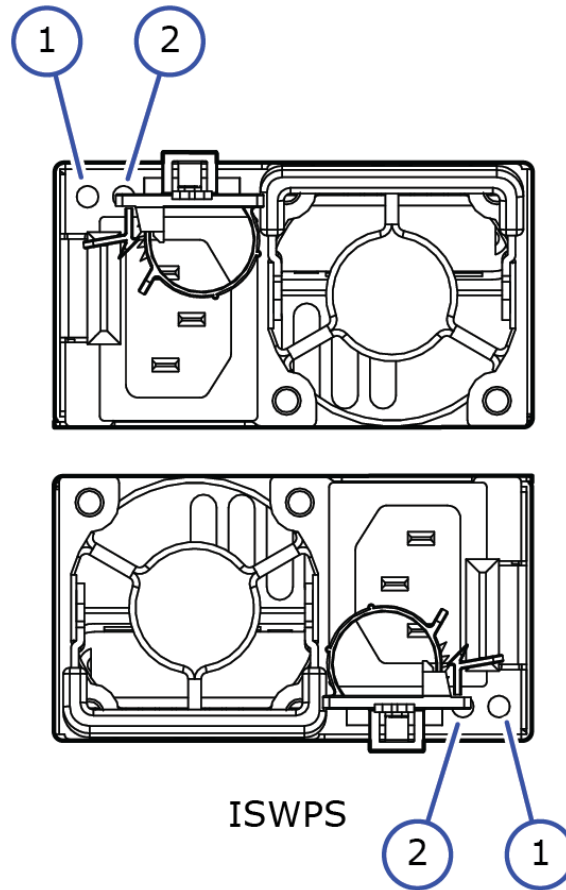
Number	Item	Description
1	SSVP RESET	Used to reset the hardware of the SSVP.
2	SVP RAS SET	Used to set the RAS function of the SVP. Use this switch together with the SVP RAS switches #2, #3, and #4.
3	SVP RAS	#1 : The SVP PS ON/OFF INH switch to suppress rebooting the SVP.  #2, #3, and #4 : Used with the SVP RAS SET switch to set each function of the SVP. See table below for functions.
4	SSVP REP	The SSVP is ready to be replaced for maintenance. This LED is lit by SVP control.



Number	Item	Description
5	SVP STATUS	This LED is turned on or off by program control via a RAS driver.

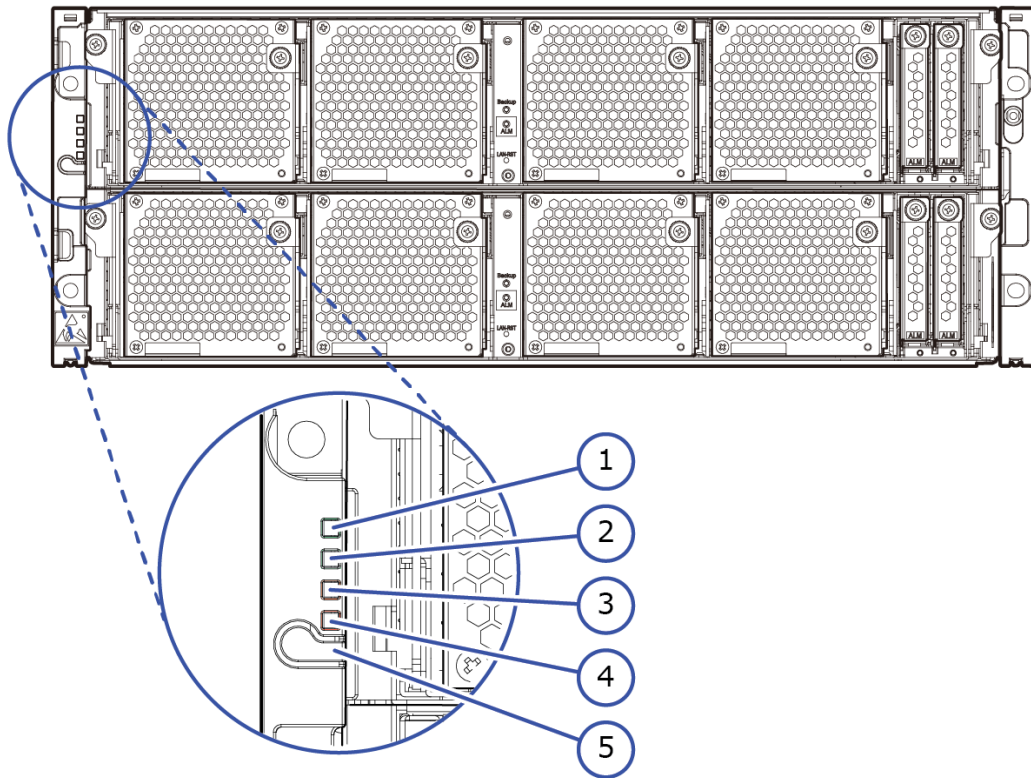
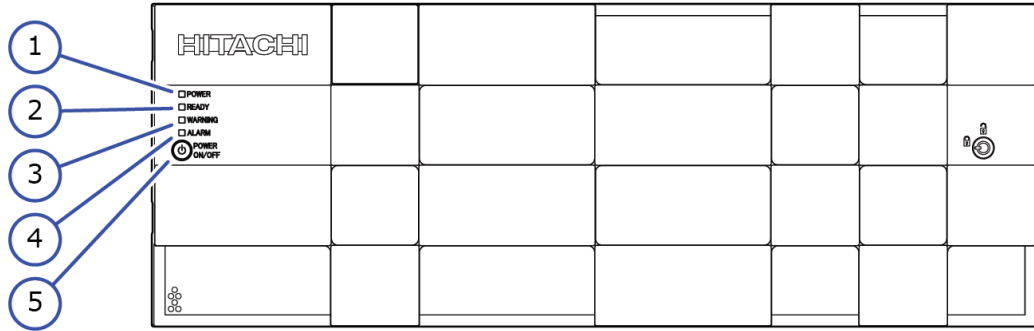
Setting	Operation	#2	#3	#4	SVP RAS SET switch
SVP IP ADDRESS DISPLAY	First time	ON	OFF	OFF	Press down
HUB RESET	First time	ON	OFF	ON	Press down
Disabling the setting, or cancelling the first operation	First time	ON	ON	ON	Press down
	Second time	OFF	OFF	OFF	Press down
SVP PASSWORD/IP ADDRESS INITIALIZATION	First time	ON	ON	ON	Press down
	Second time	OFF	OFF	ON	Press down

## Interconnect switch power supply



Number	Item	Description
1	PORT	Blue: AC input is normal.
2	ALM/RDY	Red : The ISWPS is ready to be replaced. Green : The ISWPS is operating normally.

## LED locations for high availability node



Number	Item	Description
1	POWER LED	Green: Storage system is powered on. Amber: Storage system is receiving power.
2	READY LED	Green: Normal operation.
3	WARNING LED	Off: Normal operation. Amber: Component requires maintenance.

Number	Item	Description
		<p>Blink: Failure requires maintenance.</p> <p><b>Note:</b> When System Option Mode 1097 is set to ON, the WARNING LED does not blink, even if the following failure service information messages (SIM) are issued: 452xxx, 462xxx, 3077xx, 4100xx, and 410100.</p> <p>LED might turn off during user maintenance.</p>
4	ALARM LED	<p>Off: Normal operation.</p> <p>Red: Processor failure (system might be down). For assistance, contact customer support: <a href="https://support.hitachivantara.com/en_us/contact-us.html">https://support.hitachivantara.com/en_us/contact-us.html</a>.</p>
5	POWER ON/OFF (main switch)	Powers the storage system.

## Chapter 3: Specifications


The Hitachi Virtual Storage Platform storage system use the following specifications.

### Storage system specifications

The following table lists the technical specifications of the Hitachi Virtual Storage Platform 5000 series storage system.


**Table 2 System specifications for 2-node storage systems**

Item		Specification	
System	Number of 2.5-inch drives	Maximum 768	
	Number of 3.5-inch drives	Maximum 384	
	Number of FMDs	Maximum 192	
	Number of NVMe drives	Maximum 96	
	RAID group configuration	RAID 6	<ul style="list-style-type: none"> <li>▪ 6D+2P</li> <li>▪ 14D+2P</li> </ul>
		RAID 5	<ul style="list-style-type: none"> <li>▪ 3D+1P</li> <li>▪ 7D+1P</li> </ul>
		RAID 1	<ul style="list-style-type: none"> <li>▪ 2D+2D</li> <li>▪ 4D+4D</li> </ul>
	Maximum number of spare drives		64 spare or data disks
	Maximum number of volumes		65,280
	Maximum storage system capacity (physical capacity)	30 TB 2.5-inch SSD used	20.5 PiB
15 TB 2.5-inch NVMe SSD		1.3 PiB	

Item		Specification	
	Maximum external configuration	255 PiB	
Memory	Cache memory capacity		
	VSP 5100H: <ul style="list-style-type: none"> <li>▪ Mainframe: 512 GB to 1 TB</li> <li>▪ Open: 1 TB</li> </ul> VSP 5500H: <ul style="list-style-type: none"> <li>▪ Mainframe: 2 TB</li> <li>▪ Open: 2 TB</li> </ul>		
Storage interface	DKC-DB interface		
	SAS/Dual Port		
	NVMe/Dual Port		
	Data transfer rate	SAS Interface	
	NVMe (PCIe) Interface	8 Gbps	
	Number of DKB	VSP 5100H: 4 VSP 5500H: 8	
Device interface	Support channel type	Open System	
		<ul style="list-style-type: none"> <li>▪ Fibre Channel Shortwave</li> <li>▪ Fibre Channel Longwave</li> <li>▪ iSCSI (Optic)</li> </ul> <div style="border: 1px solid black; background-color: #e0f2f1; padding: 5px; margin-top: 10px;">  <b>Note:</b> By replacing SFP transceiver of the fibre port on the Channel Board to SFP for Longwave, the port can be used for the Longwave.         </div>	
		Mainframe	Fibre Channel Short Wave/Fibre Channel Long Wave
	Data transfer rate	Fibre Channel	Open System : 4/8/16/32 Gbps Mainframe : 4/8/16 Gbps
		iSCSI (Optic)	10 Gbps
		Maximum number of CHB	VSP 5100H: 8 VSP 5500H: 16

**Table 3 System specifications for 4-node storage systems**


Item		Specification		
System	Number of 2.5-inch drives	Maximum	1,536	
	Number of 3.5-inch drives	Maximum	768	
	Number of FMDs	Maximum	384	
	Number of NVMe drives	Maximum	192	
	RAID group configuration	RAID 6		<ul style="list-style-type: none"> <li>▪ 6D+2P</li> <li>▪ 14D+2P</li> </ul>
		RAID 5		<ul style="list-style-type: none"> <li>▪ 3D+1P</li> <li>▪ 7D+1P</li> </ul>
		RAID 1		<ul style="list-style-type: none"> <li>▪ 2D+2D</li> <li>▪ 4D+4D</li> </ul>
	Maximum number of spare drives		128 spare or data disks	
	Maximum number of volumes		65,280	
	Maximum storage system capacity (physical capacity)	30 TB 2.5-inch SSD used	41.0 PiB	
15 TB 2.5-inch NVMe SSD		2.7 PiB		
Maximum external configuration		255 PiB		
Memory	Cache memory capacity		4 TB	
Storage interface	DKC-DB interface		SAS/Dual Port NVMe/Dual Port	
	Data transfer rate	SAS Interface	12 Gbps	
		NVMe (PCIe) Interface	8 Gbps	
Number of DKB		16/8		
Device interface	Support channel type	Open System	<ul style="list-style-type: none"> <li>▪ Fibre Channel Shortwave</li> <li>▪ Fibre Channel Longwave</li> <li>▪ iSCSI (Optic)</li> </ul>	

Item		Specification
		 <b>Note:</b> By replacing SFP transceiver of the fibre port on the Channel Board to SFP for Longwave, the port can be used for the Longwave.
	Mainframe	Fibre Channel Short Wave/Fibre Channel Long Wave
Data transfer rate	Fibre Channel	Open System : 4/8/16/32 Gbps Mainframe : 4/8/16 Gbps
	iSCSI (Optic)	10 Gbps
Maximum number of CHB		32

**Table 4 System specifications for 6-node storage systems**

Item		Specification	
System	Number of 2.5-inch drives	Maximum 2,304	
	Number of 3.5-inch drives	Maximum 1,152	
	Number of FMDs	Maximum 576	
	Number of NVMe drives	Maximum 288	
	RAID group configuration	RAID 6	<ul style="list-style-type: none"> <li>▪ 6D+2P</li> <li>▪ 14D+2P</li> </ul>
		RAID 5	<ul style="list-style-type: none"> <li>▪ 3D+1P</li> <li>▪ 7D+1P</li> </ul>
		RAID 1	<ul style="list-style-type: none"> <li>▪ 2D+2D</li> <li>▪ 4D+4D</li> </ul>
	Maximum number of spare drives		192 spare or data disks
Maximum number of volumes		65,280	



Item			Specification
	Maximum storage system capacity (physical capacity)	30 TB 2.5-inch SSD used	61.5 PiB
		15 TB 2.5-inch NVMe SSD	4.0 PiB
	Maximum external configuration		255 PiB
Memory	Cache memory capacity		6 TB
Storage interface	DKC-DB interface		SAS/Dual Port NVMe/Dual Port
	Data transfer rate	SAS Interface	12 Gbps
		NVMe (PCIe) Interface	8 Gbps
	Number of DKB		24/16/8
Device interface	Support channel type	Open System	<ul style="list-style-type: none"> <li>▪ Fibre Channel Shortwave</li> <li>▪ Fibre Channel Longwave<sup>3</sup></li> <li>▪ iSCSI (Optic)</li> </ul> <div style="border: 1px solid black; background-color: #e0f2f1; padding: 5px; margin-top: 10px;"> <p> <b>Note:</b> By replacing SFP transceiver of the fibre port on the Channel Board to SFP for Longwave, the port can be used for the Longwave.</p> </div>
		Mainframe	Fibre Channel Short Wave/Fibre Channel Long Wave
	Data transfer rate	Fibre Channel	Open System : 4/8/16/32 Gbps Mainframe : 4/8/16 Gbps
		iSCSI (Optic)	10 Gbps
	Maximum number of CHB		48

## Mechanical environmental specifications

The following tables list the mechanical environmental conditions for the Hitachi Virtual Storage Platform 5000 series storage systems.

**Table 5 Mechanical environmental conditions**

Item	In operation	In non-operation
Vibration value of storage system	0.25Grms, 5-500Hz, 30min.	0.6Grms, 3-500Hz, 30min.
Vibration value of chassis	-	<ul style="list-style-type: none"> <li>▪ 5G, 11ms half sine, 3axis direction</li> <li>▪ 10G, 6ms, half sine, 3axis direction</li> <li>▪ 10G, 11ms, half sine, bottom direction</li> </ul>

## Electrical specifications

The Hitachi Virtual Storage Platform 5000 series storage system Power Distribution Units (PDUs) support single-phase AC power.

The Hitachi rack comes with either two, four, or six PDUs, depending on the PDU model selected. The PDUs are installed vertically in the rack.

- If two PDUs are selected, one will be installed on the left side of the rack and the other will be installed on the right side.
- If four PDUs are selected, the PDUs will be half-length and mounted vertically, one above the other, with two on the left side of the rack and two on the right side.
- If six PDUs are selected, the PDUs will be 1/3-length and mounted vertically, one above the other, with three on the left side of the rack and two on the right side.



**Note:** The current and power specifications of the storage system in the following tables were measured in a controlled environment. To calculate the power and current draw, and heat output of a specific system, see [Component power consumption, heat output, and airflow \(on page 62\)](#) or use the weight and power calculator at the following URL: <http://www.hds.com/go/weight-and-power-calculator/>.

If you need assistance using this tool, contact Hitachi Vantara Support at [https://support.hds.com/en\\_us/contact-us.html](https://support.hds.com/en_us/contact-us.html).

Item	Input Power	Inrush Current (Rating) <sup>1</sup>		Leakage Current	Inrush Current		
		When one PS is operating	When two PSs are operating		1st (0-p)	2nd (0-p)	1st (0-p) Time (-25%)
Node power supply	Single phase, AC200V to AC240V	7.2 A	3.6 A	1.75 mA	30 A	30 A	25 ms
DBPS (DBS2)		3.2 A	1.6 A	1.75 mA	30 A	30 A	25 ms
DBPS (DBL)		2.0 A	1.0 A	1.75 mA	30 A	30 A	25 ms
DBPS (DBF3)		3.1 A	1.55 A	1.75 mA	20 A	15 A	80 ms
DBPS (DBN)		4.0 A	2.0 A	1.75 mA	30 A	30 A	25 ms
Node interconnect switch power supply		1.2 A	0.6 A	1.75 mA	30 A	30 A	25 ms
<p><b>1.</b> When two power supplies are operating, each power supply provides about half of the required power for the storage system. When only one of the two power supplies is operating, the power supply provides all required power for the storage system. Therefore, use the power supplies that meet the rated input current for when one power supply is operating.</p>							

The following table shows the supported input voltage and frequency for the controller chassis, drive box, and node interconnect switch.

Input voltage	Voltage tolerance	Frequency	Wire connection
200V to 240V	+10% or -11%	50Hz ± 2Hz 60Hz ± 2Hz	1 Phase 2 Wire + Ground
<ul style="list-style-type: none"> <li>▪ Use PDU with the standard plug.</li> <li>▪ If PDU is provided with connecting type B plug, use PDU with circuit breaker of 20 (16) A or less, or install circuit breaker of 20 (16) A in the power supply.</li> </ul>			

## Environmental specifications

The following table lists the environmental specifications for the Hitachi Virtual Storage Platform 5000 series storage systems.



**Note:** Environmental conditions of operation should be completed before switch on a system

**Table 6 Environmental specifications**

Item	Condition		
	Operating	Not operating	Shipping and storage
Temperature range	10 °C to 40 °C <sup>6</sup>	-10 °C to 50 °C	-30 °C to 60 °C
Relative Humidity (No dew condensation)	8% to 80%	8% to 90%	5% to 95%
Max. Wet Bulb	29 °C	29 °C	29 °C
Temperature gradient per hour	10 °C	10 °C	10 °C
Dust	0.15 or less	-	-
Gaseous contaminants <sup>2</sup>	G1 classification levels		
Altitude (m)	<sup>3</sup> ~ 3,050 (10 °C ~ 28 °C) ~ 950 (10 °C ~ 40 °C) <sup>6</sup>	-60 to 3,000	-60 to 3,000
Noise Level (Recommended)	90 dB or less <sup>1</sup>	-	-
Chassis Acoustic Level <sup>45</sup>	<ul style="list-style-type: none"> <li>▪ CBX: L<sub>pAm</sub> 60dB, L<sub>wA</sub> 6.6Bel</li> <li>▪ HSNBX: L<sub>pAm</sub> 60dB, L<sub>wA</sub> 6.6Bel</li> <li>▪ DBS2: L<sub>pAm</sub> 60dB, L<sub>wA</sub> 6.4Bel</li> <li>▪ DBL: L<sub>pAm</sub> 60dB, L<sub>wA</sub> 6.4Bel</li> </ul>	<ul style="list-style-type: none"> <li>▪ CBX: L<sub>pAm</sub> 55dB</li> <li>▪ HSNBX: L<sub>pAm</sub> 55dB</li> <li>▪ DBS2: L<sub>pAm</sub> 55dB</li> <li>▪ DBL: L<sub>pAm</sub> 55dB</li> <li>▪ DBF3: L<sub>pAm</sub> 55dB</li> <li>▪ DBN: L<sub>pAm</sub> 55dB</li> </ul>	-

Item	Condition		
	Operating	Not operating	Shipping and storage
	<ul style="list-style-type: none"> <li>▪ DBF3: <math>L_{pAm}</math> 60dB, <math>L_{wA}</math> 6.0Bel</li> <li>▪ DBN: <math>L_{pAm}</math> 60dB, <math>L_{wA}</math> 6.0Bel</li> </ul>		
<p><b>1.</b> Fire suppression systems and acoustic noise: Hitachi does not test storage systems and hard disk drives for compatibility with fire suppression systems and pneumatic sirens. Hitachi also does not provide recommendations or claim compatibility with any fire suppression systems and pneumatic sirens. Customer is responsible to follow their local or national regulations.</p> <p><b>2.</b> See ANSI/ISA-71.04-2013 Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants.</p> <p><b>3.</b> Meets the highest allowable temperature conditions and complies with ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) 2011 Thermal Guidelines Class A2. The maximum value of the ambient temperature and the altitude is from 35 degrees C at an altitude of 950 meters (3000 feet) to 28 degrees C at an altitude of 3050 meters (10000 feet). The allowable ambient temperature is decreased by 1 degree C for every 300-meter increase in altitude above 950 meters.</p> <p><b>4.</b> The acoustic level is measured under the following conditions in accordance with ISO7779 and the value is declared based on ISO9296.</p> <p>In a normal installation area (data center/general office), the storage system is surrounded by different elements from the following measuring conditions according to ISO, such as noise sources other than the storage system (other devices) , the walls and ceilings that reflect the sound.</p> <p>Therefore, the values described in the table do not guarantee the acoustic level in the actual installation area.</p> <ul style="list-style-type: none"> <li>▪ Measurement environment: In a semi-anechoic room whose ambient temperature is 23 degrees C <math>\pm</math> 2 degrees C</li> <li>▪ Device installation position: The Controller Chassis is at the bottom of the rack and the Drive Box is at a height of 1.5 meters in the rack</li> <li>▪ Measurement position: 1 meter away from the front, rear, left, or right side of the storage system and 1.5 meters high (at four points)</li> <li>▪ Measurement value: Energy average value of the four points (front, rear, left, and right)</li> </ul> <p><b>5.</b> Sound pressure level [LA] changes from 45 dB to 63 dB according to the ambient temperature, drive configuration and operating status. The maximum could be 67 dB during maintenance procedure for failed ENC or Power Supply.</p> <p><b>6.</b> NVMe drives have a temperature range from 10 °C to 35 °C while in operation.</p>			

## **Component power consumption, heat output, and airflow**

The following table provides power consumption, heat output, and airflow specifications of the individual Virtual Storage Platform 5000 series system components.

Component	Component model number	Power consumption (VA)	Heat output	Airflow (m <sup>3</sup> /min)	Weight (kg)
Primary controller chassis	DKC910I-CBX	756	718	5.4	70.0
Secondary controller chassis	DKC-F910I-CBX2	491	466	3.0	41.6
SFF drive chassis	DKC-F910I-SBX	1,221	1,160	12.8	68
LFF drive chassis	DKC-F910I-UBX	674	640	18.9	126.0
FMD Drive Chassis	DKC-F910I-FBX	473	450	6.4	76.7
Controller Chassis Bezel	DKC-F910I-CBLFB	-	-	-	1.0
Controller Chassis Bezel	DKC-F910I-CBLFBA	-	-	-	1.2
Drive Chassis Bezel	DKC-F910I-DBFB	-	-	-	0.5
Drive Chassis Bezel	DKC-F910I-DBFBA	-	-	-	0.5
HSN Chassis Bezel	DKC-F910I-HSNFB	-	-	-	0.6
HSN Chassis Bezel	DKC-F910I-HSNFBA	-	-	-	0.6
Flash Module Bezel	DKC-F910I-FBFB	-	-	-	0.7
Flash Module Bezel	DKC-F910I-FBFBA	-	-	-	0.9
Additional Service Processor	DKC-F910I-SVP	16.0	16.0	-	0.7
Additional RAID Controller Kit	DKC-F910I-CTL	491	466	-	11.4

Component	Component model number	Power consumption (VA)	Heat output	Airflow (m <sup>3</sup> /min)	Weight (kg)
Safety Cover for empty CTL slot	DKC-F910I-SCFC	-	-	-	1.8
Additional Hub	DKC-F910I-HUB	12.0	12.0	-	0.5
Fan Module	DKC-F910I-FANM	22.7	21.6	-	1.1
Operation Panel Kit	DKC-F910I-OPPNL	1.0	1.0	-	0.37
Mainframe Fibre 4-port 16G Host Adapter for Shortwave	DKC-F910I-4MS16	19.3	18.3	-	0.5
Mainframe Fibre 4-port 16G Host Adapter for Longwave	DKC-F910I-4ML16	19.3	18.3	-	0.5
Fibre 4-port 32Gbps Ready Host Adapter	DKC-F910I-4HF32R	24.9	22.4	-	0.5
iSCSi 2-port 10G Host Adapter	DKC-F910I-2HS10S	18.9	18.0	-	0.5
SFP for 16Gbps Longwave	DKC-F810I-1PL16	-	-	-	0.02
SFP for 16Gbps Shortwave	DKC-F810I-1PS16	-	-	-	0.02
SFP for 32Gbps Shortwave	DKC-F810I-1PS32	-	-	-	0.02
Disk Adapter	DKC-F910I-BS12G	17.2	16.0	-	0.5



Component	Component model number	Power consumption (VA)	Heat output	Airflow (m <sup>3</sup> /min)	Weight (kg)
Encryption Disk Adapter	DKC-F910I-BS12GE	17.2	16.0	-	0.5
Cache Memory 64GB	DW-F850-CM64GL	5.0	4.8	-	0.054
Cache Flash Memory 45	DKC-F910I-BM45	6.8	6.5	-	0.2
Cache Flash Memory 45 with encryption	DKC-F910I-BM4E	6.8	6.5	-	0.2
Rack Rail	A34V-600-850-UNI-S.P	-	-	-	-
HSN Chassis Rail	3292455-001	-	-	-	-
Rack Rail	A34V-600-850-UNI-S.P	-	-	-	-
Drive Chassis Rail for FBX	A3BF-HK-GL-740-1-S.P L	-	-	-	-
PCIe Cable set for primary module CBXA	DKC-F910I-MCC1	-	-	-	0.1
PCIe Cable set for primary module CBXB	DKC-F910I-MCC2	-	-	-	0.1
PCIe Cable 5m	DKC-F910I-MFC5	-	-	-	0.2
PCIe Optical Module	DKC-F910I-PQSFP	-	-	-	0.005
SAS Optical Module	DKC-F910I-SQSFP	-	-	-	0.005
Optical Cable 10m	DKC-F910I-MPC10	-	-	-	0.2
Optical Cable 20m	DKC-F910I-MPC20	-	-	-	0.3

Component	Component model number	Power consumption (VA)	Heat output	Airflow (m <sup>3</sup> /min)	Weight (kg)
Optical Cable 30m	DKC-F910I-MPC30	-	-	-	0.4
Optical Cable 100m	DKC-F910I-MPC1H	-	-	-	1.0
SAS Cable set for Disk Adapter	DKC-F910I-SCCS	-	-	-	1.4
QSFP Metal Cable 1m	DW-F800-SCQ1	-	-	-	0.2
QSFP Metal Cable 1.5m	DW-F800-SCQ1F	-	-	-	0.2
RJ45 bundled LAN Cable Kit	DKC-F910I-LC	-	-	-	0.2
RJ45 Cable 5m	DKC-F910I-LC5	-	-	-	0.3
RJ45 Cable 10m	DKC-F910I-LC10	-	-	-	0.5
RJ45 Cable 20m	DKC-F910I-LC20	-	-	-	0.9
RJ45 Cable 30m	DKC-F910I-LC30	-	-	-	1.4
RJ45 Cable 100m	DKC-F910I-LC1J	-	-	-	4.7
SFF 2.4TB Disk Drive	DKC-F810I-2R4JGM	9.4	9.0	-	0.26
LFF 14TB Disk Drive	DKC-F810I-14RH9M	13.5	12.9	-	0.86
SFF 960GB SSD Drive	DKC-F810I-960MG M	7.0	6.7	-	0.21
SFF 1.9TB SSD Drive	DKC-F810I-1T9MG M	7.0	6.7	-	0.21

Component	Component model number	Power consumption (VA)	Heat output	Airflow (m <sup>3</sup> /min)	Weight (kg)
SFF 3.8TB SSD Drive	DKC-F810I-3R8MG M	7.0	6.7	-	0.21
SFF 7.6TB SSD Drive	DKC-F810I-7R6MG M	8.3	7.9	-	0.21
SFF 15TB SSD Drive	DKC-F810I-15RMG M	8.3	7.9	-	0.21
SFF 30TB SSD Drive	DKC-F810I-30RMG M	8.3	7.9	-	0.21
7TB Flash Module Drive	DKC-F810I-7R0FP	26.0	25.0	-	1.4
14TB Flash Module Drive	DKC-F810I-14RFP	26.0	25.0	-	1.4
NVMe Disk Adapter	DKC-F910I-BN8G	17.1	16.2	-	0.5
NVMe SFF Drive Chassis	DKC-F910I-NBX	445	446	16.4	15.5
NVMe Chassis Rail	A3BF-HK-GL-740-1-S.P	-	-	-	-
NVMe Cable set for NVMe Disk Adapter	DKC-F910I-NCCS	-	-	-	1.1
SFF 1.9TB NVMe Drive	DKC-F910I-1R9RVM	26.0	25.0	-	0.28
SFF 3.8TB NVMe Drive	DKC-F910I-3R8RVM	26.0	25.0	-	0.28
SFF 7.6TB NVMe Drive	DKC-F910I-7R6RVM	26.0	25.0	-	0.28
SFF 15TB NVMe Drive	DKC-F910I-15RRVM	26.0	25.0	-	TBD
<b>1.</b> Maximum values when all fans rotate at the maximum speed.					

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## Chapter 4: Turning storage system power on and off

The storage system can be powered on and off using the power control panel located on the node interconnect switch during normal operating conditions or a power failure. See [#unique\\_46](#) for switch locations.

### System idle mode

When the storage system power cables are plugged into the PDUs and the PDU breakers are on, the storage system is in idle (basic supply only) mode. When the storage system is in idle mode:

- The amber Basic Supply (BS) LED on the control panel is on. AC power is applied to the power supplies.
- The green READY LED is off. The controller and drive chassis are not operational.
- The fans in both the controller and drive chassis are running.
- The cache backup batteries are being charged.
- The storage system consumes significantly less power than it does in operating mode. For example, a storage system that draws 100 amps while operating draws only 40 to 60 amps in idle mode, depending on the number of drives in the system. The more drives, the more power is saved. See [Table 7 Maximum idle power per chassis \(on page 69\)](#) and [Mechanical environmental specifications \(on page 57\)](#).

To put the storage system into idle mode from the OFF condition:

1. Ensure power is available to the AC input boxes and PDUs in all racks.
2. Turn on all PDU power switches and circuit breakers.

To put the storage system into idle mode from a power on condition, perform the steps in [Power off procedures \(on page 70\)](#).

To shut down the storage system, perform the power off procedures, and then turn off all PDU circuit breakers.



**Warning:** Verify the storage system is turned off normally and in idle mode before turning off the PDU circuit breakers. Otherwise, turning off the PDU circuit breakers can leave the storage system in an abnormal condition.

Table 7 Maximum idle power per chassis

Chassis	Maximum idle power (VA)
Controller Chassis 0 or 1	500
SFF Drive Chassis	1,120
LFF Drive Chassis	720
FMD Drive Chassis	1,280

## Normal power on/off procedures

This section provides general information about turning on and turning off the power to the storage system. If further assistance is required, contact customer support.

### Power on procedures

#### Before you begin

- Confirm the storage system is in idle mode. See [System idle mode \(on page 68\)](#).



**Note:** The control panel includes a safety feature to prevent the storage system power from being turned on or off accidentally. The PS ON/OFF switch does not work unless the ENABLE switch is moved to and held in ENABLE while the power switch is moved to ON or OFF.

#### Procedure

- On the control panel, check the amber BS LED and make sure it is lit. It indicates that the storage system is in idle mode.
- In the PS area on the control panel, move the ENABLE switch to the ENABLE position and hold it there. While holding the switch in the ENABLE position, move the PS ON/OFF switch to ON. Then release both switches.
- Wait for the storage system to complete its power-on self-test and start processes. Depending on the storage system configuration, this can take several minutes.  
The storage system does not go to the READY state until the cache backup batteries are charged to at least 50%. The process can take 90 minutes if the batteries are completely discharged. The storage system generates a SIM that provides the status of the battery charge. See [Cache backup batteries](#) for information about the batteries.
- When the system self-test is complete and all components are operating normally, the green READY LED turns ON and the storage system is ready for use.  
If the ALARM LED is also ON, or if the READY LED is not ON after 20 minutes, contact customer support for assistance.

## Power off procedures

Follow this procedure exactly when powering off the storage system.



**Caution:** Except in an emergency, do not turn off the PDU breakers before turning off the power to the system. The system reacts as a power failure occurred and uses the cache backup batteries to keep the cache active until the data in the cache is transferred to the cache backup flash memory. When the cache backup batteries discharge power, the power-on time can be prolonged by the amount of charge remaining in the batteries. Fully discharged batteries take 90 minutes to charge.



**Note:** The control panel includes a safety feature to prevent the storage system power from being turned on or off accidentally. The PS power ON/OFF switch does not work unless the ENABLE switch is moved to and held in ENABLE while the power switch is moved to ON or OFF.

### Before you begin

- Confirm all maintenance and software-specific shutdown procedures have been completed.
- Verify all I/O activity to the storage system has stopped. You can vary paths offline and shut down the attached hosts.

### Procedure

1. In the PS area on the control panel, move the ENABLE switch to the ENABLED and hold it there. While holding the switch in ENABLED, move the PS ON/OFF switch to OFF. Then release both switches.
2. Wait for the storage system to complete its shutdown routines. Depending on the storage system configuration and certain MODE settings, you can wait 20 minutes for the storage system to copy data from the cache to the cache flash drives and for the disk drives to spin down.  
If the READY and PS LEDs do not turn OFF after 20 minutes, contact customer support for assistance.

## Emergency power off/on procedures

The following describes how to shut off the system during an emergency situation and turning on power to the storage system after an emergency shutdown.

### Turning off power to the storage system during an emergency

The storage system does not have an emergency power off switch. Use the following procedure to turn off the system during an emergency.



**Note:** When turning off the storage system, first turn off the PDUs connecting to the controllers and then turn off the PDUs connecting to the drive trays.

### Procedure

1. Open the back doors of both racks that contain control units.
2. Turn off the circuit breakers in the following order:
  - a. Turn off the circuit breakers in both lower PDUs in both racks.
  - b. Turn off the circuit breakers in both upper PDUs in both racks with control units.
3. Open the back doors of all racks containing only drive units and, in any order, turn off the circuit breakers to all the PDUs.

## Turning on power to the storage system after an emergency shutdown

To turn the power on to the storage system after an emergency shutdown, use the following instructions.



**Note:** When turning on the storage system, first turn on the PDUs connecting to the drive trays and then turn on the PDUs connecting to the controllers.

### Procedure

1. In all system racks, turn on the circuit breakers in the PDUs supplying electrical power to the drive units.
2. In both controller racks, turn on the circuit breakers in the PDUs supplying electrical power to the controllers.
3. Turn on power to the system. For more information, see [Normal power On/Off procedures \(on page 69\)](#).

## Appendix A: Regulatory specifications

This appendix provides regulatory information for storage systems and includes tables with explanations of regulatory requirement statements from various countries.

### Regulatory compliance

This equipment has been tested and is certified to meet the following certifications.

**Table 8 Compliance certifications**

Standard	Specification	Mark on the product	Country
Electronic emission control	FCC Part 15 Subpart B Class A	Yes (FCC)	U.S.A
Electronic emission control	FCC Part 15 Subpart B Class A:2010, Class A ICES-003 Issue 4 Class A	Yes (UL)	Japan
Safety certification	TUV Safety Report and TUV-NRTL Certification, FCC Verification Report	Yes (TUV)	EU, North America
Electronic emission certifications	TUV Safety Report, EMC Report, TUV GS License, EMC Certificate, CE Mark	Yes (CE Mark)	European Union
Electronic emission control	CB Report and Certificate	Yes (TUV)	Worldwide
Electronic emission control	Test Report for C-Tick Approval	Yes	Australia and New Zealand
VCCI Registration for Product and Accessories	VCCI Class A	Yes (VCCI)	Japan



Standard	Specification	Mark on the product	Country
Safety certification	GOST Certificate for Product and Accessories	Yes (GOST)	Russia
Electronic emission control	BSMI Approval for Product and Accessories	Yes (BSMI)	Taiwan
Electronic emission control	RRL Approval and KTL Safety Approval	Yes (RRL)	Korea
Safety certification	IRAM Approval	Yes	Argentina
Electronic emission control	CCC Approval for Switching Power Supply	Yes (IRAM)	China

Table 9 Compliance certifications by region

Certification	Region	Regulatory	Standard	Certificate No. and Report No.	
Safety	Worldwide	CB	IEC60950-1:2005+A1	Certificate Numbers	JPTUV-053187-M2 JPTUV-053211-A1 PTUV-048773-M1
				Report Numbers	12030097 12030890 12028263
				Photo Documentation Numbers	12030097 12030890 12028263
	North America	cTUVus	UL60950-1:2007 CAN/CSA-C22.2 No.60950-1-07+A1	Test Report No. Certificate Numbers	USA-JT 12030098 CU72133020 CU72133022 CU72120935
	European Union	TUV	+A11+A1+A12	Certificate Numbers	S1-50266086 S1-50266254

Certification	Region	Regulatory	Standard	Certificate No. and Report No.	
					S1-50245594
	Argentina	IRAM	IEC60950-1:2005+A1	Certificate Numbers	RA3385104E,204E,205E RA3385103E,202E,203E RA3283003E
Safety EMC	Russia	EAC	TP TC 004/2011 TP TC 020/2011	Certificate Numbers	RA3283003E RU C-JP.AR46.B.60400 RU C-JP.AR46.B.60634
	North America	FCC	FCC Part15 Subpart B Class A EICES-003 Issue:2012 Class A	Test Report No.	10033930S-C 10057416S-C 10162445S-D
	European Union	EN	EEN55022:2010 EEN55024:2010 EEN61000-3-2:2006 +A1+A2 EEN61000-3-3:2008	Certificate No. Test Report Numbers	CJ50268193 12030583-001 12030583-003 12030583-004
EMC	Australia and New Zealand	C-Tick RCM	AS/NZS CISPR 22:2009+A1 Class A	Test Report Numbers	10033930S-B 10057416S-B 10162445S-C
	Taiwan	BSMI	CNS13429¥CNS14336-1	Declaration of Conformity	Declaration of Conformity
	South Korea	KCC	KN22KN24	Certificate No.	MSIP-REM-HTB-DKC810
	Region	Regulatory	Standard	Model	Certificate No.
Safety EMC	China	CCC	GB4943-2011GB9254-2008GB17625.1-2003	SBX/ UBX_SWPSTDPS-600FB XX	2011010907455767
				FBX_SWPSPD6001	2012010907575263

## US FCC Notice

FCC Notice

Federal Communications Commission

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 users will be required to correct the interference at their own expense.

### Electronic emissions testing

EMI testing was conducted with shielded cables. To comply with the FCC regulations, you must use shielded cables with your installation.

The EMI tests were performed with the following configurations:


DKC810I-CBX+DKC+F810I-SBX

DKC810I-CBX+DKC+F810I-SBX+DKC-F810I-UBX

Copies of the Underwriters Laboratories EMI compliance certificates are located at the end of this chapter.

If trouble occurs in another configuration, a user may be requested to take appropriate preventive measures.

## European Declaration of Conformity

	<p><b>Warning</b> This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A for ITE, the essential protection requirement of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.</p>
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"EINE LEICHT ZUGÄNGLICHE TRENN-VORRICHTUNG, MIT EINER KONTAKT-ÖFFNUNGSWEITE VON MINDESTENS 3mm IST IN DER UNMITTELBAREN NÄHE DER VERBRAUCHERANLAGE ANZUORDEN (4-POLIGE ABSCHALTUNG)."

**Maschinen lärm informations verordnung 3. GSGV, 18.01.1991:** Der "höchste" Schalldruckpegel beträt 70 db (A) oder weniger gemäß ISO 7779

CLASS 1 LASER PRODUCT



**Warning:** 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.

**Warning:** Dies ist ein Produkt der Klasse A. In nichtgewerblichen Umgebungen können von dem Gerät Funkstörungen ausgehen, zu deren Beseitigung vom Benutzer geeignete Maßnahmen zu ergreifen sind.

## Notice of export controls

Export of technical data contained in this document may require an export license from the United States government and/or the government of Japan. Contact the Hitachi Legal Department for any export compliance questions.

## China RoHS

	This symbol displays requirements for controlling pollution caused by electronic information products.
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## Hazardous and toxic substances

Table 10 Hazardous and toxic substances

Toxic and hazardous substances and elements						
Unit	Lead (PB)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Controller chassis	X	O	O	O	O	O
Drive chassis	X	O	O	O	O	O

### Toxic and hazardous substances and elements

The Symbol O indicates that this toxic or hazardous substances contained in all of the homogeneous materials used for this part is below this limit requirement in SJ/T 11363-2006.

The symbol X indicates that this toxic or hazardous substances contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T 11363-2006.

## Disposal



**Note:** This symbol on the product or on its packaging means that your electrical and electronic equipment should be disposed at the end of life separately from household wastes. There are separate collection systems for recycling EU and many cities in the USA. For more information, contact the local authority or the dealer where you purchased the product.

## Recycling



The cache backup battery unit includes a nickel-hydride battery. A nickel-hydride battery should be recycled when it is no longer usable. When you replace the battery unit, do not dispose of the old one in the trash. Recycle the battery instead. The mark posted on the battery unit is a three-arrow mark that means a recyclable part.

## FIPS 140-2 Consolidated Validation Certificate

The encrypting back-end director received FIPS 140-2 certification from the National Institute of Standards and Technology. For more information about security and encryption, contact your Hitachi Vantara sales representative.

**FIPS 140-2 Consolidated Validation Certificate**



July 2016

The National Institute of Standards and Technology, as the United States FIPS 140-2 Cryptographic Module Validation Authority; and the Communications Security Establishment Canada, as the Canadian FIPS 140-2 Cryptographic Module Validation Authority; hereby validate the FIPS 140-2 testing results of the cryptographic modules listed below in accordance with the Derived Test Requirements for FIPS 140-2, Security Requirements for Cryptographic Modules. FIPS 140-2 specifies the security requirements that are to be satisfied by a cryptographic module utilized within a security system protecting Sensitive Information (United States) or Protected Information (Canada) within computer and telecommunications systems (including voice systems).

Products which use a cryptographic module identified below may be labeled as complying with the requirements of FIPS 140-2 so long as the product, throughout its life-cycle, continues to use the validated version of the cryptographic module as specified in this consolidated certificate. The validation report contains additional details concerning test results. No reliability test has been performed and no warranty of the products by both agencies is either expressed or implied.

FIPS 140-2 provides four increasing, qualitative levels of security: Level 1, Level 2, Level 3, and Level 4. These levels are intended to cover the wide range and potential applications and environments in which cryptographic modules may be employed. The security requirements cover eleven areas related to the secure design and implementation of a cryptographic module.

The scope of conformance achieved by the cryptographic modules as tested are identified and listed on the Cryptographic Module Validation Program website. The website listing is the official list of validated cryptographic modules. Each validation entry corresponds to a uniquely assigned certificate number. Associated with each certificate number is the module name(s), module versioning information, applicable caveats, module type, date of initial validation and applicable revisions, Overall Level, individual Levels if different than the Overall Level, FIPS-approved and other algorithms, vendor contact information, a vendor provided description and the accredited Cryptographic Module Testing laboratory which performed the testing.

Signed on behalf of the Government of the United States

Signature: Michael Cooper

Dated: 4 Aug 2016

Chief, Computer Security Division  
National Institute of Standards and Technology

Signed on behalf of the Government of the Canada

Signature: L. A. S.

Dated: 4 Aug 2016

Director, Architecture and Technology Assurance  
Communications Security Establishment Canada

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## Appendix B: Component list

The following table lists the components number for each storage system model.

Component	Virtual Storage Platform 5000 series component number
Primary controller chassis	DKC910I-CBX
Secondary controller chassis	DKC-F910I-CBX2
SFF Drive Chassis	DKC-F910I-SBX
LFF Drive Chassis	DKC-F910I-UBX
FMD Drive Chassis	DKC-F910I-FBX
NVMe Drive Chassis	DKC-F910I-NBX
Controller Chassis Bezel	DKC-F910I-CBLFB
Drive Chassis Bezel	DKC-F910I-DBFB
Flash Module Bezel	DKC-F910I-FBFB
HSN Chassis Bezel	DKC-F910I-HSNFB
Controller Chassis Bezel	DKC-F910I-CBLFBA
Drive Chassis Bezel	DKC-F910I-DBFBA
Flash Module Bezel	DKC-F910I-FBFBA
HSN Chassis Bezel	DKC-F910I-HSNFBA
Additional RAID Controller Kit	DKC-F910I-CTL
Additional Service Processor	DKC-F910I-SVP
Additional Hub	DKC-F910I-HUB
Operation Panel Kit	DKC-F910I-OPPNL
Fan Module	DKC-F910I-FANM
Mainframe Fibre 4-port 16G Host Adapter for Shortwave	DKC-F910I-4MS16

<b>Component</b>	<b>Virtual Storage Platform 5000 series component number</b>
Mainframe Fibre 4-port 16G Host Adapter for Longwave	DKC-F910I-4ML16
Fibre 4-port 32Gbps Ready Host Adapter	DKC-F910I-4HF32R
iSCSi 2-port 10G Host Adapter	DKC-F910I-2HS10S
SFP for 16Gbps Longwave	DKC-F810I-1PL16
SFP for 16Gbps Shortwave	DKC-F810I-1PS16
SFP for 32Gbps Shortwave	DKC-F810I-1PS32
Disk Adapter	DKC-F910I-BS12G
Encryption Disk Adapter	DKC-F910I-BS12GE
NVMe Disk Adapter	DKC-F910I-BN8G
Cache Memory 64GB	DW-F850-CM64GL
Cache Flash Memory 45	DKC-F910I-BM45
Cache Flash Memory 45 with encryption	DKC-F910I-BM4E
Controller Chassis Rail	A34V-600-850-UNI-S.P
Controller Chassis Rail	A34V-600-850-UNI-S.P
HSN Chassis Rail	3292455-001
Chassis fixation bracket for CBXA/CBX	A34V-600-850-UNI-S.P
Chassis fixation bracket for CBXB/CBX2	A34V-600-850-UNI-S.P
Drive Chassis Rail	A3BF-HK-GL-740-1-S.P
NVMe Chassis Rail	A3BF-HK-GL-740-1-S.P
Drive Chassis Rail for FBX	A3BF-HK-GL-740-1-S.P
PCIe Cable set for CBXA in primary CBX-Pair	DKC-F910I-MCC1
PCIe Cable set for CBXB in primary CBX-Pair	DKC-F910I-MCC2



<b>Component</b>	<b>Virtual Storage Platform 5000 series component number</b>
PCIe Cable set for primary module CBX	DKC-F910I-MCC60
PCIe Cable set for primary module CBX2	DKC-F910I-MCC45
Safety Cover for empty CTL slot	DKC-F910I-SCFC
PCIe Cable 5m	DKC-F910I-MFC5
PCIe Optical Module	DKC-F910I-PQSFP
SAS Optical Module	DKC-F910I-SQSFP
Optical Cable 10m	DKC-F910I-MPC10
Optical Cable 20m	DKC-F910I-MPC20
Optical Cable 30m	DKC-F910I-MPC30
Optical Cable 100m	DKC-F910I-MPC1H
SAS Cable set for Disk Adapter	DKC-F910I-SCCS
SAS Cable 1m	DKC-F910I -SCQ1
SAS Cable 1.5m	DKC-F910I -SCQ1F
SAS Cable 5m	DKC-F910I-SCQ5A
NVMe Cable set for Disk Adapter	DKC-F910I-NCCS
RJ45 bundled LAN Cable Kit	DKC-F910I-LC
RJ45 Cable 0.6m	DKC-F910I-LC06
RJ45 Cable 5m	DKC-F910I-LC5
RJ45 Cable 10m	DKC-F910I-LC10
RJ45 Cable 20m	DKC-F910I-LC20
RJ45 Cable 30m	DKC-F910I-LC30
RJ45 Cable 100m	DKC-F910I-LC1J
HDD Canister (SAS 2.4TB)	DKC-F810I-2R4JGM
HDD Canister (SAS 14TB)	DKC-F810I-14RH9M
SSD Canister (960GB)	DKC-F810I-960MGM
SSD Canister (1.9TB)	DKC-F810I-1T9MGM

<b>Component</b>	<b>Virtual Storage Platform 5000 series component number</b>
SSD Canister (3.8TB)	DKC-F810I-3R8MGM
SSD Canister (7.6TB)	DKC-F810I-7R6MGM
SSD Canister (15TB)	DKC-F810I-15RMGM
SSD Canister (30TB)	DKC-F810I-30RMGM
7TB Flash Module Drive	DKC-F810I-7R0FP
14TB Flash Module Drive	DKC-F810I-14RFP
NVMe SSD Canister (1.9TB)	DKC-F910I-1R9RVM
NVMe SSD Canister (3.8TB)	DKC-F910I-3R8RVM
NVMe SSD Canister (7.6TB)	DKC-F910I-7R6RVM
NVMe SSD Canister (15TB)	DKC-F910I-15RRVM

**Hitachi Vantara**



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