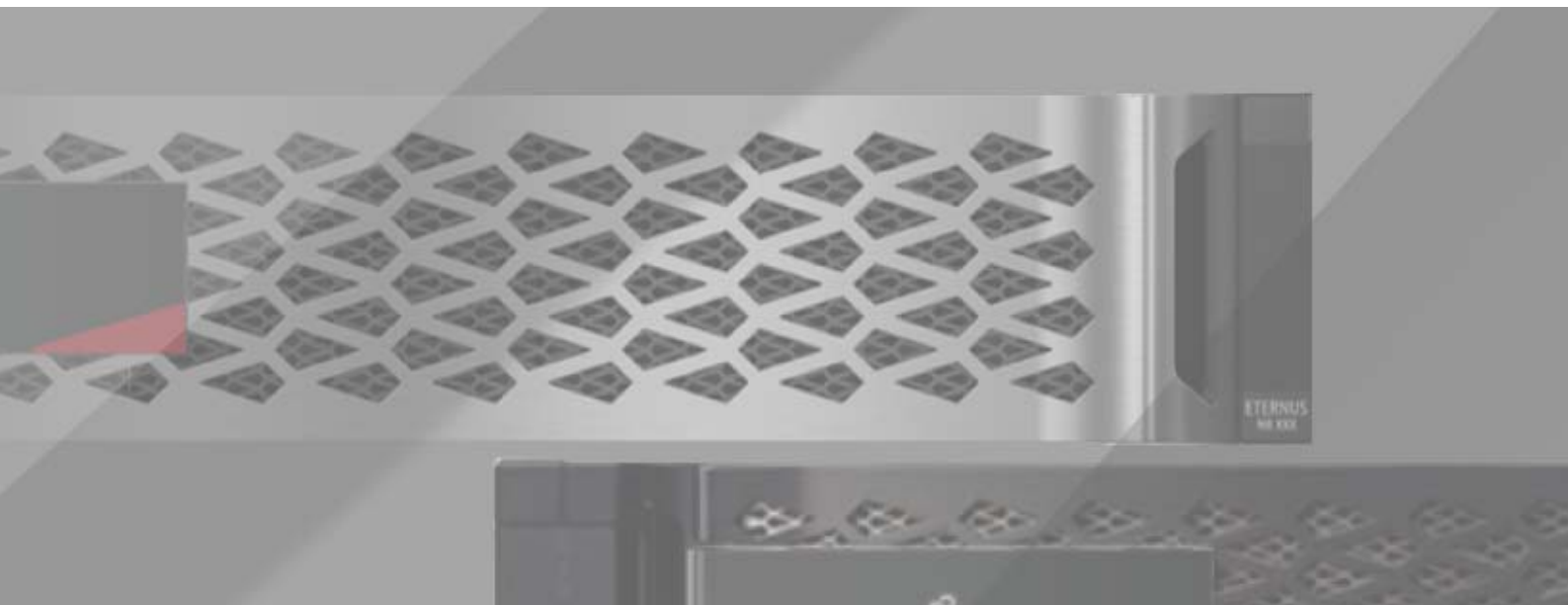


Fujitsu Storage  
ETERNUS AX series All-Flash Arrays,  
ETERNUS AC series All-Flash Arrays,  
ETERNUS HX series Hybrid Arrays

---

## Site Planning Guide



Requirements for transportation/installation

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# Preface

Fujitsu would like to thank you for purchasing the Fujitsu Storage ETERNUS AX1100/AX1200/AX2100/AX2200/AX4100 All-Flash Arrays, the ETERNUS AC2100 All-Flash Arrays, and the ETERNUS HX2100/HX2200/HX2300/HX6100 Hybrid Arrays (hereinafter referred to as ETERNUS AX/AC/HX).

The ETERNUS AX/AC/HX is designed to be connected to Fujitsu servers (Fujitsu SPARC Servers, PRIMEQUEST, PRIMERGY, and other servers) or non-Fujitsu servers.

This manual describes the environmental requirements that are necessary to install and use the ETERNUS AX/AC/HX.

This manual is intended for use of the ETERNUS AX/AC/HX in regions other than Japan.

Please carefully review the information outlined in this manual.

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Fourteenth Edition  
April 2024

## Trademarks

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Third-party trademark information related to this product is available at:  
<https://www.fujitsu.com/global/products/computing/storage/eternus/trademarks.html>

## About This Manual

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### Intended Audience

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This manual is intended for managers of facilities where the ETERNUS AX/AC/HX is installed.

### Related Information and Documents

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The latest information for your model is available at:  
<https://www.fujitsu.com/global/support/products/computing/storage/manuals-list.html>

### Document Conventions

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#### ■ Notice Symbols

The following notice symbols are used in this manual:

##### Caution

Indicates information that you need to observe when using the ETERNUS AX/AC/HX. Make sure to read the information.

##### Note

Indicates information and suggestions that supplement the descriptions included in this manual.

#### ■ Model Name Notation

In this manual, model names may be noted as follows.

Target model	Notation
ETERNUS AX1100/AX1200	ETERNUS AX1x00
ETERNUS AX2100/AX2200	ETERNUS AX2x00
ETERNUS HX2100/HX2200/HX2300	ETERNUS HX2x00

### Start of Production for This Product

---

Production for the ETERNUS AX1100/AX2100/AX4100 and ETERNUS HX2100/HX2200/HX6100 has started from 2020.

Production for the ETERNUS AX2200 has started from 2021.

Production for the ETERNUS AX1200 and ETERNUS HX2300 has started from 2023.

Production for the ETERNUS AC2100 has started from 2024.



## Warning Signs

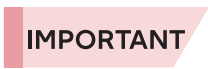
Warning signs are shown throughout this manual in order to prevent injury to the user and/or material damage. These signs are composed of a symbol and a message describing the recommended level of caution. The following explains the symbol, its level of caution, and its meaning as used in this manual.



This symbol indicates the possibility of serious or fatal injury if the ETERNUS AX/AC/HX is not used properly.



This symbol indicates the possibility of minor or moderate personal injury, as well as damage to the ETERNUS AX/AC/HX and/or to other users and their property, if the ETERNUS AX/AC/HX is not used properly.



This symbol indicates IMPORTANT information for the user to note when using the ETERNUS AX/AC/HX.

The following symbols are used to indicate the type of warnings or cautions being described.

Electric Shock



△ The triangle emphasizes the urgency of the WARNING and CAUTION contents. Inside the triangle and above it are details concerning the symbol (e.g. Electrical Shock).

No Disassembly



⊘ The barred "Do Not..." circle warns against certain actions. The action which must be avoided is both illustrated inside the barred circle and written above it (e.g. No Disassembly).

Unplug

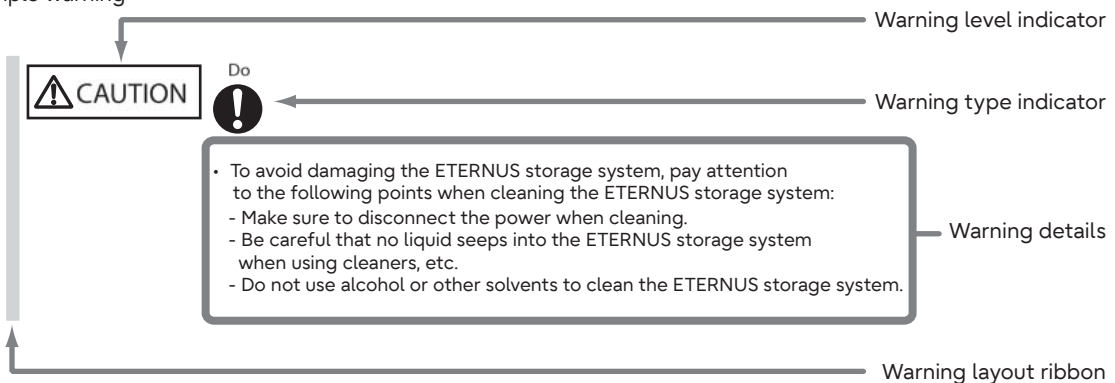


● The black "Must Do..." circle indicates actions that must be taken. The required action is both illustrated inside the black disk and written above it (e.g. Unplug).

### ■ How Warnings are Presented in This Manual

A message is written beside the symbol indicating the caution level. This message is marked with a vertical ribbon in the left margin, to distinguish this warning from ordinary descriptions. An example is shown below.

Example warning



# 1. Installation Specifications

This chapter provides the installation specifications of the ETERNUS AX/AC/HX.

## Installation Specifications

- ETERNUS AX series All-Flash Arrays
  - ["ETERNUS AX1100/AX1200/AX2100/AX2200" \(page 10\)](#)
  - ["ETERNUS AX4100" \(page 13\)](#)
- ETERNUS AC series All-Flash Arrays
  - ["ETERNUS AC2100" \(page 15\)](#)
- ETERNUS HX series Hybrid Arrays
  - ["ETERNUS HX2100/HX2200/HX2300" \(page 17\)](#)
  - ["ETERNUS HX6100" \(page 20\)](#)

### ETERNUS AX1100/AX1200/AX2100/AX2200

Each installation specification is shown below.

- Installation specifications: [Table 1](#)
- Sound level of the drive shelf: [Table 2](#)
- Efficiency and the power factor of the power supply unit: [Table 3](#)

Table 1 Installation Specifications (ETERNUS AX1100/AX1200/AX2100/AX2200)

Item		ETERNUS AX1100	ETERNUS AX1200	ETERNUS AX2100	ETERNUS AX2200
Dimensions (W × D × H)	2.5" type controller shelf	480 × 483 × 85 mm (2U)	480 × 483 × 85 mm (2U)	480 × 483 × 85 mm (2U)	483 × 543 × 87 mm (2U)
	DS224C 2.5" type drive shelf	-	480 × 484 × 85 mm (2U)	480 × 484 × 85 mm (2U)	-
	NS224 drive shelf	-	-	-	483 × 543 × 87 mm
	Power distribution unit (2U) (*1)	(485 × 123 × 44 mm) × 2			
Maximum weight (*2) (*3)	2.5" type controller shelf	27.6 kg (31.6 kg)	27.6 kg (31.6 kg)	27.6 kg (31.6 kg)	24.6 kg (28.6 kg)
	DS224C 2.5" type drive shelf	-	24.4 kg (28.4 kg)	24.4 kg (28.4 kg)	-
	NS224 drive shelf	-	-	-	30.3 kg (34.3 kg)
	Power distribution unit (2U) (*1)	(3.0 kg) × 2			
Power	Voltage	AC 100 – 120V, AC 200 – 240V			
	Phase	Single			
	Frequency	50 Hz / 60 Hz			

1. Installation Specifications  
Installation Specifications

Item				ETERNUS AX1100	ETERNUS AX1200	ETERNUS AX2100	ETERNUS AX2200	
Maximum power consumption (*2)	Controller shelf	2.5" type	AC100 – 120V	507 W (518 VA)	524 W (535 VA)	528 W (539 VA)	1,004 W (1,004 VA)	
			AC200 – 240V	497 W (508 VA)	514 W (526VA)	518 W (530 VA)	1,079 W (1,080 VA)	
	Drive shelf	DS224C 2.5" type	AC100 – 120V	-	390 W (398 VA)	390 W (398 VA)	-	
			AC200 – 240V	-	383 W (392 VA)	383 W (392 VA)	-	
		NS224	AC100 – 120V	-	-	-	848 W (848 VA)	
			AC200 – 240V	-	-	-	810 W (810 VA)	
	Maximum configuration (*4)			AC100 – 120V	507 W (518 VA)	1,304 W (1,331 VA)	2,478 W (2,529 VA)	1,852 W (1,852 VA)
				AC200 – 240V	497 W (508 VA)	1,280 W (1,308 VA)	2,433 W (2,490 VA)	1,889 W (1,890 VA)
Maximum heat generation (*2)	Controller shelf	2.5" type	AC100 – 120V	1,825 kJ/h	1,886 kJ/h	1,901 kJ/h	3,614 kJ/h	
			AC200 – 240V	1,789 kJ/h	1,850.4 kJ/h	1,865 kJ/h	3,884 kJ/h	
	Drive shelf	DS224C 2.5" type	AC100 – 120V	-	1,404 kJ/h	1,404 kJ/h	-	
			AC200 – 240V	-	1,379 kJ/h	1,379 kJ/h	-	
		NS224	AC100 – 120V	-	-	-	3,053 kJ/h	
			AC200 – 240V	-	-	-	3,053 kJ/h	
	Maximum configuration (*4)			AC100 – 120V	1,825 kJ/h	4,694 kJ/h	8,921 kJ/h	6,667 kJ/h
				AC200 – 240V	1,789 kJ/h	4,608.4 kJ/h	8,759 kJ/h	6,937 kJ/h
Maximum amount of exhaust air	Controller shelf			-	-	-	-	
	Drive shelf	2.5" type / 3.5" type		-	-	-	-	
		NS224		-	-	-	-	
		60-drive type		-	-	-	-	

1. Installation Specifications  
Installation Specifications

Item			ETERNUS AX1100	ETERNUS AX1200	ETERNUS AX2100	ETERNUS AX2200
Environmental conditions	Temperature	Operating	5 – 45 °C (*5)			10 – 35 °C (*6)
		Not operating	-40 – 70 °C			
		During shipment	-40 – 70 °C			
	Temperature gradient		15 °C/Hr or less			
	Humidity	Operating (*5)	8 – 90 %RH			8 – 80 %RH
		Not operating	10 – 95 %RH			
		During shipment	10 – 95 %RH			
	Humidity gradient		30 %/day or less			
	Maximum wet bulb temperature		29 °C			
	Altitude above sea level		0 – 3,048 m			
	Airborne dust		0.15 mg/m <sup>3</sup> or less			
	Gas concentration tolerance level		Hydrogen sulfide (H <sub>2</sub> S): 7.1 ppb or less Sulfur dioxide (SO <sub>2</sub> ): 37 ppb or less Hydrogen chloride (HCl): 6.6 ppb or less Chlorine (Cl <sub>2</sub> ): 6.8 ppb or less Hydrogen fluoride (HF): 3.6 ppb or less Nitrogen dioxide (NO <sub>2</sub> ): 52.3 ppb or less Ammonia (NH <sub>3</sub> ): 423.5 ppb or less Ozone (O <sub>3</sub> ): 5 ppb or less			
	Oil vapor		0.2mg/m <sup>3</sup> or less			
Seawater (salt corrosion)		If the ETERNUS AX is installed on the ocean or premises within 0.5 km from the coast, necessary measures must be taken to prevent salt corrosion.				
Noise emission (*7)	Sound pressure level		51 dBA		69.1 dBA	
	Sound power level		6.9 B		7.2B	

\*1: A 2U power distribution unit is composed of two 1U power distribution units.

\*2: These values are for each shelf when 24 drives are installed.

\*3: The value in the parentheses for the controller shelf and drive shelves includes the mass of the rack rail kit.

\*4: These values are for the maximum load when all the available options are installed in an ETERNUS AX/HX.

\*5: The operating test was performed in environments compatible with the Operating Condition Class A4 of the EU eco-design directive (ErP Directive 2009/125/EC).

\*6: The operating test was performed in environments compatible with the Operating Condition Class A2 of the EU eco-design directive (ErP Directive 2009/125/EC).

\*7: For details about the sound level of the drive shelf, refer to "[Table 2 Sound Level of the Drive Shelf](#)" ([page 12](#)).

Table 2 Sound Level of the Drive Shelf

	DS224C	NS224
Sound pressure level	51 dBA	49.8 dBA
Sound power level	6.9 B	6.4 B

Table 3 Efficiency and Power Factor of the Power Supply Unit

Component name Shelf	80PLUS®	Efficiency			Power factor	Output
		20 % (*1)	50 % (*1)	100 % (*1)	50 % (*1)	
ETERNUS AX1100	Platinum	91.8 %	94.2 %	92.7 %	0.980	Multiple output
ETERNUS AX1200		91.8 %	94.2 %	92.7 %	0.980	
ETERNUS AX2100		91.8 %	94.2 %	92.7 %	0.980	
ETERNUS AX2200		93.5 %	94.2 %	91.4 %	1.000	Single output
DS224C drive shelf		91.8 %	94.2 %	92.7 %	0.980	Multiple output
NS224 drive shelf		93.5 %	94.2 %	91.4 %	1.000	Single output

\*1: Indicates the rated load against the rated output of the PSU.

## ETERNUS AX4100

Each installation specification is shown below.

- Installation specifications: [Table 4](#)
- Sound level of the drive shelf: [Table 5](#)
- Efficiency and the power factor of the power supply unit: [Table 6](#)

Table 4 Installation Specifications (ETERNUS AX4100)

Item		ETERNUS AX4100		
Dimensions (W × D × H)	2.5" type controller shelf		483 × 828 × 175 mm (4U)	
	DS224C 2.5" type drive shelf		480 × 484 × 85 mm (2U)	
	NS224 drive shelf		483 × 543 × 87 mm (2U)	
	Power distribution unit (2U) (*1)		(485 × 123 × 44 mm) × 2	
Maximum weight (*2) (*3)	2.5" type controller shelf		49.9 kg (53.9 kg)	
	DS224C 2.5" type drive shelf		24.4 kg (28.4 kg)	
	NS224 drive shelf		30.3 kg (34.3 kg)	
	Power distribution unit (2U) (*1)		(3.0 kg) × 2	
Power	Voltage		AC 100 – 120V, AC 200 – 240V	
	Phase		Single	
	Frequency		50 Hz / 60 Hz	
Maximum power consumption (*2)	Controller shelf	2.5" type	AC100 – 120V	1,580 W (1,630 VA)
			AC200 – 240V	1,528 W (1,560 VA)
	Drive shelf	DS224C 2.5" type	AC100 – 120V	390 W (398 VA)
			AC200 – 240V	383 W (392 VA)
		NS224	AC100 – 120V	848 W (848 VA)
			AC200 – 240V	810 W (810 VA)
Maximum configuration (*4)	AC100 – 120V		9,380 W (9,590 VA)	
	AC200 – 240V		9,188 W (9,400 VA)	

1. Installation Specifications  
Installation Specifications

Item			ETERNUS AX4100	
Maximum heat generation (*2)	Controller shelf	2.5" type	AC100 – 120V	5,688 kJ/h
			AC200 – 240V	5,501 kJ/h
	Drive shelf	DS224C 2.5" type	AC100 – 120V	1,404 kJ/h
			AC200 – 240V	1,379 kJ/h
		NS224	AC100 – 120V	3,053 kJ/h
			AC200 – 240V	2,916 kJ/h
Maximum configuration (*4)			AC100 – 120V	33,768 kJ/h
			AC200 – 240V	33,077 kJ/h
Maximum amount of exhaust air	Controller shelf			-
	Drive shelf	2.5" type / 3.5" type		-
		60-drive type		-
Environmental conditions	Temperature	Operating (*5)		10 – 35 °C
		Not operating		-40 – 70 °C
		During shipment		-40 – 70 °C
	Temperature gradient			15 °C/Hr or less
	Humidity	Operating (*5)		8 – 80 %RH
		Not operating		10 – 95 %RH
		During shipment		10 – 95 %RH
	Humidity gradient			30 %/day or less
	Maximum wet bulb temperature			29 °C
	Altitude above sea level			0 – 3,048 m
	Airborne dust			0.15 mg/m <sup>3</sup> or less
	Gas concentration tolerance level			Hydrogen sulfide (H <sub>2</sub> S): 7.1 ppb or less Sulfur dioxide (SO <sub>2</sub> ): 37 ppb or less Hydrogen chloride (HCl): 6.6 ppb or less Chlorine (Cl <sub>2</sub> ): 6.8 ppb or less Hydrogen fluoride (HF): 3.6 ppb or less Nitrogen dioxide (NO <sub>2</sub> ): 52.3 ppb or less Ammonia (NH <sub>3</sub> ): 423.5 ppb or less Ozone (O <sub>3</sub> ): 5 ppb or less
	Oil vapor			0.2 mg/m <sup>3</sup> or less
Seawater (salt corrosion)			If the ETERNUS AX is installed on the ocean or premises within 0.5 km from the coast, necessary measures must be taken to prevent salt corrosion.	
Noise emission (*6)	Sound pressure level		67.2 dBA	
	Sound power level		8.5 B	

\*1: A 2U power distribution unit is composed of two 1U power distribution units.

\*2: These values are for each shelf when 24 drives are installed.

\*3: The value in the parentheses for the controller shelf and drive shelves includes the mass of the rack rail kit.

\*4: These values are for the maximum load when all the available options are installed in an ETERNUS AX/HX.

\*5: The operating test was performed in environments compatible with the Operating Condition Class A2 of the EU eco-design directive (ErP Directive 2009/125/EC).

\*6: For details about the sound level of the drive shelf, refer to "[Table 5 Sound Level of the Drive Shelf](#)" ([page 15](#)).

1. Installation Specifications  
Installation Specifications

Table 5 Sound Level of the Drive Shelf

	DS224C	NS224
Sound pressure level	51 dBA	49.8 dBA
Sound power level	6.9 B	6.4 B

Table 6 Efficiency and Power Factor of the Power Supply Unit

Component name	80PLUS®	Efficiency			Power factor	Output
		20 % (*1)	50 % (*1)	100 % (*1)	50 % (*1)	
Shelf	Platinum	93.45 %	94.18 %	91.43 %	1.000	Single output
ETERNUS AX4100		91.8 %	94.2 %	92.7 %	0.980	
DS224C drive shelf		93.45 %	94.18 %	91.43 %	1.000	
NS224 drive shelf						

\*1: Indicates the rated load against the rated output of the PSU.

## ETERNUS AC2100

Each installation specification is shown below.

- Installation specifications: [Table 7](#)
- Sound level of the drive shelf: [Table 8](#)
- Efficiency and the power factor of the power supply unit: [Table 9](#)

Table 7 Installation Specifications (ETERNUS AC2100)

Item		ETERNUS AC2100		
Dimensions (W × D × H)	2.5" type controller shelf		483 × 543 × 87 mm (2U)	
	NS224 drive shelf		483 × 543 × 87 mm	
	Power distribution unit (2U) (*1)		(485 × 123 × 44 mm) × 2	
Maximum weight (*2) (*3)	2.5" type controller shelf		24.6 kg (28.6 kg)	
	NS224 drive shelf		30.2 kg (34.2 kg)	
	Power distribution unit (2U) (*1)		(3.0 kg) × 2	
Power	Voltage		AC 100 – 120V, AC 200 – 240V	
	Phase		Single	
	Frequency		50 Hz / 60 Hz	
Maximum power consumption (*2)	Controller shelf	2.5" type	AC100 – 120V	1,025 W (1,025 VA)
			AC200 – 240V	1,099 W (1,110 VA)
	Drive shelf	NS224	AC100 – 120V	895 W (895 VA)
			AC200 – 240V	827 W (827 VA)
	Maximum configuration (*4)		AC100 – 120V	1,920 W (1,920 VA)
			AC200 – 240V	1,926 W (1,937 VA)

1. Installation Specifications  
Installation Specifications

Item			ETERNUS AC2100		
Maximum heat generation (*2)	Controller shelf	2.5" type	AC100 – 120V	3,690 kJ/h	
			AC200 – 240V	3,956 kJ/h	
	Drive shelf	NS224	AC100 – 120V	3,222 kJ/h	
			AC200 – 240V	2,977 kJ/h	
	Maximum configuration (*4)			AC100 – 120V	6,912 kJ/h
				AC200 – 240V	6,933 kJ/h
Maximum amount of exhaust air	Controller shelf			-	
	Drive shelf	2.5" type / 3.5" type		-	
		NS224		-	
		60-drive type		-	
Environmental conditions	Temperature	Operating (*5)		10 – 35 °C (*6)	
		Not operating		-40 – 70 °C	
		During shipment		-40 – 70 °C	
	Temperature gradient			15 °C/Hr or less	
	Humidity	Operating (*5)		8 – 80 %RH	
		Not operating		10 – 95 %RH	
		During shipment		10 – 95 %RH	
	Humidity gradient			30 %/day or less	
	Maximum wet bulb temperature			29 °C	
	Altitude above sea level			0 – 3,048 m	
	Airborne dust			0.15 mg/m <sup>3</sup> or less	
	Gas concentration tolerance level			Hydrogen sulfide (H <sub>2</sub> S): 7.1 ppb or less Sulfur dioxide (SO <sub>2</sub> ): 37 ppb or less Hydrogen chloride (HCl): 6.6 ppb or less Chlorine (Cl <sub>2</sub> ): 6.8 ppb or less Hydrogen fluoride (HF): 3.6 ppb or less Nitrogen dioxide (NO <sub>2</sub> ): 52.3 ppb or less Ammonia (NH <sub>3</sub> ): 423.5 ppb or less Ozone (O <sub>3</sub> ): 5 ppb or less	
	Oil vapor			0.2mg/m <sup>3</sup> or less	
	Seawater (salt corrosion)			If the ETERNUS AC is installed on the ocean or premises within 0.5 km from the coast, necessary measures must be taken to prevent salt corrosion.	
Noise emission (*7)	Sound pressure level			69.1 dBA	
	Sound power level			7.2 B	

\*1: A 2U power distribution unit is composed of two 1U power distribution units.

\*2: These values are for each shelf when 24 drives are installed.

\*3: The value in the parentheses for the controller shelf and drive shelves includes the mass of the rack rail kit.

\*4: These values are for the maximum load when all the available options are installed in an ETERNUS AX/AC/HX.

\*5: The operating test was performed in environments compatible with the Operating Condition Class A4 of the EU eco-design directive (ErP Directive 2009/125/EC).



1. Installation Specifications  
Installation Specifications

- \*6: The operating test was performed in environments compatible with the Operating Condition Class A2 of the EU eco-design directive (ErP Directive 2009/125/EC).
- \*7: For details about the sound level of the drive shelf, refer to "[Table 8 Sound Level of the Drive Shelf](#)" ([page 17](#)).

Table 8 Sound Level of the Drive Shelf

	NS224
Sound pressure level	49.8 dBA
Sound power level	6.4 B

Table 9 Efficiency and Power Factor of the Power Supply Unit

Component name	80PLUS®	Efficiency			Power factor	Output
		20 % (*1)	50 % (*1)	100 % (*1)	50 % (*1)	
ETERNUS AC2100	Platinum	93.5 %	94.2 %	91.4 %	1.000	Single output
NS224 drive shelf						

- \*1: Indicates the rated load against the rated output of the PSU.

## ETERNUS HX2100/HX2200/HX2300

Each installation specification is shown below.

- Installation specifications: [Table 10](#)
- Sound level of the drive shelf: [Table 11](#)
- Efficiency and the power factor of the power supply unit: [Table 12](#)

Table 10 Installation Specifications (ETERNUS HX2100/HX2200/HX2300)

Item		ETERNUS HX2100	ETERNUS HX2200	ETERNUS HX2300
Dimensions (W × D × H)	3.5" type controller shelf	480 × 508 × 87 mm (2U)	-	480 × 508 × 87 mm (2U)
	2.5" type controller shelf	-	480 × 483 × 85 mm (2U)	-
	DS212C 3.5" type drive shelf	480 × 505 × 87 mm (2U)		
	DS224C 2.5" type drive shelf	480 × 484 × 85 mm (2U)		
	DS460C 60-drive type drive shelf	486 × 922 × 176 mm (4U)		
	Power distribution unit (2U) (*1)	(485 × 123 × 44 mm) × 2		
Maximum weight (*2) (*3)	3.5" type controller shelf	28.8 kg (32.8 kg)	-	29.2 kg (33.2 kg)
	2.5" type controller shelf	-	27.6 kg (31.6 kg)	
	DS212C 3.5" type drive shelf	28.7 kg (32.7 kg)		
	DS224C 2.5" type drive shelf	24.4 kg (28.4 kg)		
	DS460C 60-drive type drive shelf	112 kg (116 kg)		
	Power distribution unit (2U) (*1)	(3.0 kg) × 2		
Power	Voltage	AC 100 – 120V, AC 200 – 240V		
	Phase	Single		
	Frequency	50 Hz / 60 Hz		

1. Installation Specifications  
Installation Specifications

Item				ETERNUS HX2100	ETERNUS HX2200	ETERNUS HX2300	
Maximum power consump- tion (*2)	Controller shelf	3.5" type	AC100 – 120V	496 W (507 VA)	-	729 W (740 VA)	
			AC200 – 240V	487 W (498 VA)	-	703 W (712 VA)	
		2.5" type	AC100 – 120V	-	615 W (631 VA)	-	
			AC200 – 240V	-	606 W (620 VA)	-	
	Drive shelf	DS212C 3.5" type	AC100 – 120V	338 W (345 VA)	338 W (345 VA)	338 W (345 VA)	
			AC200 – 240V	332 W (340 VA)	332 W (340 VA)	332 W (340 VA)	
		DS224C 2.5" type	AC100 – 120V	396 W (405 VA)	396 W (405 VA)	396 W (405 VA)	
			AC200 – 240V	389 W (398 VA)	389 W (398 VA)	389 W (398 VA)	
		DS460C 60-drive type	AC100 – 120V	-	-	-	
			AC200 – 240V	1,541 W (1,558 VA)	1,541 W (1,558 VA)	1,541 W (1,558 VA)	
	Maximum configuration (*4)			AC100 – 120V	3,596 W (3,672 VA)	3,715 W (3,796 VA)	4,293 W (4,385 VA)
				AC200 – 240V	3,901 W (3,954 VA)	3,688 W (3,738 VA)	4,117 W (4,168 VA)
	Maximum heat generation (*2)	Controller shelf	3.5" type	AC100 – 120V	1,786 kJ/h	-	2,624 kJ/h
				AC200 – 240V	1,753 kJ/h	-	2,531 kJ/h
2.5" type			AC100 – 120V	-	2,214 kJ/h	-	
			AC200 – 240V	-	2,182 kJ/h	-	
Drive shelf		DS212C 3.5" type	AC100 – 120V	1,217 kJ/h	1,217 kJ/h	1,217 kJ/h	
			AC200 – 240V	1,195 kJ/h	1,195 kJ/h	1,195 kJ/h	
		DS224C 2.5" type	AC100 – 120V	1,534 kJ/h	1,426 kJ/h	1,426 kJ/h	
			AC200 – 240V	1,505 kJ/h	1,400 kJ/h	1,400 kJ/h	
		DS460C 60-drive type	AC100 – 120V	-	-	-	
			AC200 – 240V	5,548 kJ/h	5,548 kJ/h	5,548 kJ/h	
Maximum configuration (*4)				AC100 – 120V	12,946 kJ/h	13,374 kJ/h	15,455 kJ/h
				AC200 – 240V	14,044 kJ/h	13,277 kJ/h	14,821 kJ/h

1. Installation Specifications  
Installation Specifications

Item		ETERNUS HX2100	ETERNUS HX2200	ETERNUS HX2300	
Maximum amount of exhaust air	Controller shelf	-	-	-	
	Drive shelf	2.5" type / 3.5" type	-	-	
		60-drive type	-	-	
Environmental conditions	Temperature	Operating (*5)	5 – 45 °C		
		Not operating	-40 – 70 °C		
		During shipment	-40 – 70 °C		
	Temperature gradient		15 °C/Hr or less		
	Humidity	Operating (*5)	8 – 90 %RH	8 – 80 %RH	
		Not operating	10 – 95 %RH		
		During shipment	10 – 95 %RH		
	Humidity gradient		30 %/day or less		
	Maximum wet bulb temperature		29 °C		
	Altitude above sea level		0 – 3,048 m		
	Airborne dust		0.15 mg/m <sup>3</sup> or less		
	Gas concentration tolerance level		Hydrogen sulfide (H <sub>2</sub> S): 7.1 ppb or less Sulfur dioxide (SO <sub>2</sub> ): 37 ppb or less Hydrogen chloride (HCl): 6.6 ppb or less Chlorine (Cl <sub>2</sub> ): 6.8 ppb or less Hydrogen fluoride (HF): 3.6 ppb or less Nitrogen dioxide (NO <sub>2</sub> ): 52.3 ppb or less Ammonia (NH <sub>3</sub> ): 423.5 ppb or less Ozone (O <sub>3</sub> ): 5 ppb or less		
	Oil vapor		0.2 mg/m <sup>3</sup> or less		
Seawater (salt corrosion)		If the ETERNUS HX is installed on the ocean or premises within 0.5 km from the coast, necessary measures must be taken to prevent salt corrosion.			
Noise emission (*6)	Sound pressure level	51 dBA			
	Sound power level	6.7 B	6.9 B	6.7 B	

- \*1: A 2U power distribution unit is composed of two 1U power distribution units.
- \*2: These values are for each shelf when 24 drives are installed in a 2.5" type shelf, 12 drives are installed in a 3.5" type shelf, or 60 drives are installed in a 60-drive type shelf.
- \*3: The value in the parentheses for the controller shelf and drive shelves includes the mass of the rack rail kit.
- \*4: These values are for the maximum load when all the available options are installed in an ETERNUS AX/HX.
- \*5: The operating test was performed in environments compatible with the Operating Condition Class A4 of the EU eco-design directive (ErP Directive 2009/125/EC).
- \*6: For details about the sound level of the drive shelf, refer to ["Table 11 Sound Level of the Drive Shelf" \(page 19\)](#).

Table 11 Sound Level of the Drive Shelf

	DS212C	DS224C	DS460C
Sound pressure level	44.7 dBA	51 dBA	72 dBA
Sound power level	6.7 B	6.9 B	7.2 B

Table 12 Efficiency and Power Factor of the Power Supply Unit

Component name Shelf	80PLUS®	Efficiency			Power factor	Output
		20 % (*1)	50 % (*1)	100 % (*1)	50 % (*1)	
ETERNUS HX2100	Platinum	91.8 %	94.2 %	92.7 %	0.980	Multiple output
ETERNUS HX2200		91.8 %	94.2 %	92.7 %	0.980	
ETERNUS HX2300		91.8 %	94.2 %	92.7 %	0.980	
DS212C drive shelf		91.8 %	94.2 %	92.7 %	0.980	
DS224C drive shelf		91.8 %	94.2 %	92.7 %	0.980	
DS460C drive shelf		91.9 %	94.4 %	93.4 %	0.990	

\*1: Indicates the rated load against the rated output of the PSU.

## ETERNUS HX6100

Each installation specification is shown below.

- Installation specifications: [Table 13](#)
- Sound level of the drive shelf: [Table 14](#)
- Efficiency and the power factor of the power supply unit: [Table 15](#)

Table 13 Installation Specifications (ETERNUS HX6100)

Item		ETERNUS HX6100		
Dimensions (W × D × H)	Controller shelf	483 × 828 × 175 mm (4U)		
	DS212C 3.5" type drive shelf	480 × 505 × 87 mm (2U)		
	DS224C 2.5" type drive shelf	480 × 484 × 85 mm (2U)		
	DS460C 60-drive type drive shelf	486 × 922 × 176 mm (4U)		
	Power distribution unit (2U) (*1)	(485 × 123 × 44 mm) × 2		
Maximum weight (*2) (*3)	3.5" type controller shelf	49.2 kg (53.2 kg)		
	DS212C 3.5" type drive shelf	28.7 kg (32.7 kg)		
	DS224C 2.5" type drive shelf	24.4 kg (28.4 kg)		
	DS226C 2.5" type drive shelf	22.2 kg (26.2 kg)		
	DS460C 60-drive type drive shelf	112 kg (116 kg)		
	Power distribution unit (2U) (*1)	(3.0 kg) × 2		
Power	Voltage	AC 100 – 120V, AC 200 – 240V		
	Phase	Single		
	Frequency	50 Hz / 60 Hz		
Maximum power consumption (*2)	Controller shelf	AC100 – 120V	1,512 W (1,543 VA)	
		AC200 – 240V	1,470 W (1,500 VA)	
	Drive shelf	DS212C 3.5" type	AC100 – 120V	338 W (345 VA)
			AC200 – 240V	332 W (340 VA)
		DS224C 2.5" type	AC100 – 120V	396 W (405 VA)
			AC200 – 240V	389 W (398 VA)
		DS460C 60-drive type	AC100 – 120V	-
			AC200 – 240V	1,541 W (1,558 VA)
Maximum configuration (*4)	AC100 – 120V	25,272 W (22,243 VA)		
	AC200 – 240V	24,810 W (21,900 VA)		

1. Installation Specifications  
Installation Specifications

Item			ETERNUS HX6100	
Maximum heat generation (*2)	Controller shelf		AC100 – 120V	5,443 kJ/h
			AC200 – 240V	5,292 kJ/h
	Drive shelf	DS212C 3.5" type	AC100 – 120V	1,217 kJ/h
			AC200 – 240V	1,195 kJ/h
		DS224C 2.5" type	AC100 – 120V	1,426 kJ/h
			AC200 – 240V	1,400 kJ/h
		DS460C 60-drive type	AC100 – 120V	-
AC200 – 240V			5,548 kJ/h	
Maximum configuration (*4)		AC100 – 120V	90,979 kJ/h	
		AC200 – 240V	89,316 kJ/h	
Maximum amount of exhaust air	Controller shelf		-	
	Drive shelf	2.5" type / 3.5" type	-	
		60-drive type	-	
Environmental conditions	Temperature	Operating (*5)	10 – 35 °C	
		Not operating	-40 – 70 °C	
		During shipment	-40 – 70 °C	
	Temperature gradient		15 °C/Hr or less	
	Humidity	Operating (*5)	8 – 80 %RH	
		Not operating	10 – 95 %RH	
		During shipment	10 – 95 %RH	
	Humidity gradient		30 %/day or less	
	Maximum wet bulb temperature		29 °C	
	Altitude above sea level		0 – 3,048 m	
	Airborne dust		0.15 mg/m <sup>3</sup> or less	
	Gas concentration tolerance level		Hydrogen sulfide (H <sub>2</sub> S): 7.1 ppb or less Sulfur dioxide (SO <sub>2</sub> ): 37 ppb or less Hydrogen chloride (HCl): 6.6 ppb or less Chlorine (Cl <sub>2</sub> ): 6.8 ppb or less Hydrogen fluoride (HF): 3.6 ppb or less Nitrogen dioxide (NO <sub>2</sub> ): 52.3 ppb or less Ammonia (NH <sub>3</sub> ): 423.5 ppb or less Ozone (O <sub>3</sub> ): 5 ppb or less	
	Oil vapor		0.2 mg/m <sup>3</sup> or less	
Seawater (salt corrosion)		If the ETERNUS HX is installed on the ocean or premises within 0.5 km from the coast, necessary measures must be taken to prevent salt corrosion.		
Noise emission (*6)	Sound pressure level		67.2 dBA	
	Sound power level		8.5 B	

\*1: A 2U power distribution unit is composed of two 1U power distribution units.

\*2: These values are for each shelf when 24 drives are installed in a 2.5" type shelf, 12 drives are installed in a 3.5" type shelf, or 60 drives are installed in a 60-drive type shelf.

\*3: The value in the parentheses for the controller shelf and drive shelves includes the mass of the rack rail kit.

\*4: These values are for the maximum load when all the available options are installed in an ETERNUS AX/HX.

\*5: The operating test was performed in environments compatible with the Operating Condition Class A2 of the EU eco-design directive (ErP Directive 2009/125/EC).

\*6: For details about the sound level of the drive shelf, refer to "[Table 14 Sound Level of the Drive Shelf](#)" ([page 22](#)).

1. Installation Specifications  
Installation Specifications

Table 14 Sound Level of the Drive Shelf

	DS212C	DS224C	DS460C
Sound pressure level	44.7 dBA	51 dBA	72 dBA
Sound power level	6.7 B	6.9 B	7.2 B

Table 15 Efficiency and Power Factor of the Power Supply Unit

Component name Shelf	80PLUS®	Efficiency			Power factor	Output
		20 % (*1)	50 % (*1)	100 % (*1)	50 % (*1)	
ETERNUS HX6100	Platinum	93.45 %	94.18 %	91.43 %	1.000	Single output
DS212C drive shelf		91.8 %	94.2 %	92.7 %	0.980	
DS224C drive shelf		91.8 %	94.2 %	92.7 %	0.980	
DS460C drive shelf		91.9 %	94.4 %	93.4 %	0.990	

\*1: Indicates the rated load against the rated output of the PSU.

## 19-inch Racks

The following table shows the installation specifications of the 19-inch racks.

Table 16 19-inch Rack Installation Specifications

Item	Specification	
	Base rack	Expansion rack
Dimensions (W × D × H)	700 × 1,050 × 2,000 mm 700 × 1,272 × 2,000 mm (including anti-tipping stabilizer)	
Maximum weight	129 kg	103 kg
Service area	Refer to <a href="#">Figure 15</a> under " <a href="#">Installation Area</a> " (page 34).	
Number of units	42U	

Table 17 19-inch Wide Rack Installation Specifications

Item	Specification	
	Base rack	Expansion rack
Dimensions (W × D × H)	800 × 1,200 × 2,000 mm 800 × 1,432 × 2,000 mm (including anti-tipping stabilizer)	
Maximum weight	155 kg	125 kg
Service area (including a space for using the lifter)	Refer to <a href="#">Figure 16</a> under " <a href="#">Installation Area</a> " (page 34).	
Number of units	42U	

# ETERNUS AX/AC/HX Dimensions

## ■ Controller Shelf Dimensions

The following diagrams show the dimensions of a controller shelf. The dimensions are approximations and do not include protruding parts.

### ● 2.5" Type Controller Shelf

Figure 1 2.5" Type Controller Shelf Dimensions (ETERNUS AX1100/AX1200/AX2100, ETERNUS HX2200)

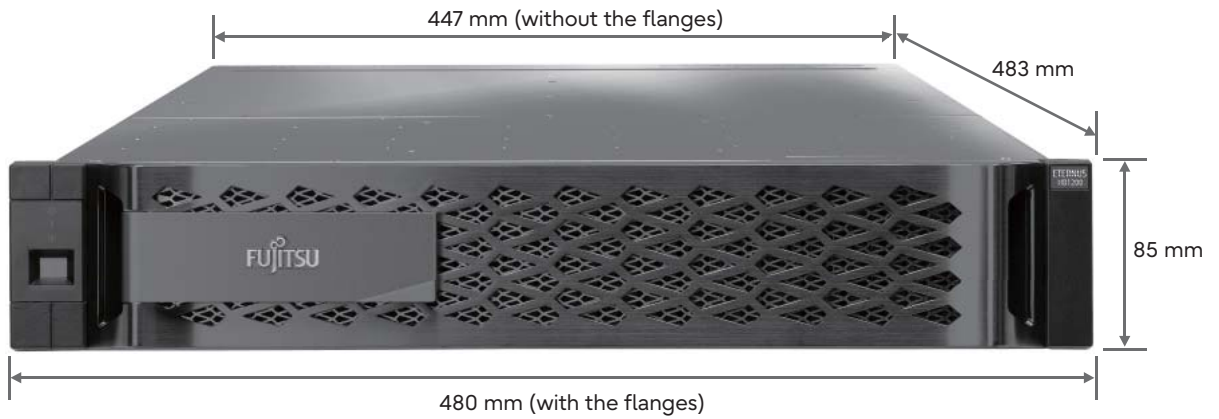


Figure 2 2.5" Type Controller Shelf Dimensions (ETERNUS AX2200)

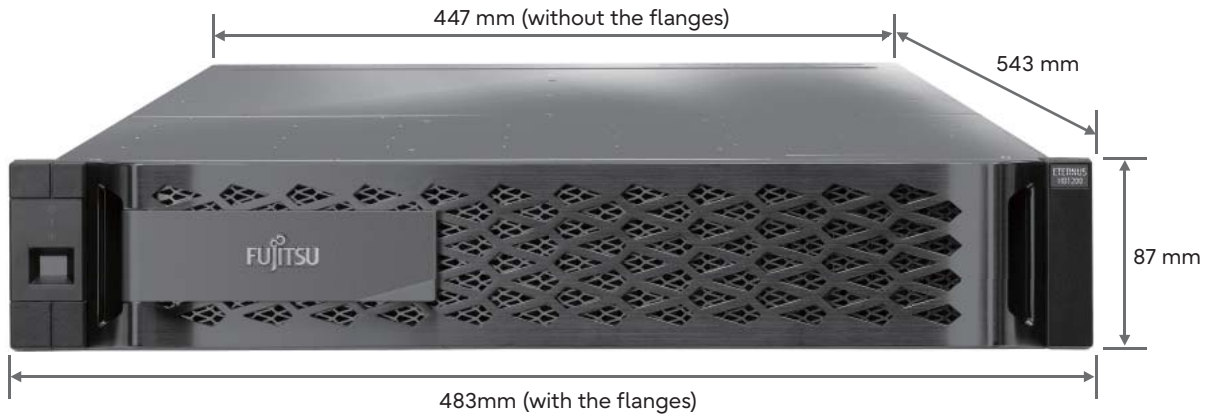
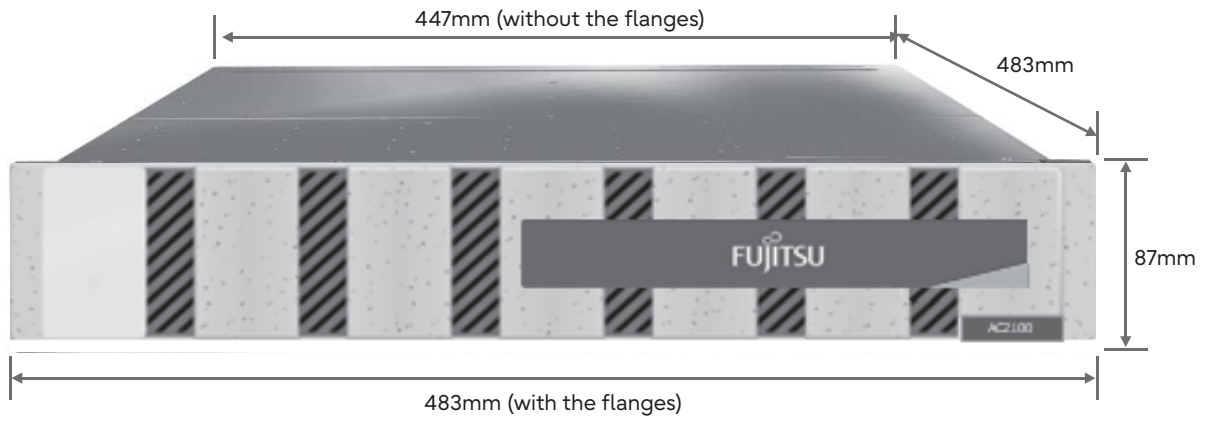
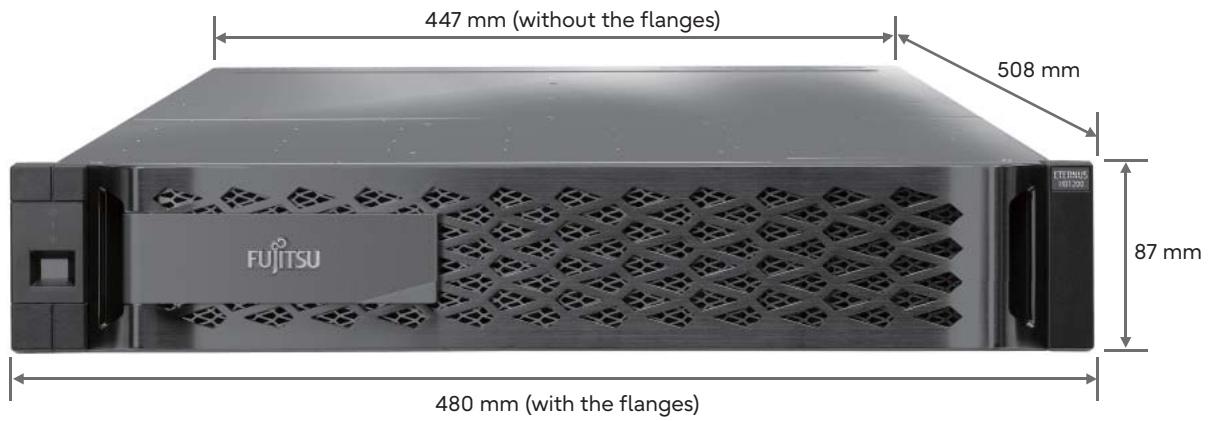


Figure 3 2.5" Type Controller Shelf Dimensions (ETERNUS AC2100)



● 3.5" Type Controller Shelf

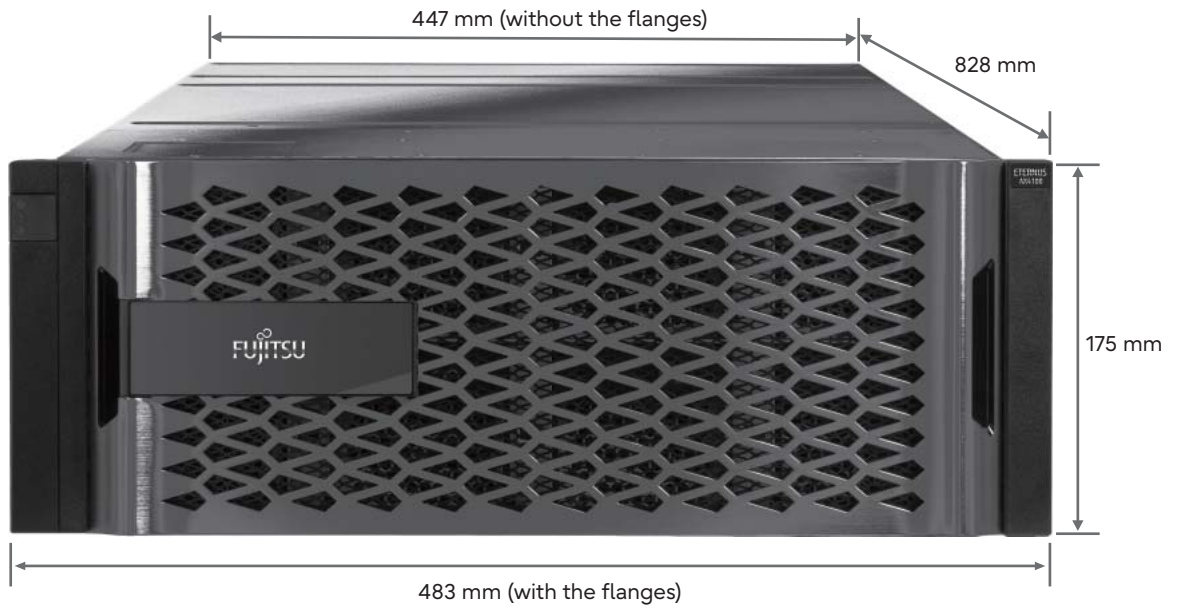
Figure 4 3.5" Type Controller Shelf Dimensions (ETERNUS HX2100/HX2300)





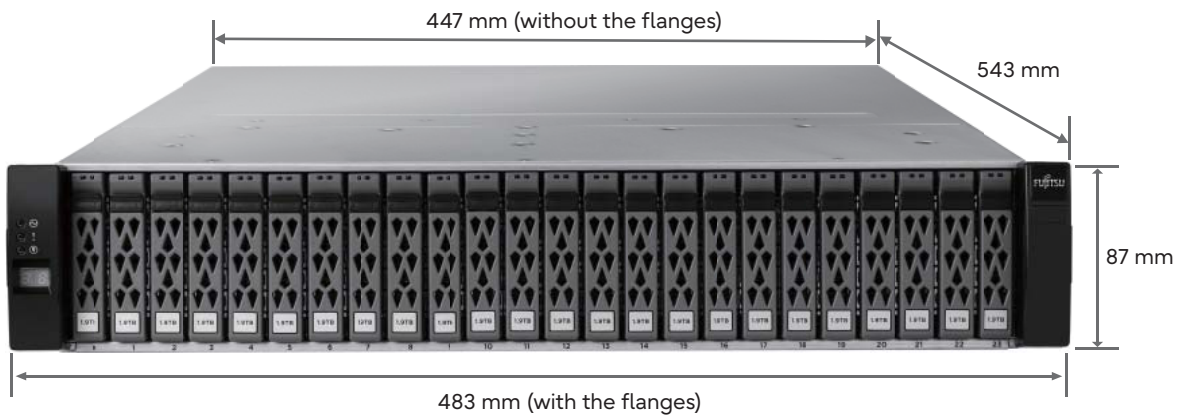
● 4U Controller Shelf

Figure 5 4U Controller Shelf Dimensions (ETERNUS AX4100, HX6100)



● NS224 Drive Shelf

Figure 6 NS224 2.5" Type Drive Shelf Dimensions

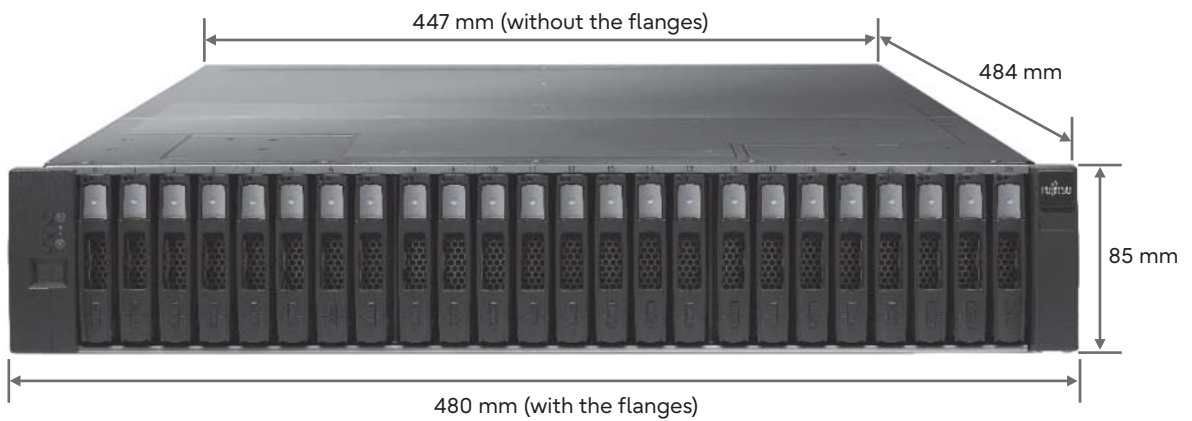


### ■ Drive Shelf Dimensions

The diagrams below show the dimensions of a drive shelf. The dimensions are approximations and do not include protruding parts.

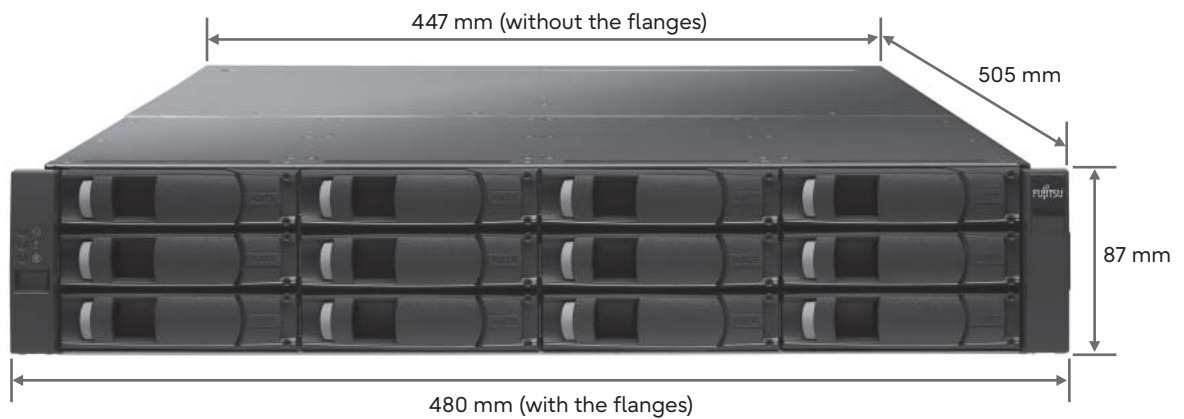
#### ● DS224C 2.5" Type Drive Shelf

Figure 7 DS224C 2.5" Type Drive Shelf Dimensions



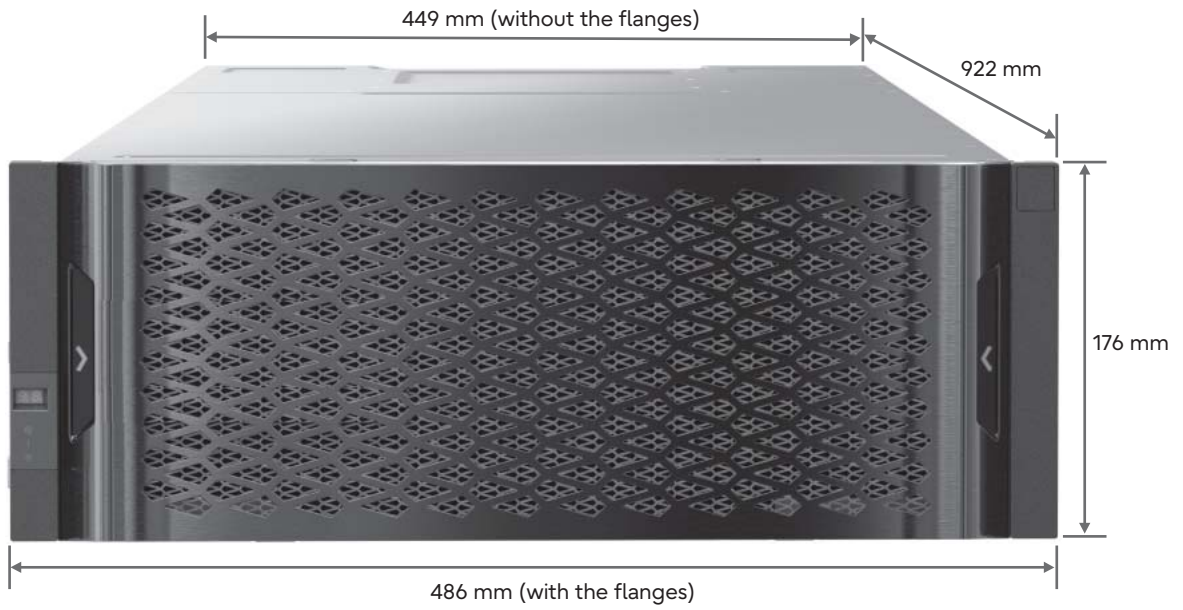
#### ● DS212C 3.5" Type Drive Shelf

Figure 8 DS212C 3.5" Type Drive Shelf Dimensions



● DS460C 60-Drive Type Drive Shelf

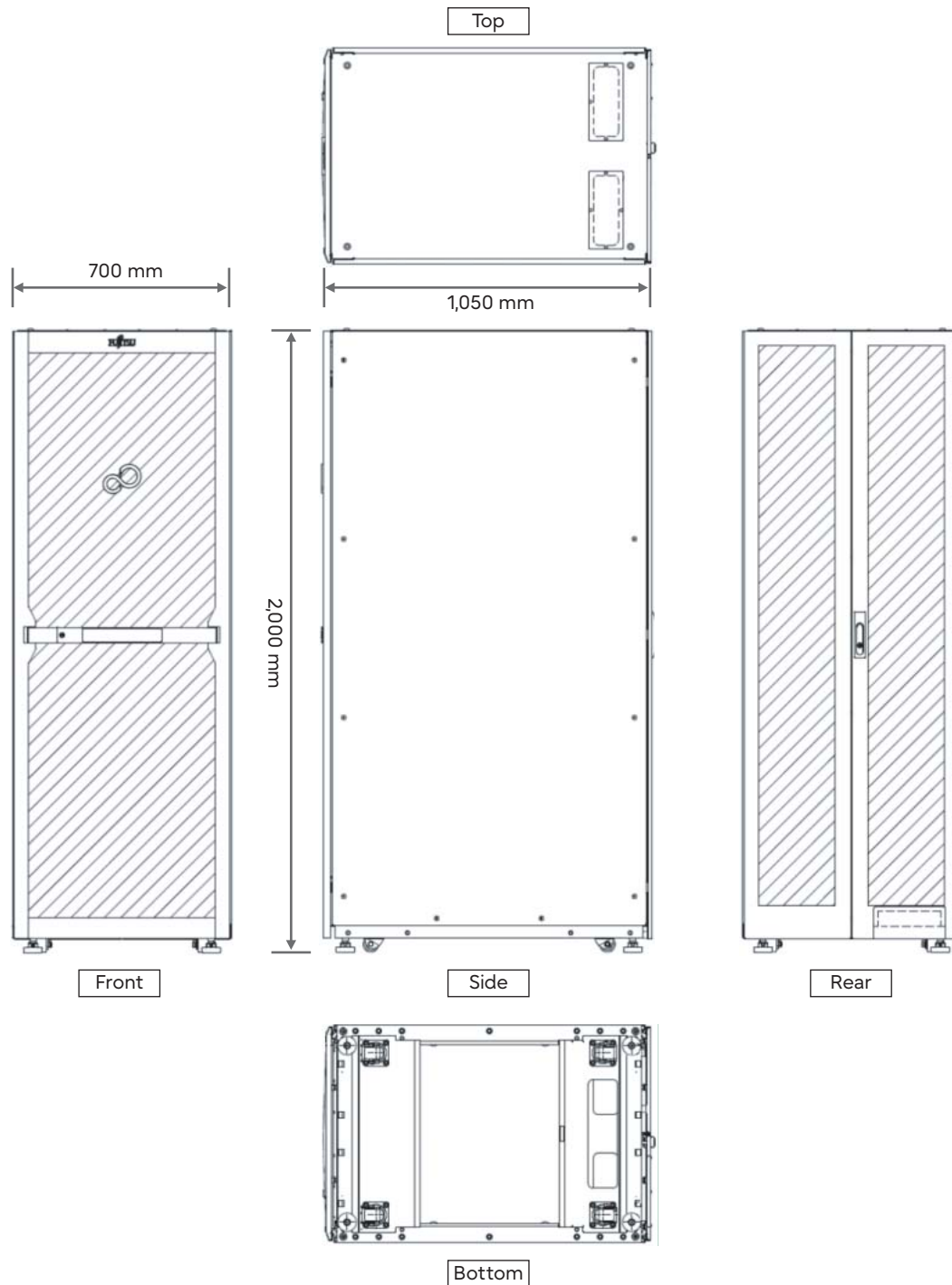
Figure 9 DS460C 60-Drive Type Drive Shelf Dimensions



## Rack Dimensions

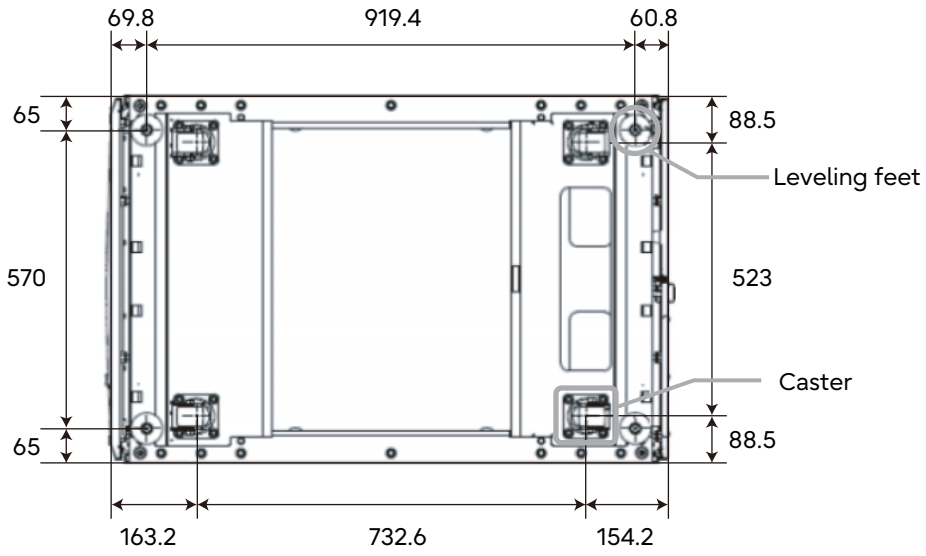
The following diagrams show the dimensions of a 19-inch rack and an anti-tipping stabilizer. The dimensions are approximations and do not include protruding parts. For specification information that is required for securing a rack, refer to [Figure 17](#) under "[Installation Methods](#)" (page 37).

Figure 10 19-inch Rack Dimensions



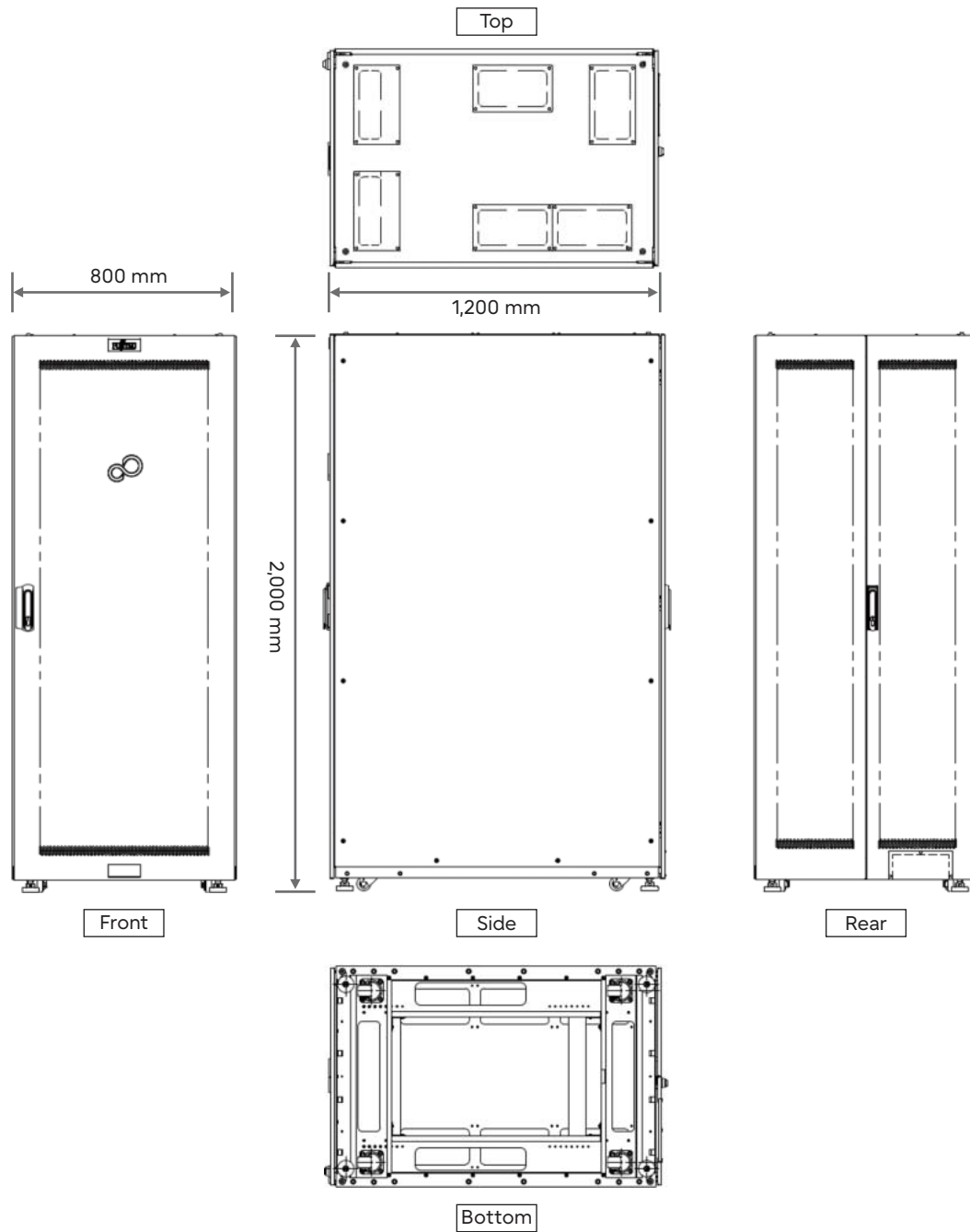
1. Installation Specifications  
Rack Dimensions

Figure 11 19-inch Rack Internal Dimensions (Horizontal Cross Section)



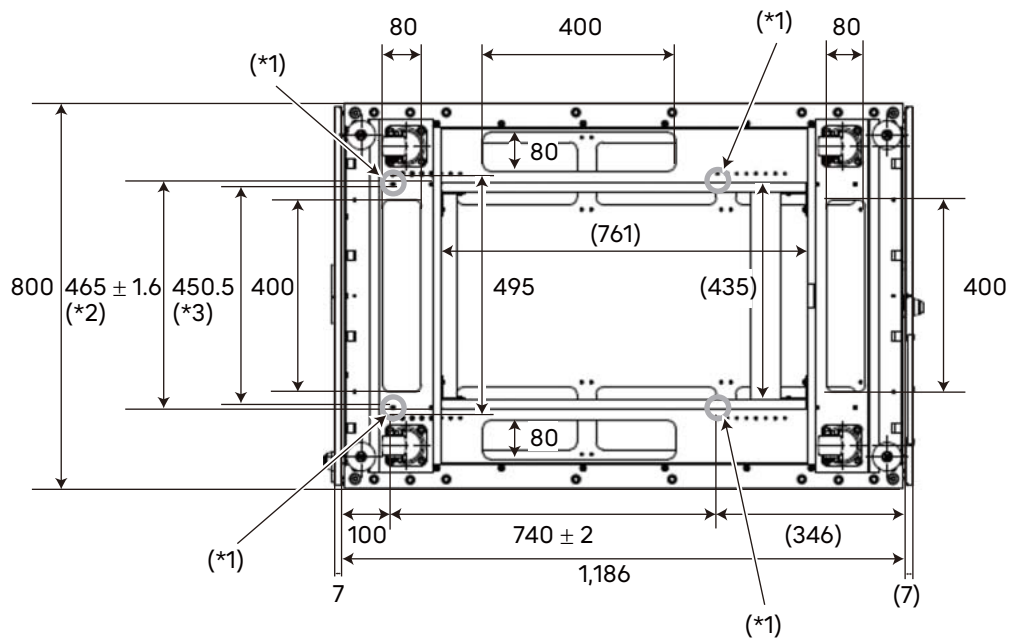
1. Installation Specifications  
Rack Dimensions

Figure 12 19-inch Wide Rack Dimensions



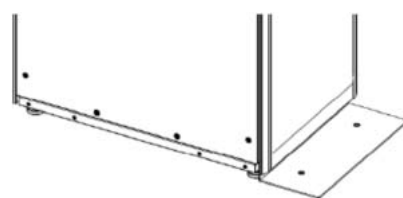
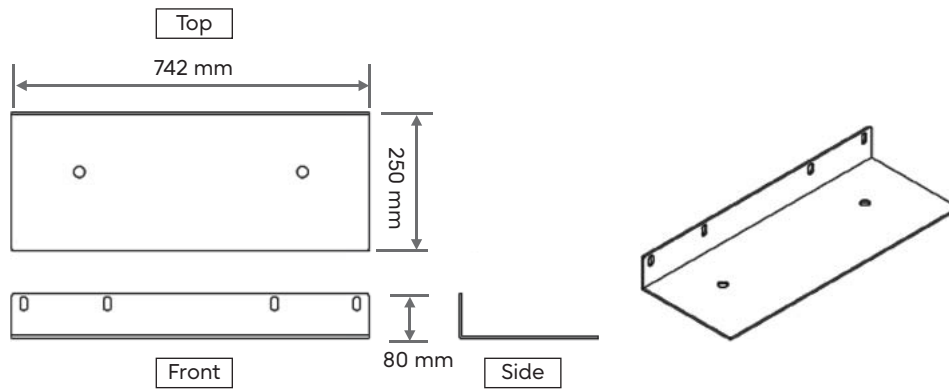
1. Installation Specifications  
 Rack Dimensions

Figure 13 19-inch Wide Rack Internal Dimensions (Horizontal Cross Section)



- \*1: Holes for fixing the storage system to the rack (size: 9.5mm square hole, universal pitch)
- \*2: Pitch of holes for fixing the storage system to the rack
- \*3: Inside the rack

Figure 14 Anti-Tipping Stabilizer Dimensions



Installation image of the L-shaped stabilizer

## Compliance Standards

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- About Compliance Standards
  - Product safety
    - EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013
    - IEC 60950-1:2005, 2nd Edition + A1:2009 + A2:2013
    - ANSI/UL 60950-1:2014
    - CAN/CSA-C22.2 No 60950-1-07, + A1:2011 + A2:2014
    - EN 62368-1:2014 + A11:2017
    - IEC 62368-1:2014
    - IANSI/UL 62368-1, 2nd Edition
    - CAN/CSA C22.2 No. 62368-1-14
    - CNS 14336-1:2010
    - IS 13252(Part 1):2010
    - TP TC 004/2011
  - Electromagnetic Compatibility (EMC)
    - EN 55032 Class A
    - EN 55024:2010
    - EN 61000-3-2:2014
    - EN 61000-3-3:2013
    - FCC Part-15 Subpart B Class A
    - ICES-003 Class A
    - VCCI Class A
    - JIS C 61000-3-2
    - CNS 13438:2006
    - AS/NZS CISPR 32 Class A 2015
    - TP TC 020/2011
    - KN32 Class A
    - KN35
  - Environmental compliance
    - This product complies with the requirements of the European Union directives listed below:
      - 2014/35/EU Low Voltage Directive
      - 2014/30/EU Electromagnetic Compatibility Directive
      - 2012/19/EU Waste Electrical and Electronic Equipment (WEEE) Directive
      - 2009/125/EC, Regulation (EU) 019/424 Erp Directive
      - 2011/65/EU Restriction of Hazardous Substances (RoHS) Directive
  - 80PLUS® (power conversion efficiency)



## Package Size

The ETERNUS AX/AC/HX is shipped in cardboard boxes or in a rack. These boxes may not fit through some doorways or elevators. To make sure that the ETERNUS AX/AC/HX can be moved to the installation site, carefully check the transport route information.

The following table shows the package size and the maximum package weight of each component.

Table 18 Package Size

Component		Package size (W × D × H)	Maximum weight
Reinforced cardboard for 19-inch racks		950 × 1,450 × 2,190 mm (*1)	Approximately 240 kg (*1) (*2)
Reinforced cardboard for 19-inch wide racks		1,030 × 1,550 × 2,170 mm (*1)	Approximately 260 kg (*1) (*2)
Controller shelf	2.5" type	810 × 490 × 710 mm	44.5 kg
	3.5" type	810 × 490 × 710 mm	44.5 kg
Controller shelf (ETERNUS AX4100, ETERNUS HX6100)		1,180 × 690 × 700 mm	140.0 kg
Drive shelf	2.5" type	810 × 490 × 710 mm	44.5 kg
	3.5" type	810 × 490 × 710 mm	44.5 kg
	60-drive type	1,180 × 690 × 700 mm	140 kg
Drive (*3)	2.5" type	160 × 278 × 106 mm	Approximately 0.5 kg
	3.5" type	189 × 300 × 116 mm	Approximately 1.2 kg
	6 drives	330 × 340 × 210 mm	Approximately 6 kg
	10 drives	350 × 360 × 290 mm	Approximately 9 kg
Power distribution unit		(540 × 380 × 310 mm) × 2	(Approximately 10 kg) × 2

\*1: The size includes the ramp (slope) for the crate package.

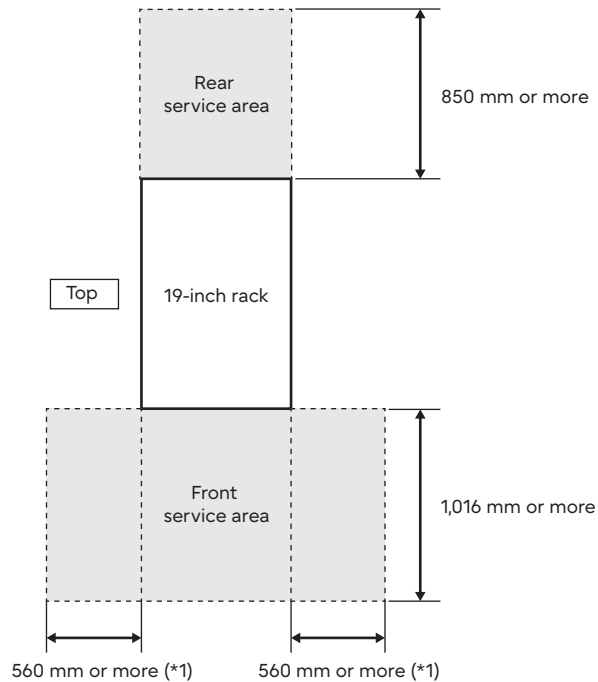
\*2: This value is used when shelves are not installed in the rack.

\*3: When an order for optional drives to be installed in the factory is placed, shelves are shipped with the drives preinstalled. When optional drives are ordered without preinstallation, each drive is shipped in an individual package, or in a box of 6 or 10 drives.

## Installation Area

This section explains the installation areas and the service areas that are required for an ETERNUS AX/AC/HX that is installed in a Fujitsu 19-inch rack.  
Secure service areas in the front and rear of the 19-inch rack.

Figure 15 Installation Area and Service Area (When the Lifter Is Not Used)



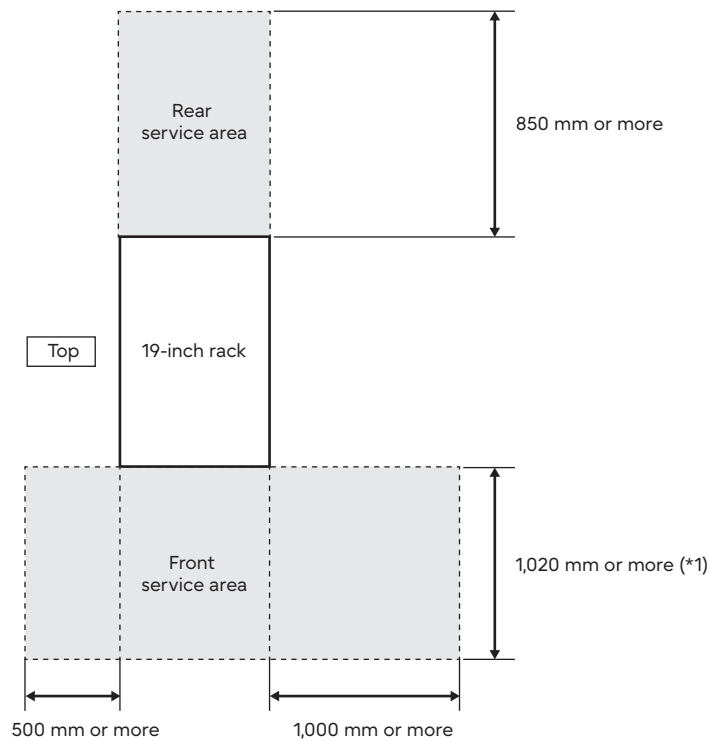
\*1: The areas on the left and right of the front service area are not required if the ETERNUS AX/AC/HX is installed in the rack.

## 1. Installation Specifications

### Installation Area

When DS460C drive shelves (60-drive) are installed in a rack or being maintained, temporary space is required to use the lifter around the rack.

Figure 16 Installation Area and Service Area (When the Lifter Is Used)



\*1: If a service area in front of the rack can be secured, secure a size 1,800mm or more.

### ■ Precautions for Installing a DS460C Drive Shelf (60-Drive) in a Rack

- A lifter must be used to ensure safety during the installation of the drive shelf in the rack. Secure a space required to use the lifter.
- When a drive is added or replaced, the front left and right of the rack must be secured as service areas to pull out the drawer.
- The drive shelf weighs a maximum of 115 kg. Be sure to maintain the load bearing capacity of the location where the drive shelves are installed.

## Installation Environment

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Sufficient consideration of the installation environment should be taken to ensure proper use of the ETERNUS AX/AC/HX. Using the ETERNUS AX/AC/HX in an environment that does not satisfy the installation environment requirements may cause a failure to occur with the ETERNUS AX/AC/HX.

### Air Conditioning

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It is important to consider the flows of cooling air (intake air and exhaust air) for the installation location of the ETERNUS AX/AC/HX. The temperature in some ETERNUS AX/AC/HX storage systems may rise by taking in air exhausted from other storage systems depending on how they are installed near each other. In addition, check if the ambient temperature in the installation location always satisfies the usage environment temperature by taking into consideration the room size, whether other storage systems are installed, and how many people are present in the room.

Take the following points into consideration when installing the air-conditioning system:

- Ambient Temperature

An ETERNUS AX/AC/HX is cooled by taking in air through the front intakes and pushing out the exhaust air through the rear of the ETERNUS AX/AC/HX. If the intake air temperature does not meet the ambient environment conditions, a temperature error occurs and the power of the ETERNUS AX/AC/HX is shut down.

- Front intake air temperature

The air temperature of the front intake varies depending on the model. Refer to the environmental conditions that are listed in "[Installation Specifications](#)" ([page 10](#)) for details.

- Rear exhaust air temperature

For example, when the intake air temperature is 40 °C, the exhaust air temperature is 50 °C or higher.

The necessary cooling capacity of air conditioning must be determined by taking the exhaust air cooling into consideration.

Estimate the amount of heat in the exhaust air from the ETERNUS AX/AC/HX by using the heat generation amount and exhaust air amount that are listed in "[Installation Specifications](#)" ([page 10](#)).

## Installation Methods

- Perform one of the following rack installation methods to ensure the safe use of an ETERNUS AX/AC/HX that is installed in a rack:
  - To secure a rack, use a rack without stabilizers and secure it to the building with the leveling feet.
  - If a rack is not to be secured, make sure to use a rack with stabilizers and use these stabilizers to prevent the rack from toppling over.
- The installation method that should be used depends on the installation location, the floor conditions, and the type of racks where the ETERNUS AX/AC/HX is to be installed. Contact your installation contractor for more details regarding installation and how the installation should actually be performed.

An installation diagram when installing a rack (or the floor dimensions of the rack) is shown below.

Figure 17 Floor Dimensions of the Rack (of 19-inch Racks)

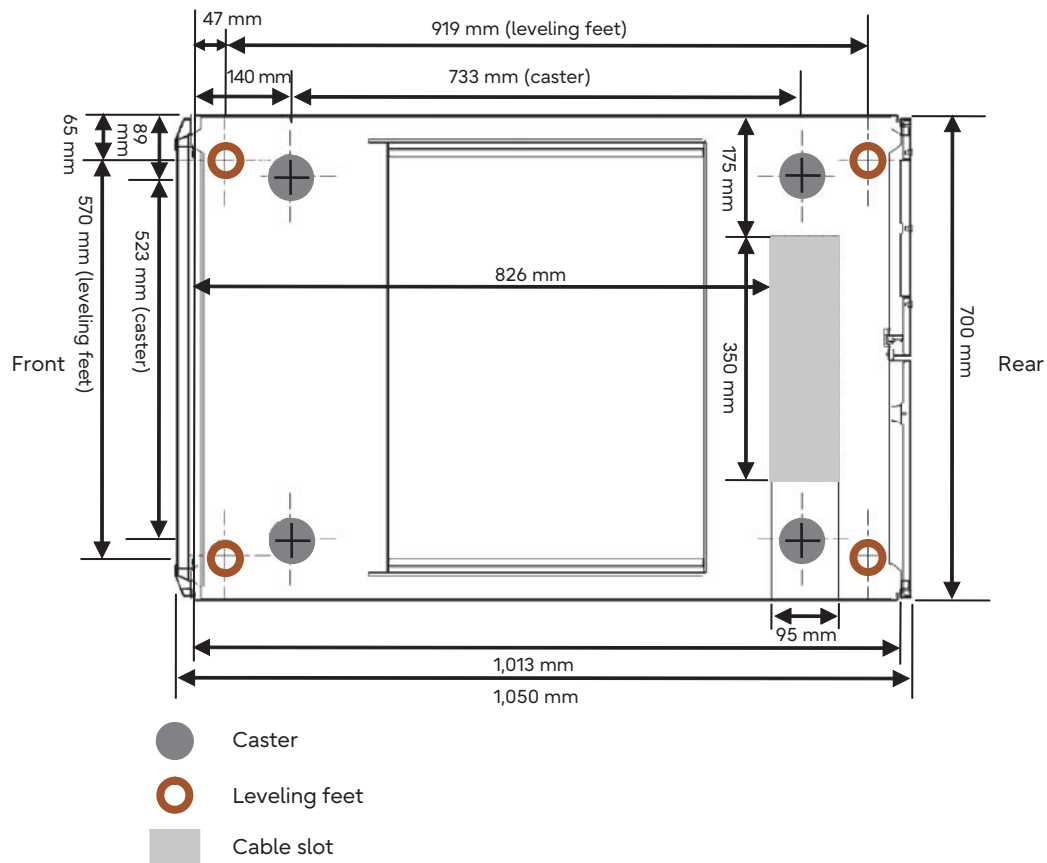
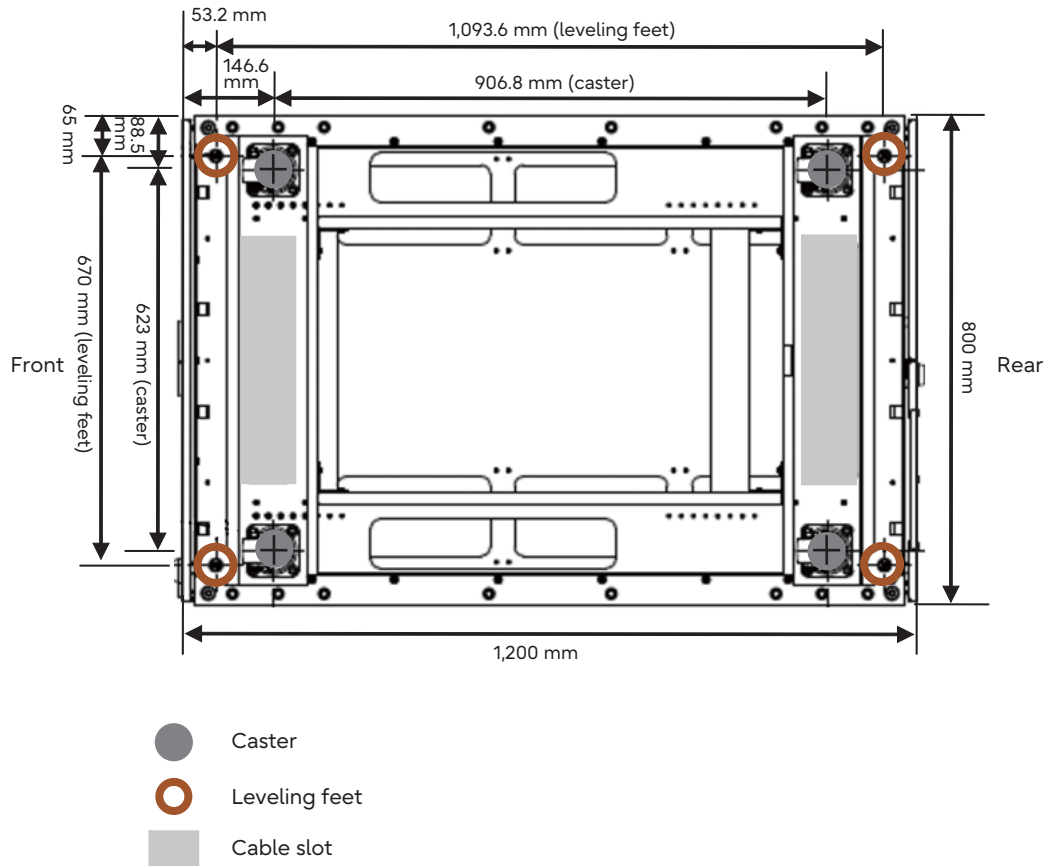


Figure 18 Floor Dimensions of the Rack (of 19-inch Wide Racks)



## Load Bearing Capacity for Floors

Make sure that the following relationship between the load bearing capacity of the floor and the weight of the ETERNUS AX/AC/HX is maintained.

(Load bearing capacity of the floor) > (ETERNUS AX/AC/HX weight ÷ Installation area that includes service areas)

If the condition above is not satisfied, additional measures are required to ensure sufficient load bearing capacity.

Contact your installation contractor for details about the necessary measures that must be taken.

# Outlet/Socket Specifications

This section explains the power connection specifications of the ETERNUS AX/AC/HX storage systems.

## ■ Power Supply Units

The ETERNUS AX/AC/HX has multiple power supply units in each of its shelf. Using the same power requirements for all the power supply units is recommended so that the power requirements (use of power distribution units and input voltage) do not vary in the ETERNUS AX/AC/HX.

### Caution

When connecting a power cord, use the power cord clamp (cable tie) that is attached to the power supply unit to prevent it from coming out.

## ● Controller Shelves and Drive Shelves

Power can be supplied from two power sources because each shelf has two power supply units. During normal operation, each of the power sources supplies half of the necessary power (\*1). If either of the power supply lines fails, all of the necessary power is supplied from the other power source.

\*1: The controller shelf of the ETERNUS AX4100 and the controller shelf of the ETERNUS HX6100 have four power supply units.

## ■ Current Consumption

The following table shows the current consumption (guideline) of each power cord that is used for ETERNUS AX/AC/HX connections.

Table 19 Maximum Current Consumption of Each Power Cord

Component name		Voltage	
		AC100V	AC200V
Controller shelf	ETERNUS AX1100	5.18A	2.54A
	ETERNUS AX1200	5.35A	2.63A
	ETERNUS AX2100	5.39A	2.65A
	ETERNUS AX2200	10.04A	5.40A
	ETERNUS AX4100	8.15A	3.90A
	ETERNUS AC2100	10.25A	5.50A
	ETERNUS HX2100	5.07A	2.49A
	ETERNUS HX2200	6.62A	3.25A
	ETERNUS HX2300	7.40A	3.56A
	ETERNUS HX6100	7.72A	3.75A
Drive shelf	DS212C	3.45A	1.70A
	DS224C	4.35A	2.12A
	DS460C	-	7.79A
	NS224 (ETERNUS AX/AC/HX models other than the ETERNUS AC2100)	8.48A	4.05A
	NS224 (ETERNUS AC2100)	8.95A	4.13A

-: Incompatible with AC100V

When power distribution units are used, make sure that the current capacity totaling the maximum current consumption value of power cords that connect to the shelves does not exceed the maximum current consumption value of the power distribution unit.

## Specifications for Optional Power Supply Products

This section explains the specifications of optional power cords and power related optional products for the ETERNUS AX/AC/HX.


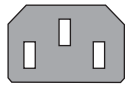
When using power distribution units, take the number of outlets required to connect each shelf into consideration to select the most appropriate power distribution units.

When an existing power socket is used, make sure that the plug type of the power distribution unit fits the existing power socket and that the power supply facility is able to provide sufficient power to the system. If the plug type does not fit the power socket, electrical work to change the power socket is required. This electrical work must be performed in compliance with the electrical codes of the nation, the municipality, or the region.

### ■ AC200V Power Cords

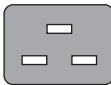
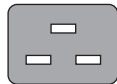
AC200V power cords are used to connect devices to the NEMA L6-15R power socket type. These power cords can be used if the specifications of the connection device allow AC200V.

Table 20 Specifications for AC250V Power Cords (IEC60320 C13 - NEMA L6-15P)

Usage	Plug type (Socket)	Socket type (Power supply unit)	Power cord length	Voltage rating/ current rating
Used for connection between the ETERNUS AX/AC/HX and the socket (IEC60320 C13 <-> NEMA L6-15P)	NEMA L6-15P 	IEC60320 C13 	4.0 m	250V/10A

AC200V power cords are used to connect devices to the IEC60320 C19 power socket type. These power cords can be used if the specifications of the connection device allow AC200V.

Table 21 Specifications for AC250V Power Cords (IEC60320 C19 - C20)


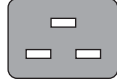
Usage	Plug type (Socket)	Socket type (Power supply unit)	Power cord length	Voltage rating/ current rating
Used for connection between the ETERNUS AX/AC/HX and the socket (IEC60320 C19 <-> IEC60320 C20)	IEC60320 C20 	IEC60320 C19 	3.0 m	250V/16A



1. Installation Specifications  
Outlet/Socket Specifications

AC200V power cords are used to connect devices to the NEMA L6-20R power socket type. These power cords can be used if the specifications of the connection device allow AC200V.

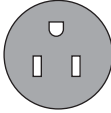

Table 22 Specifications for AC250V Power Cords (IEC60320 C19 - NEMA L6-20P)

Usage	Plug type (Socket)	Socket type (Power supply unit)	Power cord length	Voltage rating/ current rating
Used for connection between the ETERNUS AX/AC/HX and the socket (IEC60320 C19 <-> NEMA L6-20P)	NEMA L6-20P 	IEC60320 C19 	3.0 m	250V/16A

■ AC100V Power Cords

AC100V power cords are used to connect devices to the NEMA 5-15R power socket type. These power cords can be used if the specifications of the connection device allow AC100V.

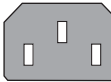

Table 23 Specifications for AC100V Power Cords (IEC60320 C13 - NEMA 5-15P)

Usage	Plug type (Socket)	Socket type (Power supply unit)	Power cord length	Voltage rating/ current rating
Used for connection between the ETERNUS AX/AC/HX and the socket (IEC60320 C13 <-> NEMA 5-15P)	NEMA 5-15P 	IEC60320 C13 	3.0 m	125V/15A

■ AC100V/AC200V Power Cords

AC100V/AC200V power cords are used to connect devices to the IEC60320 C13 power socket type. These power cords can be used if the specifications of the connection device allow AC100V or AC200V.

Table 24 Specifications for AC100V/AC250V Power Cords (IEC60320 C13 - C14)

Usage	Plug type (Socket)	Socket type (Power supply unit)	Power cord length	Voltage rating/ current rating
Used for connection between the ETERNUS AX/AC/HX and the socket (IEC60320 C13 <-> IEC60320 C14)	IEC60320 C14 	IEC60320 C13 	3.0 m	250V/10A

**Caution**

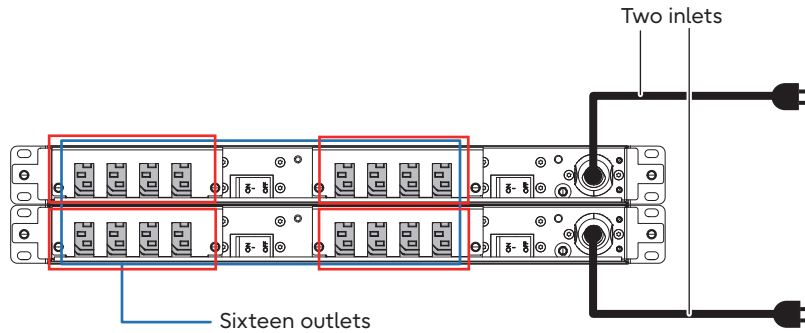
If these power cords are used for the ETERNUS AX2200 or ETERNUS AC2100 that is operating at AC100V, the current rating may be exceeded depending on the configuration. Before ordering these power cords, be sure that the current rating is not exceeded. Contact your sales representative if necessary.

■ Power Distribution Unit (AC24A/200V, 2U, 16 Outlets)

There are 16 outlets and two inlets.



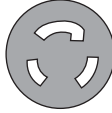
Estimate the maximum current consumption to supply power to all the connected devices using one of the modules of the power distribution unit.

Figure 19 Power Distribution Unit (AC24A/200V, 2U, 16 Outlets)



: The current rating in four of the outlets must be 12A or lower

Table 25 Specifications for Power Distribution Units (AC24A/200-240V, 2U, 16 Outlets)

Outlet Socket type (Socket)	Inlet			Voltage rating/ current rating
	Plug type	Socket type (Socket)	Power cord length	
IEC60320 C13 	NEMA L6-30P 	NEMA L6-30R 	4.0m	Rating: 200-240V 24A

■ Power Distribution Unit (AC24A/200V, 2U, Six Outlets)

There are six outlets and two inlets.

Estimate the maximum current consumption to supply power to all the connected devices using one of the modules of the power distribution unit.

This is supported in the ETERNUS HX series only.

Figure 20 Power Distribution Unit (AC24A/200V, 2U, Six Outlets)

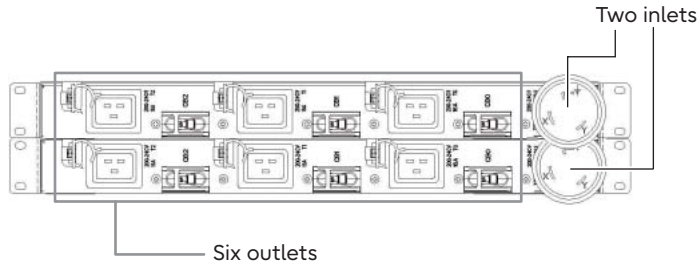


Table 26 Specifications for Power Distribution Units (AC24A/200-240V, 2U, Six Outlets)

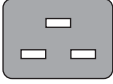


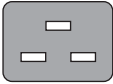


Outlet Socket type (Socket)	Inlet			Voltage rating/ current rating
	Plug type	Socket type (Socket)	Power cord length	
IEC60320 C19 	NEMA L6-30P 	NEMA L6-30R 	4.4m	Rating: 200-240V 24A

Table 27 Specifications for Power Distribution Units (AC24A/200-240V, 2U, Six Outlets) (for Korea)

Outlet Socket type (Socket)	Inlet			Voltage rating/ current rating
	Plug type	Socket type (Socket)	Power cord length	
IEC60320 C19 	IEC Industrial Plug IP44 32A 2P+PE 	IEC Industrial Socket IP44 32A 2P+PE 	4.4m	Rating: 200-240V 24A

## Required Number of Outlets/sockets

The number of power outlets/sockets required to install the ETERNUS AX/AC/HX depends on the number of shelves and power distribution units.

It is recommended that the power cords of the shelves are connected to the power distribution units that are installed in the same rack. Secure the necessary number of power outlets within the same rack to avoid connecting power cords to power outlets in different racks. It may be necessary to purchase additional power distribution units depending on the installation locations of shelves.

### ■ Without Power Distribution Units

Two power sockets are required for each controller shelf and drive shelf.

### ■ With Power Distribution Units

Two power sockets are required for each power distribution unit.

## Circuit Protectors

Protection coordination must be secured between the distribution board circuit protectors and the ETERNUS AX/AC/HX or power distribution units to protect the ETERNUS AX/AC/HX by blocking the failed circuit immediately when a power supply input error occurs.

Distribution board circuit protectors must satisfy the following required conditions and breaking characteristics.

### ■ Required Conditions

The distribution board circuit protectors must satisfy the required conditions that are listed below.

Table 28 Required Conditions for Distribution Board Circuit Protectors

Connected device	Power supply voltage	Current capacity
Power distribution unit (AC24A/200V, 2U, 16 outlets)	AC 200 – 240V	24A
Power distribution unit (AC24A/200V, 2U, six outlets)	AC 200 – 240V	24A
ETERNUS AX/AC/HX (without power distribution units)	AC 100 – 120V AC 200 – 240V	15A

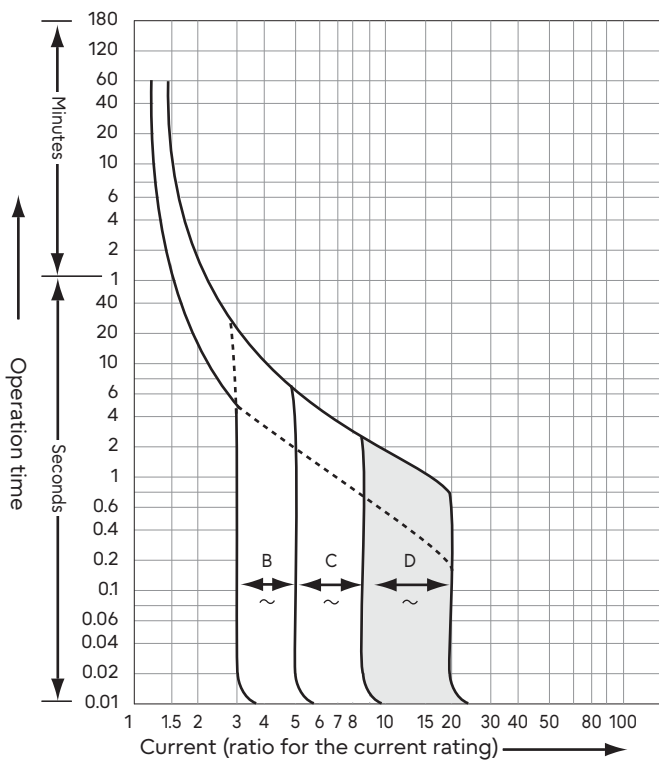
## ■ Breaking Characteristics

### Caution

The breaking characteristics (\*1) of the distribution board circuit protectors must be the long-time delay type and must be equivalent to or slower than the D (IEC/EN60898-1) shown in [Figure 21](#). If the distribution board's circuit protectors have a breaking characteristic that is faster than D, the breaker may trip when a power supply unit in the storage system fails. When the breaker trips, a shutoff occurs on multiple power supply units connected to the same connection line as the failed power supply unit.

\*1: Relationship between the size of excess current and operation time

Figure 21 Breaking Characteristics of Distribution Board Circuit Protectors



## ■ Connection Diagrams

The following diagrams show connections between the power distribution units, the ETERNUS AX/AC/HX and the power sockets of the distribution boards.

### Caution

Do not connect just one power distribution unit to multiple ETERNUS storage systems. In addition, do not connect just one circuit protector of a power distribution unit to multiple ETERNUS storage systems.

### Note

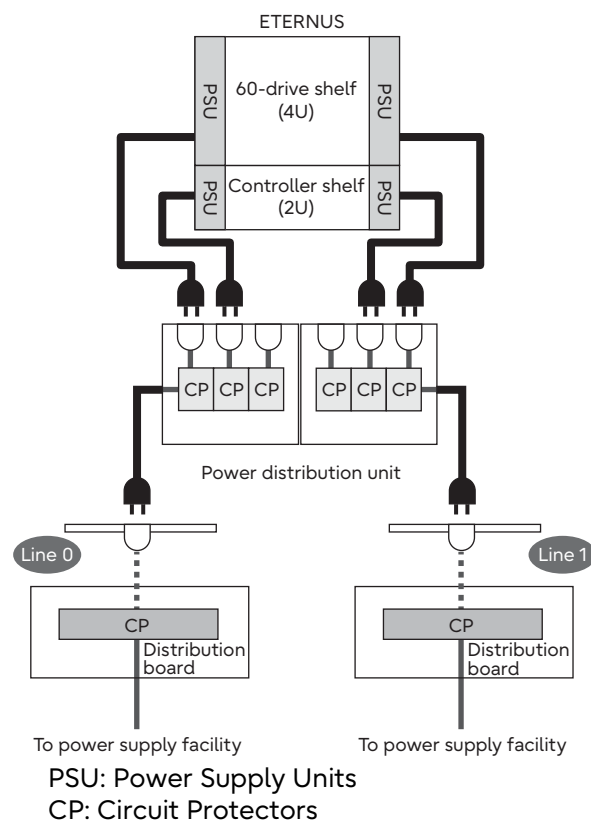
When power cords are connected to a single power supply line, the connections are more secure if a one-to-one connection is made between each power cord and circuit protector of the distribution board.

#### ● For Power Distribution Unit (Six Outlets) Connections

The following diagram shows an example of a power supply connection when a power distribution unit (six outlets) is used.

- Current consumption of each outlet: 16A or less
- Current consumption of each inlet cable: 24A or less

Figure 22 Example of a Power Supply Connection When a Power Distribution Unit (Six Outlets) Is Used



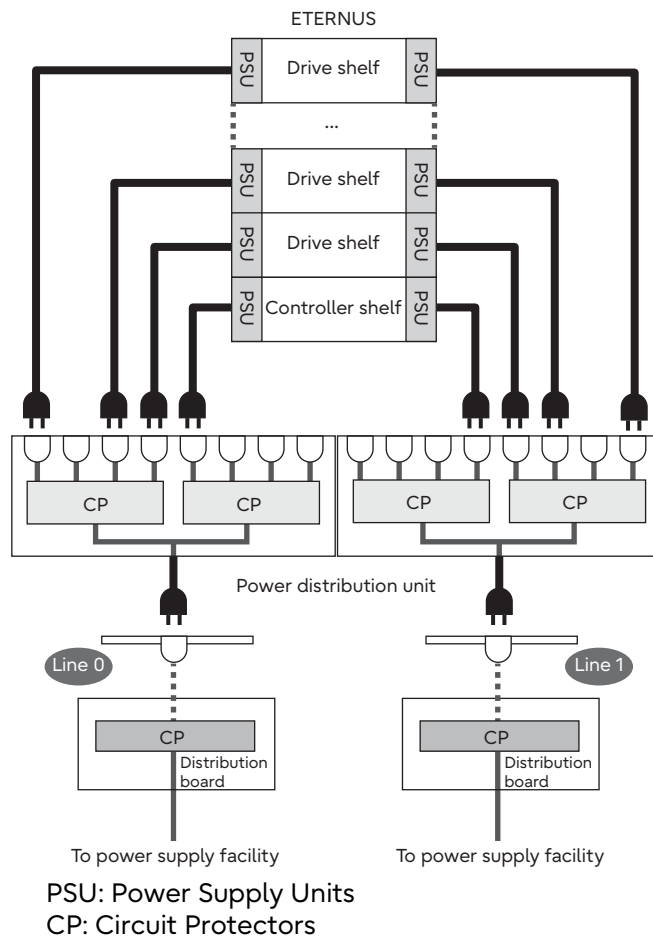
1. Installation Specifications  
Outlet/Socket Specifications

● For Power Distribution Unit (16 Outlets) Connections

The following diagram shows an example of a power supply connection when a power distribution unit (16 outlets) is used.

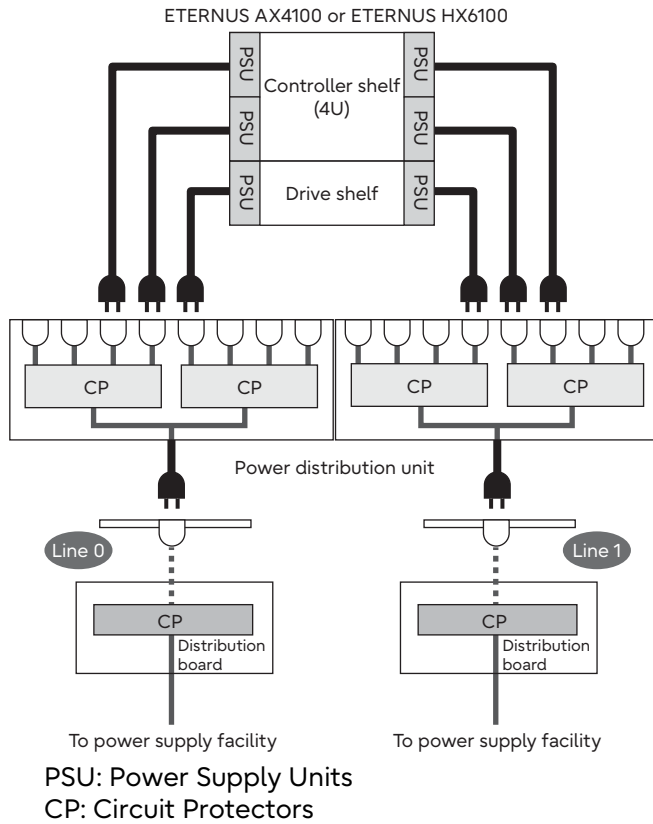
- Current consumption of each outlet: 10A or less
- Current consumption of each CP (four outlets: OUT1 to OUT4, or OUT5 to OUT8): 12A or less
- Current consumption of each inlet cable: 24A or less

Figure 23 Example of a Power Supply Connection When a Power Distribution Unit (16 Outlets) Is Used



1. Installation Specifications  
 Outlet/Socket Specifications

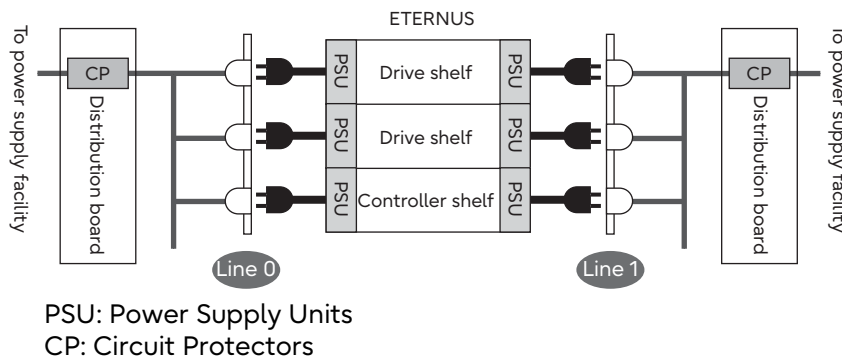
Figure 24 Example of a Power Supply Connection When a Power Distribution Unit (16 Outlets) Is Used with the ETERNUS AX4100 or the ETERNUS HX6100



● For Direct (No Power Distribution Unit) Connections

The following diagram shows a power supply connection example when no power distribution units are used.

Figure 25 Example of a Power Supply Connection When a Power Distribution Unit Is Not Used



- Only connect the ETERNUS AX/AC/HX to circuit protectors.



## Input Power Supply Lines

It is recommended to use multiple power supply facilities in the building for power supply redundancy, or divide the AC input system for the ETERNUS AX/AC/AC/HX into a dual system (line 0 and line 1).

Because the power supply of the ETERNUS AX/AC/HX is configured redundantly, business can continue even if one of the power supply lines fails. However, a single power supply facility configuration is also allowed for the entire system optimization (including the server). When selecting a single configuration, take into consideration the availability of the system.

Figure 26 Dual-Line Power Supply (When Connecting to Power Sockets)

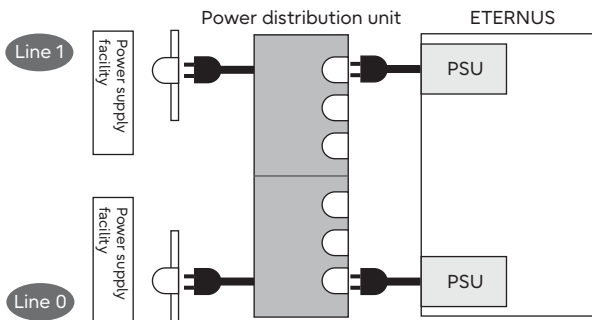


Figure 27 Single-Line Power Supply (When Connecting to Power Sockets)

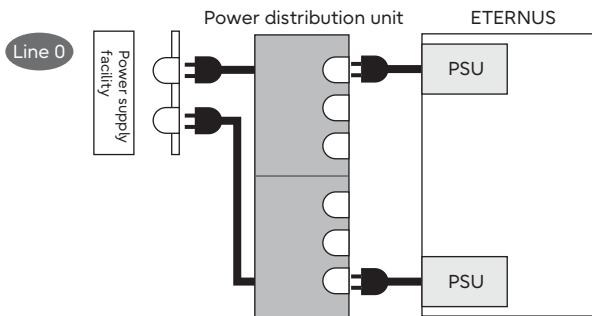
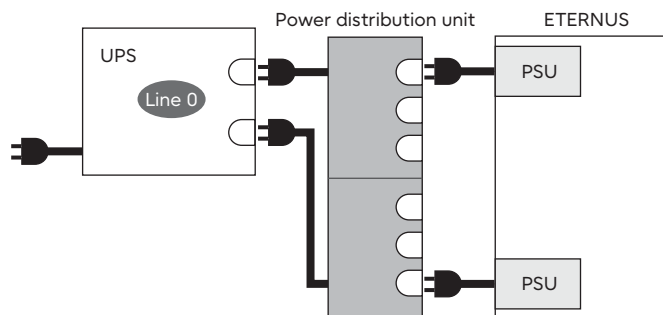


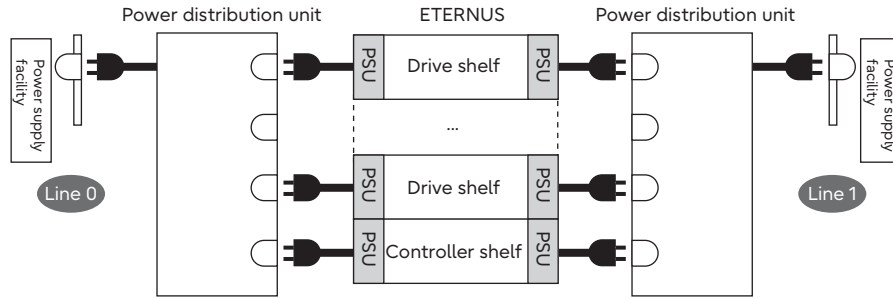
Figure 28 Single-Line Power Supply (When Connecting to a UPS Unit)



1. Installation Specifications  
Outlet/Socket Specifications

**Note**

When the power distribution units are separately connected to line 0 (PSU#0) and line 1 (PSU#1), the availability of the power supply facilities is improved.



## 2. Rack Installation Specifications

This chapter provides the installation specification of the ETERNUS AX/AC/HX.

### Rack Installation Requirements

This section explains the requirements for installing the ETERNUS AX/AC/HX in a 19-inch rack.

#### Placement in the Rack

Note the following when installing the ETERNUS AX/AC/HX in the rack.

- Secure a space of 1U at the bottom of a rack.
- The space from 2U to 7U is dedicated to PDUs. Since the height of a PDU is 2U, a maximum of three PDUs can be installed.
- Install the controller shelf in 8U.
- Drive shelves must be installed in a higher position than the controller shelf.
- If size of the drive shelves is mixture of 2U and 4U, the 4U shelves must be installed below the 2U shelves.
- The center of gravity must be taken into consideration to prevent a rack from toppling over. Shelves should generally be installed from bottom to top to lower the center of gravity and to ensure the safe use of racks.
- Shelves are installed in the following order (from bottom to top).

Table 29 Shelf Installation Order

Installation order	Shelf	Size (height)
6	DS214C drive shelf	2U
	DS224C drive shelf	2U
	NS224 drive shelf	2U
5	DS460C drive shelf	4U
4	Controller shelf	2U
3	Controller shelf	4U
2	Power distribution unit	2U
1	UPS (*1)	-

\*1: Uninterruptible Power Supply.

- When an AX4100 or HX6100 is ordered together with a rack, drive shelves are installed according to the following priority.

Table 30 Priority of the Drive Shelf Types Connected to the AX4100

Priority	Drive shelf
1	Drive shelf included in the controller shelf
2	A drive shelf that is different from the one included in the controller shelf

2. Rack Installation Specifications  
Rack Installation Requirements

Table 31 Priority of the Drive Shelf Types Connected to the HX6100

Priority	Drive shelf
1	Drive shelf included in the controller shelf
2	A drive shelf that is the same type as the one included in the controller shelf
3	DS460C
4	DS224C
5	DS212C

Figure 29 Example Rack Installation: ETERNUS AX1x00/AX2x00, ETERNUS HX2x00

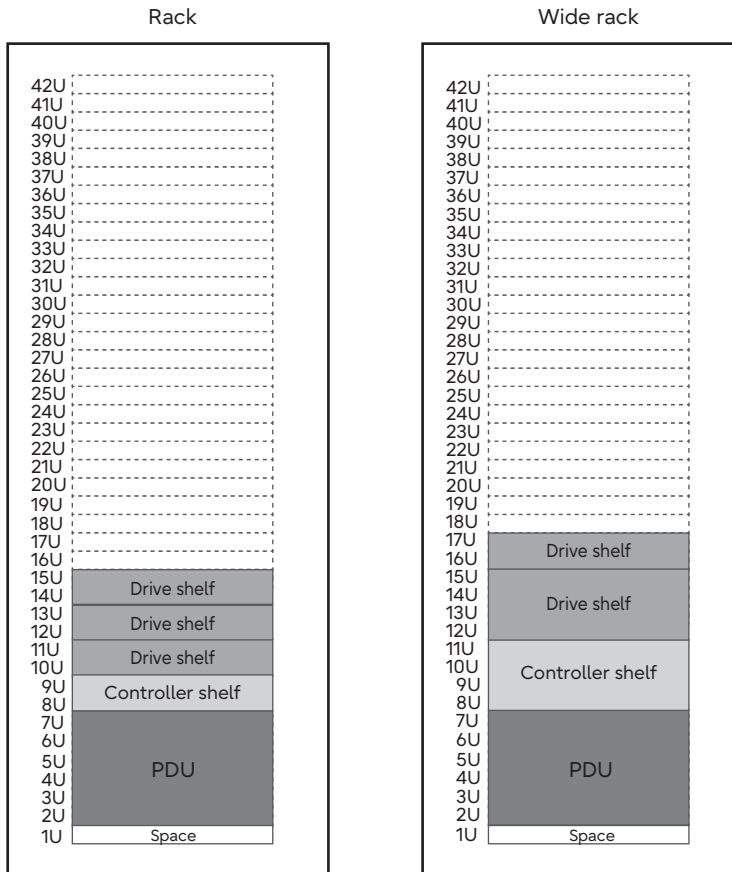
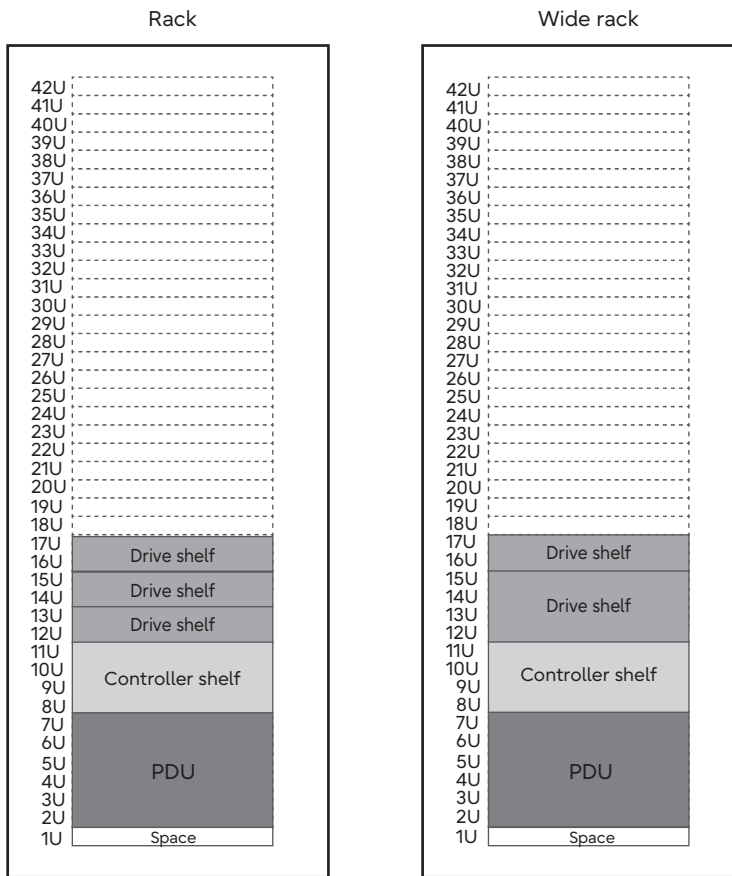


Figure 30 Example Rack Installation: ETERNUS AX4100, ETERNUS HX6100



**Note**

- When determining the rack-mounting layout of each shelf and power distribution unit, consider the length of each cord. For example, if the ETERNUS AX/AC/HX is installed at the top of a 2000 mm rack and a 4 m power cord is used, the surplus length of the power cord at the bottom of a rack should be about 2 m.
- If the ETERNUS AX/AC/HX is installed at the bottom of a rack, a space for the surplus of cables may not be available in some racks, preventing the ETERNUS AX/AC/HX from being pulled out when maintenance work is required. In this case, secure a space of 1U or more at the bottom when installing the ETERNUS AX/AC/HX.
- If drive shelves are to be added in the future, securing sufficient space for power distribution units in the bottom of the rack is recommended.
- If devices are installed above and below the ETERNUS AX/AC/HX and there is a difference in depth of 100 mm or more, leave a space of 1U above the ETERNUS AX/AC/HX so the rear of the unit can be easily accessed.

## Cable Connection

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### Power Cord

This section explains the requirements for connecting a power distribution unit with the ETERNUS AX/AC/HX.

- Power Distribution Units (2U, 16 Outlets, 24A)
  - For each power distribution unit, the total current capacity of the current consumption value of the power cords that connect from outlets OUT1 to OUT8 must be 24A or less.
  - For each power distribution unit, the total current capacity of the current consumption value of the power cords that connect from outlets OUT1 to OUT4 and total current capacity of the current consumption value of the power cords that connect from outlets OUT5 to OUT8 must be 12A or less.
  - Connect a new shelf to OUT5 if the total current capacity of the current consumption value of the power cords that connect from outlets OUT1 to OUT4 exceeds 12A. Connect a new shelf to the next power distribution unit if the total current capacity of the current consumption value of the power cords that connect from outlets OUT5 to OUT8 exceeds 12A.
  
- Power Distribution Units (2U, 6 Outlets, 24A)
  - For each power distribution unit, the total current capacity of the current consumption value of the power cords that connect from outlets OUT1 to OUT3 must be 24A or less.

### Shelves Interconnection Cables

Mini SAS HD cables or QSFP cables are used to connect between shelves in the ETERNUS AX/AC/HX.

#### Caution

The field engineer (FE) will perform the cable connection work.

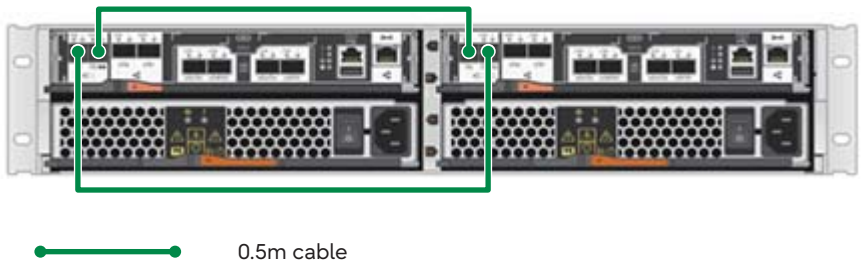
- ETERNUS AX1200/AX2100 and ETERNUS HX2100/HX2200/HX2300

Two (0.5 m) mini SAS HD cables are provided with each controller shelf, four with the first drive shelf, and two with the second and later drive shelves.  
The length of the mini SAS HD cables that are used varies depending on the number and type of drive shelf.

  - For one or two 2U drive shelves  
Use 0.5 m cables.
  - To connect between 2U drive shelves and 4U drive shelves  
Use 1 m cables.
  - To connect between the controller shelf and the uppermost 4U drive shelf  
Use 2 m cables.

2. Rack Installation Specifications  
Rack Installation Requirements

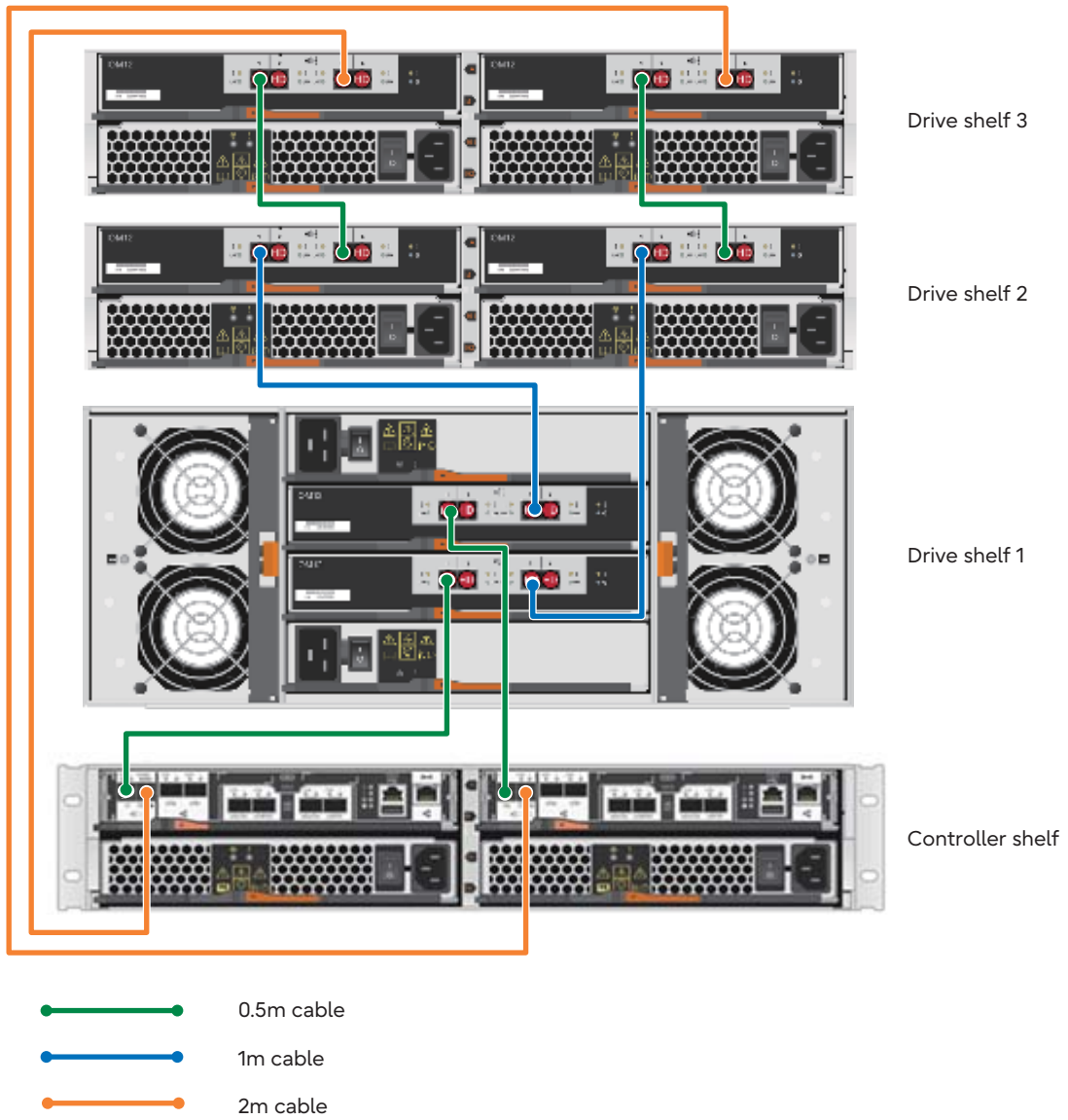
Figure 31 Mini SAS HD Cables between Shelves (for a Single Controller Shelf)



**Note**

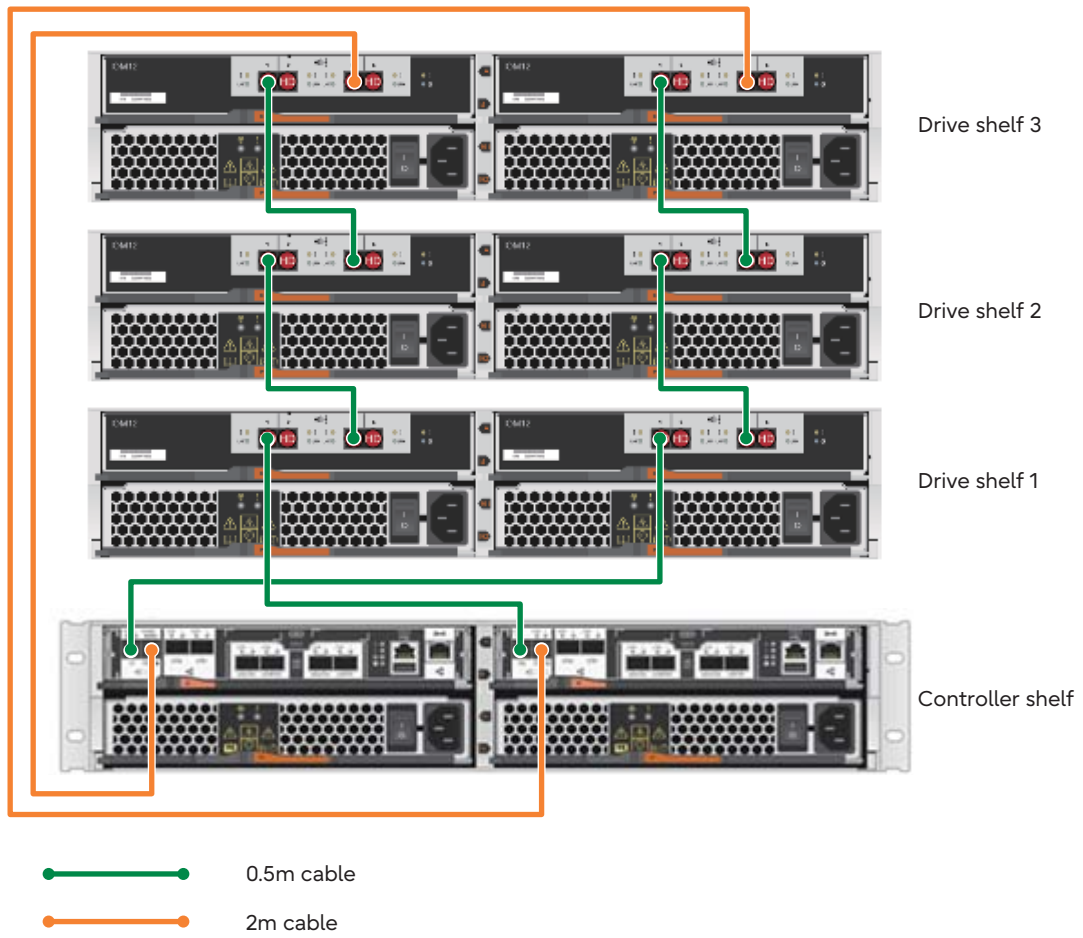
Mini SAS HD cables between shelves are not required when the ETERNUS HX2300 is used without drive shelves.

Figure 32 Mini SAS HD Cables between Shelves (When Connecting a 4U Drive Shelf)



2. Rack Installation Specifications  
Rack Installation Requirements

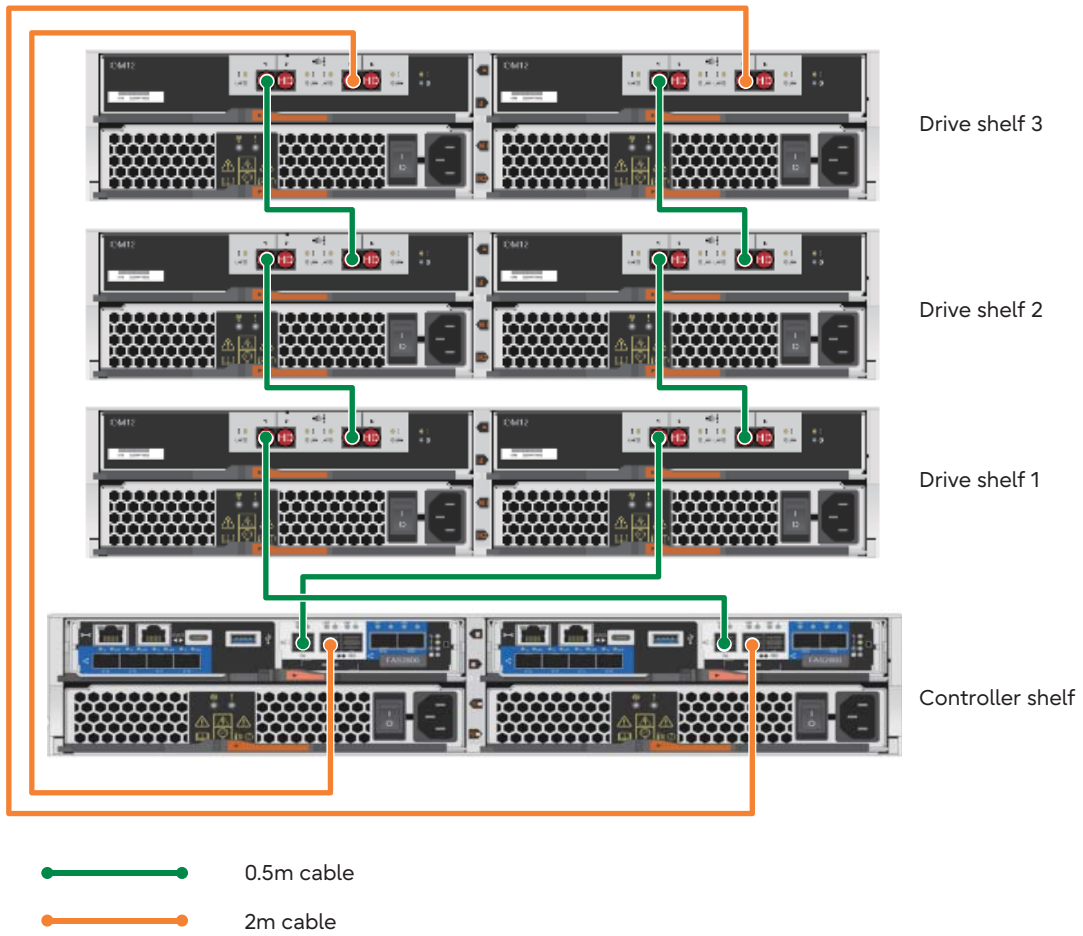
Figure 33 Mini SAS HD Cables between Shelves (When Connecting Multiple Shelves)





2. Rack Installation Specifications  
Rack Installation Requirements

Figure 34 Mini SAS HD Cables between Shelves (When Connecting Multiple Shelves to the ETERNUS HX2300)



● ETERNUS AX2200, ETERNUS AC2100

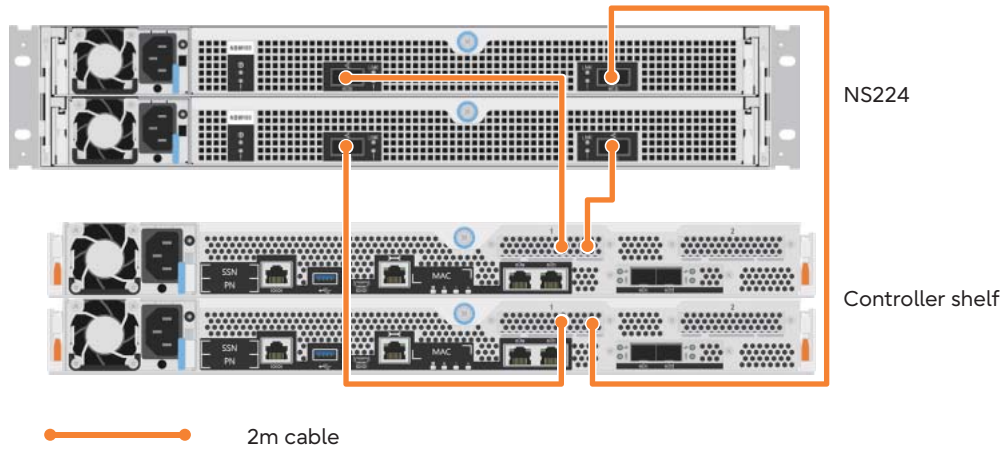
Four QSFP cables are required for each drive shelf.

The number and length of the QSFP cables that are used vary depending on the installation location of the racks and the connection destination.

Table 32 Guideline for Selecting the Length for the Mini SAS Cables between Shelf

Status	Cable length	Quantity
One on top of the other	0.5 m	4
10U or greater distance in the same rack	1 m	4
In the same rack	2 m	4
Adjacent racks	5 m	4

Figure 35 QSFP Cables between Shelves (When Connecting between the ETERNUS AX2200 or ETERNUS AC2100 and One NS224 Drive Shelf)



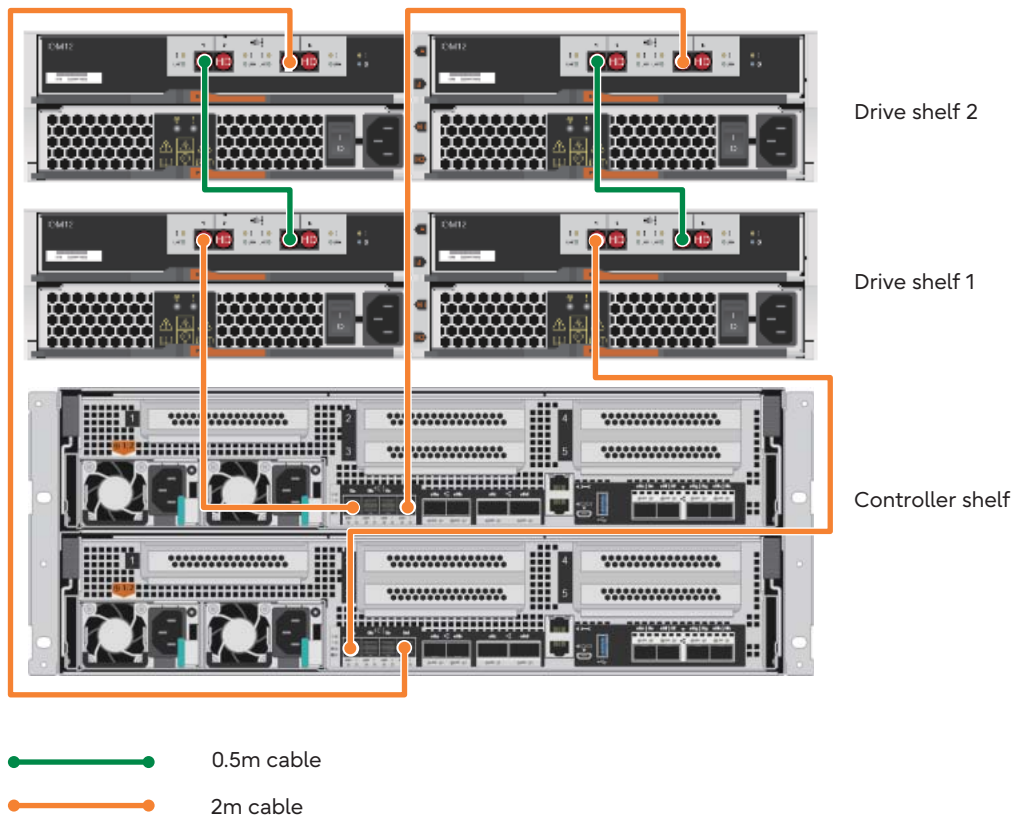
● ETERNUS AX4100 and ETERNUS HX6100

Four (2 m) mini SAS HD cables are provided with each drive shelf that is supplied with the ordered controller shelf.

The number and length of the mini SAS HD cables that are used vary depending on the installation location of the racks and the connection destination.

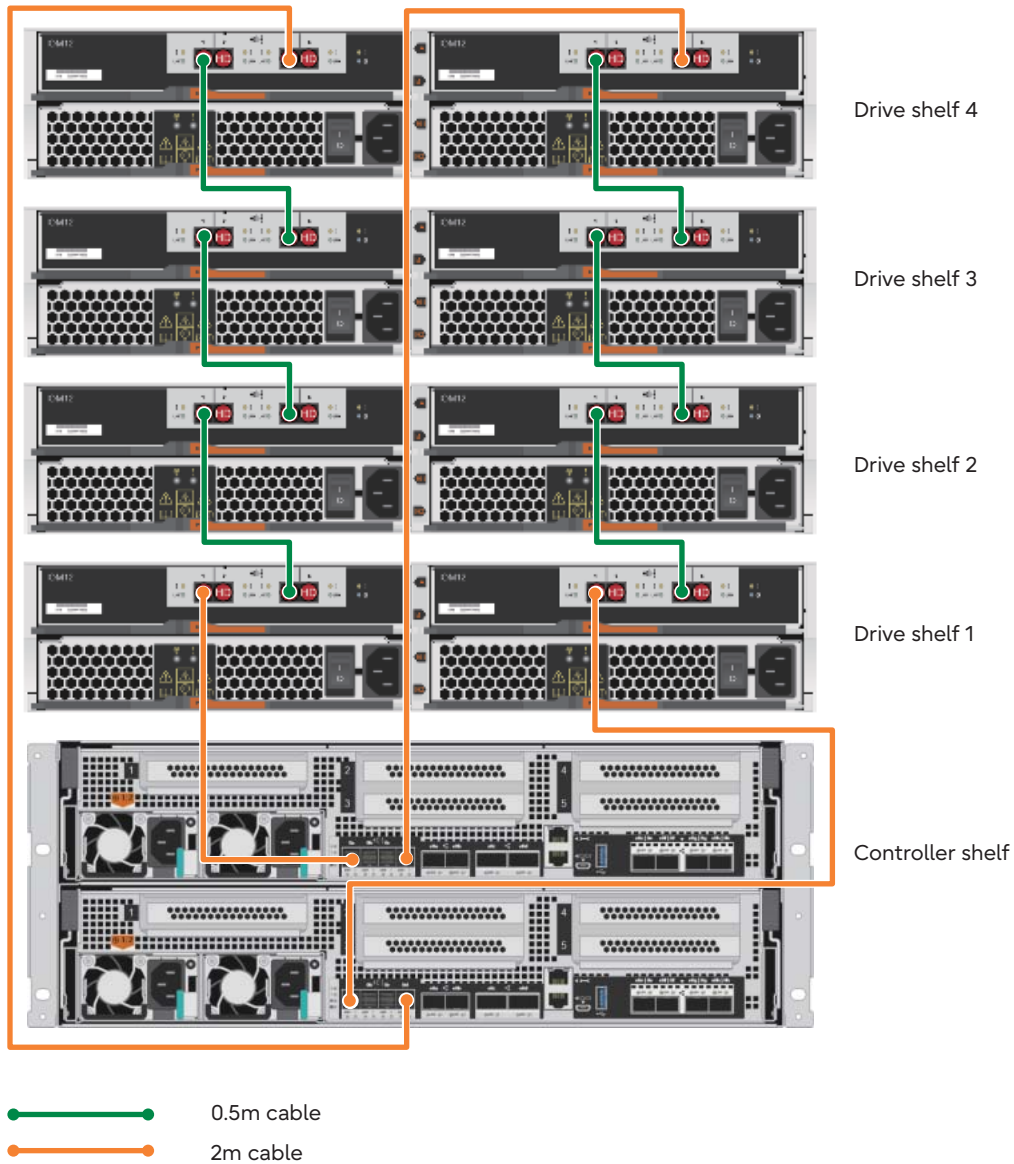
Connection pattern	Status	Cable length	Quantity
Controller shelf and drive shelf connection	In the same rack	2 m	4
	Adjacent racks	5 m	4
DS212C/DS224C and DS212C/DS224C connection	One on top of the other	0.5 m	2
DS460C and DS460C connection		0.5 m	2
DS212C/DS224C and DS460C connection		1 m	2
Drive shelf and drive shelf connection	Adjacent racks	5 m	2

Figure 36 Mini SAS HD Cables between Shelves (When Connecting between the ETERNUS HX6100 and Two DS212C Drive Shelves)



2. Rack Installation Specifications  
Rack Installation Requirements

Figure 37 Mini SAS HD Cables between Shelves (When Adding Two DS212C Drive Shelves to the Configuration in [Figure 36](#))



2. Rack Installation Specifications  
Rack Installation Requirements

Figure 38 Mini SAS HD Cables between Shelves (When Connecting between the ETERNUS AX4100 and One NS224 Drive Shelf)

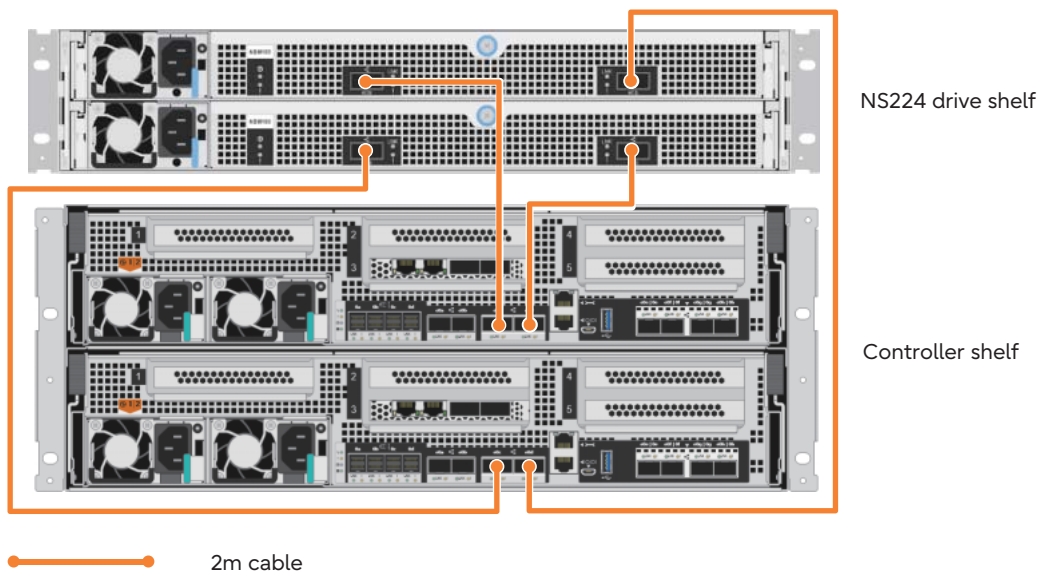
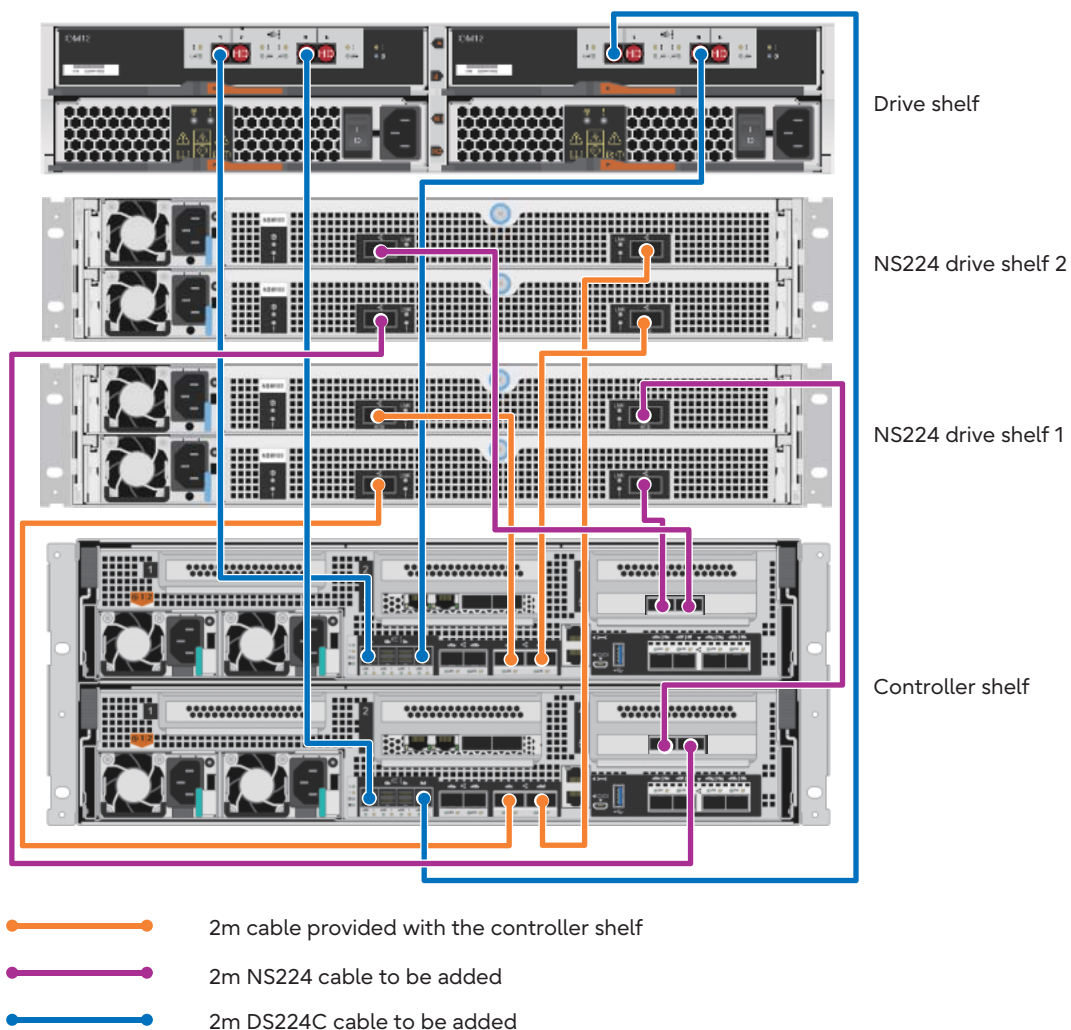


Figure 39 Mini SAS HD Cables between Shelves (When Adding NS224 and DS224C Drive Shelves to the Configuration in [Figure 38](#))



## Direct Attach Cable (Twinax SFP+ Cable)

For the ETERNUS AX/AC/HX series, one controller is equivalent to one node and a high availability (HA) pair comprises two nodes. To configure HA pairs, a "direct attach cable" (10Gb, SFP+/SFP+, 0.5m) must be used for connections between nodes.

Two 0.5 m direct attach cables are provided with each controller shelf.

### Caution

The field engineer (FE) will perform the cable connection work.

Figure 40 Direct Attach Cable Connection

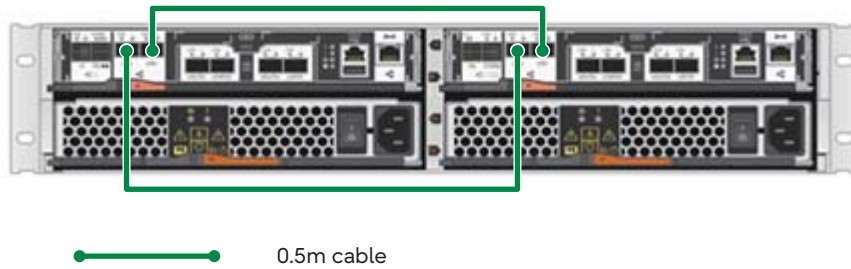
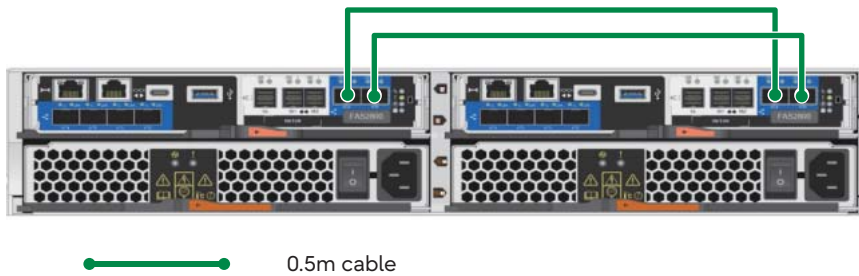


Figure 41 Direct Attach Cable Connection (ETERNUS HX2300)



## Cables Used Between Nodes and Switches

For the ETERNUS AX/AC/HX series, a cluster comprises multiple HA pairs.

For a cluster configured with two or more HA pairs (four or more nodes), the cluster network connection must be used.

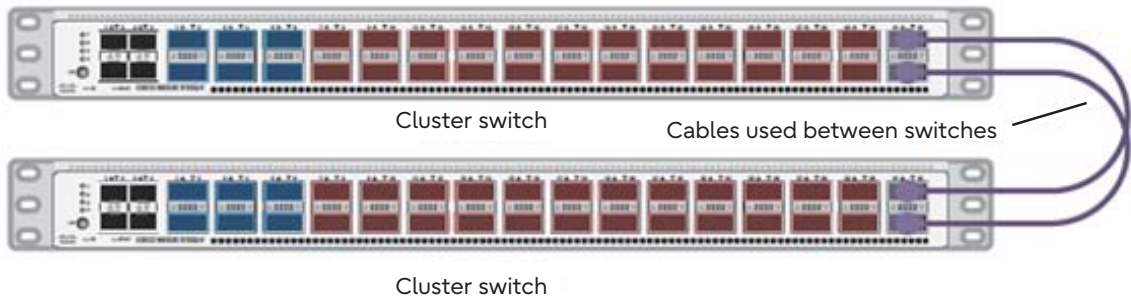
Cluster switches are used for the cluster network connection.

Cluster switches are also used for the MetroCluster configuration.

Two cluster switches are used for each cluster system.

● Cluster Switches and Cables Used between Switches

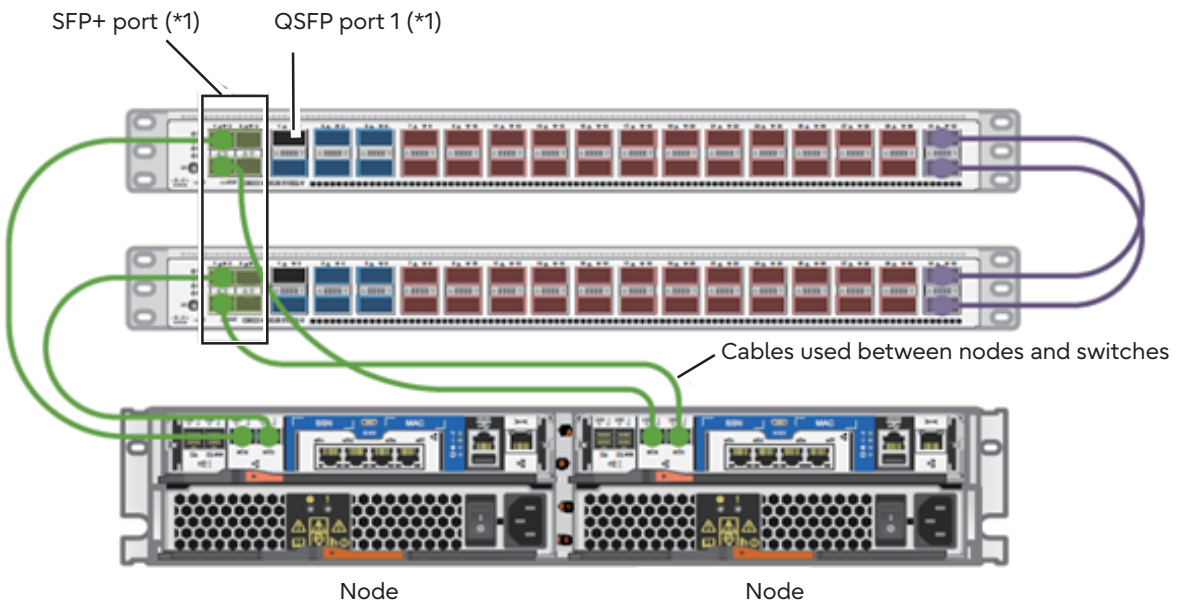
Figure 42 Connecting Cluster Switches with the Cables Used Between Switches



● Cables between Nodes and Switches (10GBASE Port Connection)

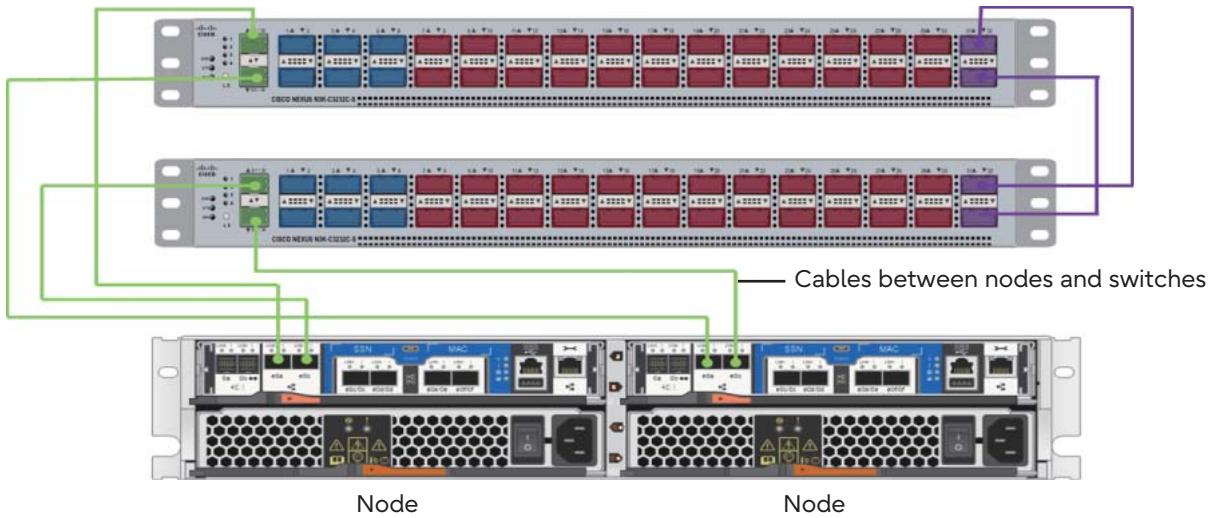
Cables used between nodes and switches vary depending on whether the cluster switches are connected to 10GBASE ports, 40GBASE ports, or 100GBASE ports. When the cluster switch is connected to a 10GBASE port, four cables are used for each HA pair (two nodes). A total of eight cable connections (four nodes connections) is possible.

Figure 43 Two-Node Configurations Using Cluster Switches (Nexus 3132 VXLAN) (for 10GBASE Port Connections)



\*1: SFP+ ports (x 4) on a switch cannot be used at the same time as QSFP port 1. Enable the SFP+ port when connecting cables to the SFP+ ports on the switch.

Figure 44 Two-Node Configurations Using Cluster Switches (Nexus 3232C) (for 10GBASE Port Connections)



● Cables between Nodes and Switches (40GBASE Port Breakout Connection)

Split the 40GBASE port into four 10GBASE ports (breakout connections). Two cables are required for every two HA pairs (four nodes). Two cables are also required for a single HA pair (two nodes). In this case, half the terminals of the breakout cables are left unconnected.

Figure 45 Four-Node Configuration Using Cluster Switches (Nexus 9336C) (for 40GBASE Port Connections)

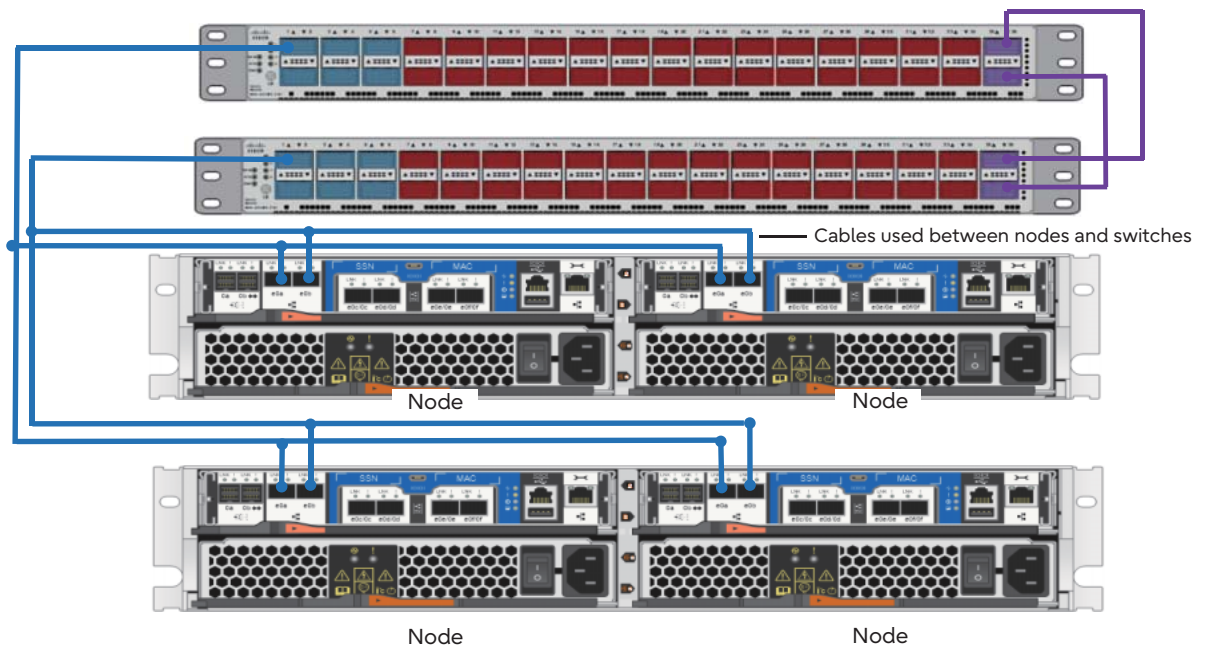
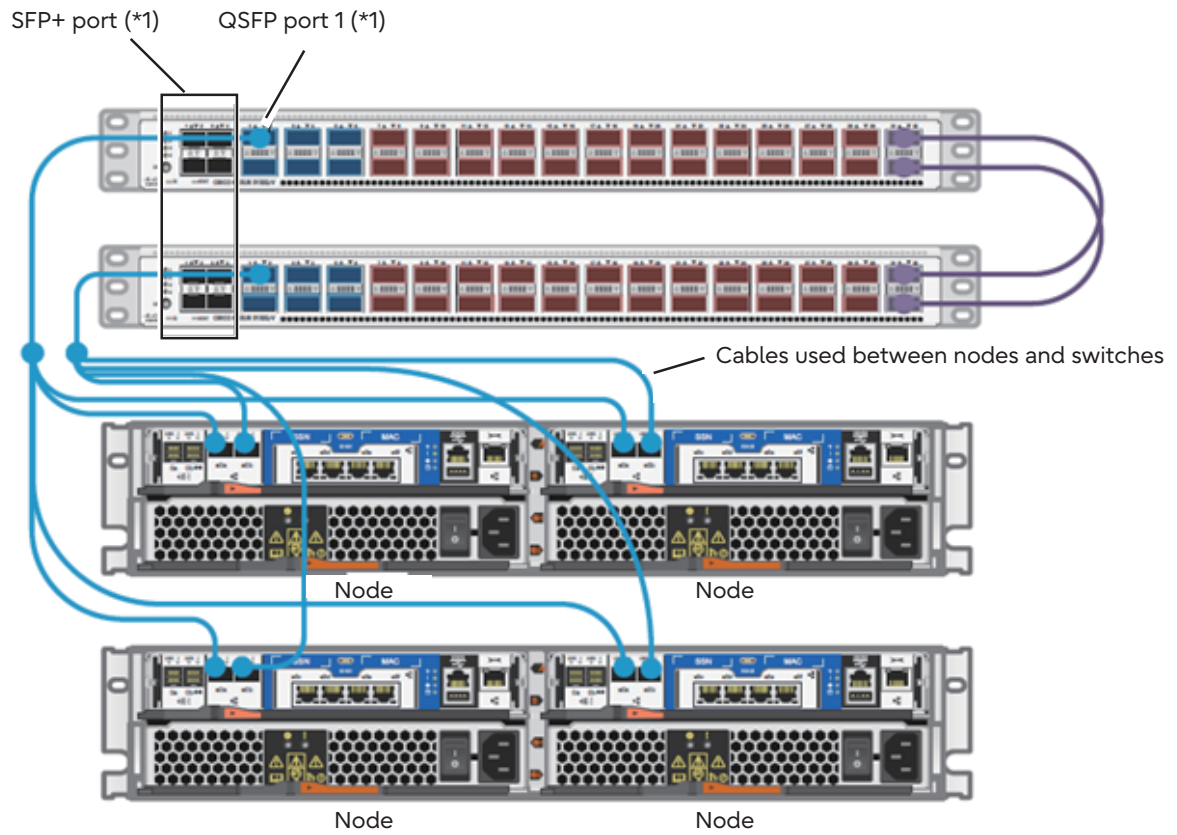




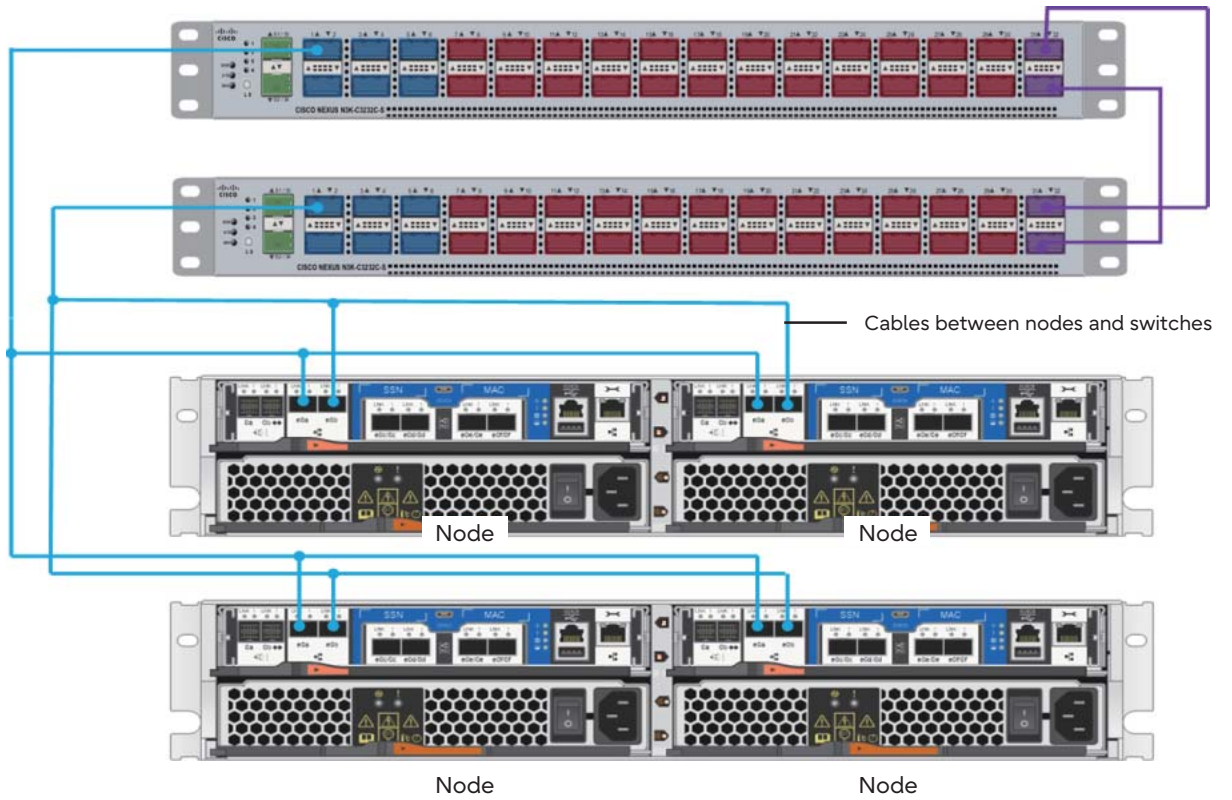
Figure 46 Two-HA Pair (Four-Node) Configuration Using Cluster Switches (Nexus 3132 VXLAN)  
(for 40GBASE Port Connections)



\*1: If SFP+ ports are enabled, QSFP port 1 cannot be used. Use port 2 to 6.

2. Rack Installation Specifications  
Rack Installation Requirements

Figure 47 Two-HA Pair (Four-Node) Configuration Using Cluster Switches (Nexus 3232C) (for 40GBASE Port Connections)



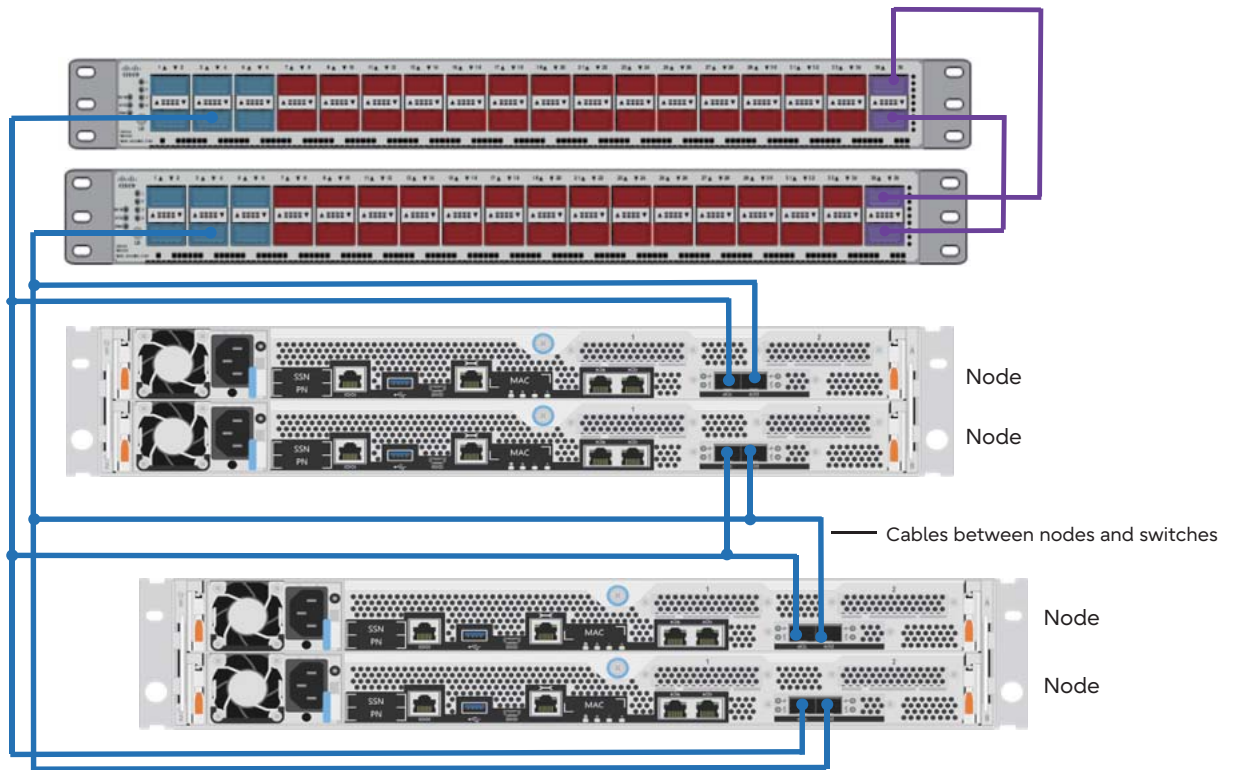
● Cables between Nodes and Switches (100GBASE Port Breakout Connection)

For the ETERNUS AX2200 and ETERNUS AC2100, split the 100GBASE port into four 25GBASE ports (breakout connections).

Two cables are required for every two HA pairs (four nodes).

Two cables are also required for a single HA pair (two nodes). In this case, half the terminals of the breakout cables are left unconnected.

Figure 48 Two-Node Configuration Using Cluster Switches (Nexus 9336C) (for 100GBASE Port Connections)



● Cables between Nodes and Switches (100GBASE Port Connection)

When connecting to a 100GBASE port, four cables are required for every HA pair (two nodes). A total of 48 cable connections (12 nodes connections) is possible.

Figure 49 Two-Node Configuration Using Cluster Switches (Nexus 9336C) (for 100GBASE Port Connections)

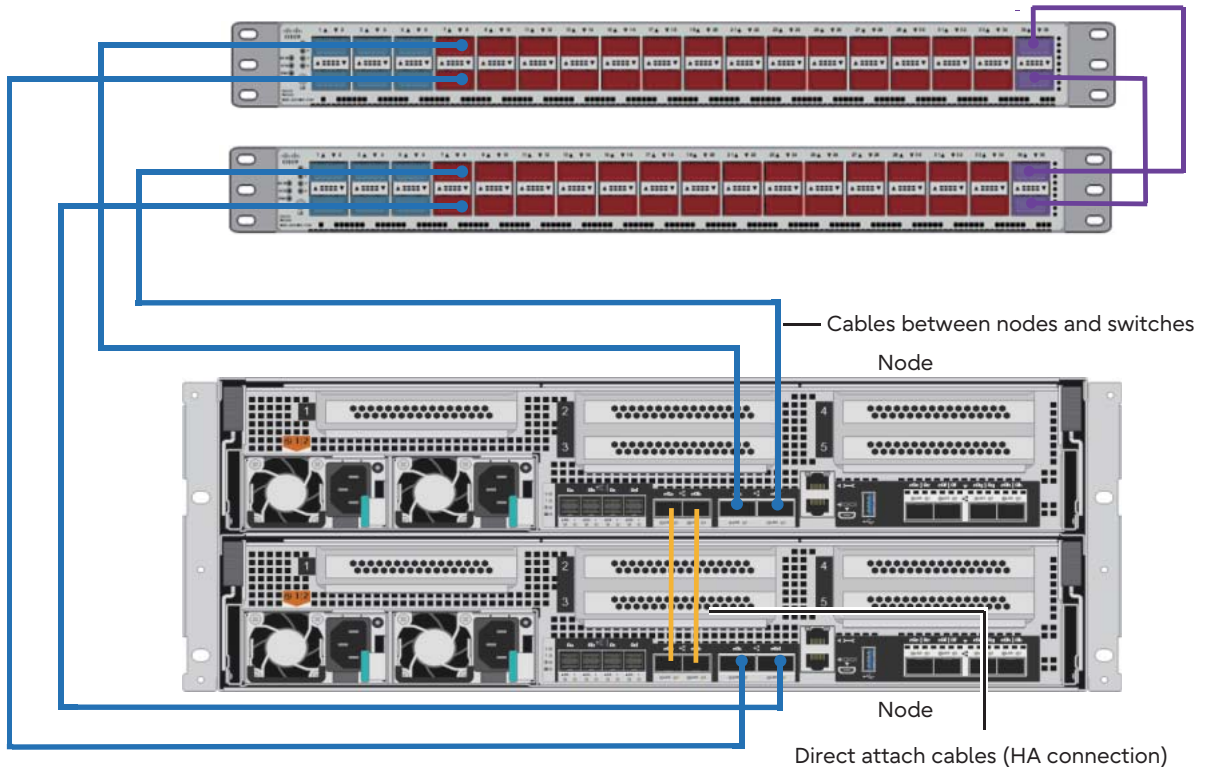
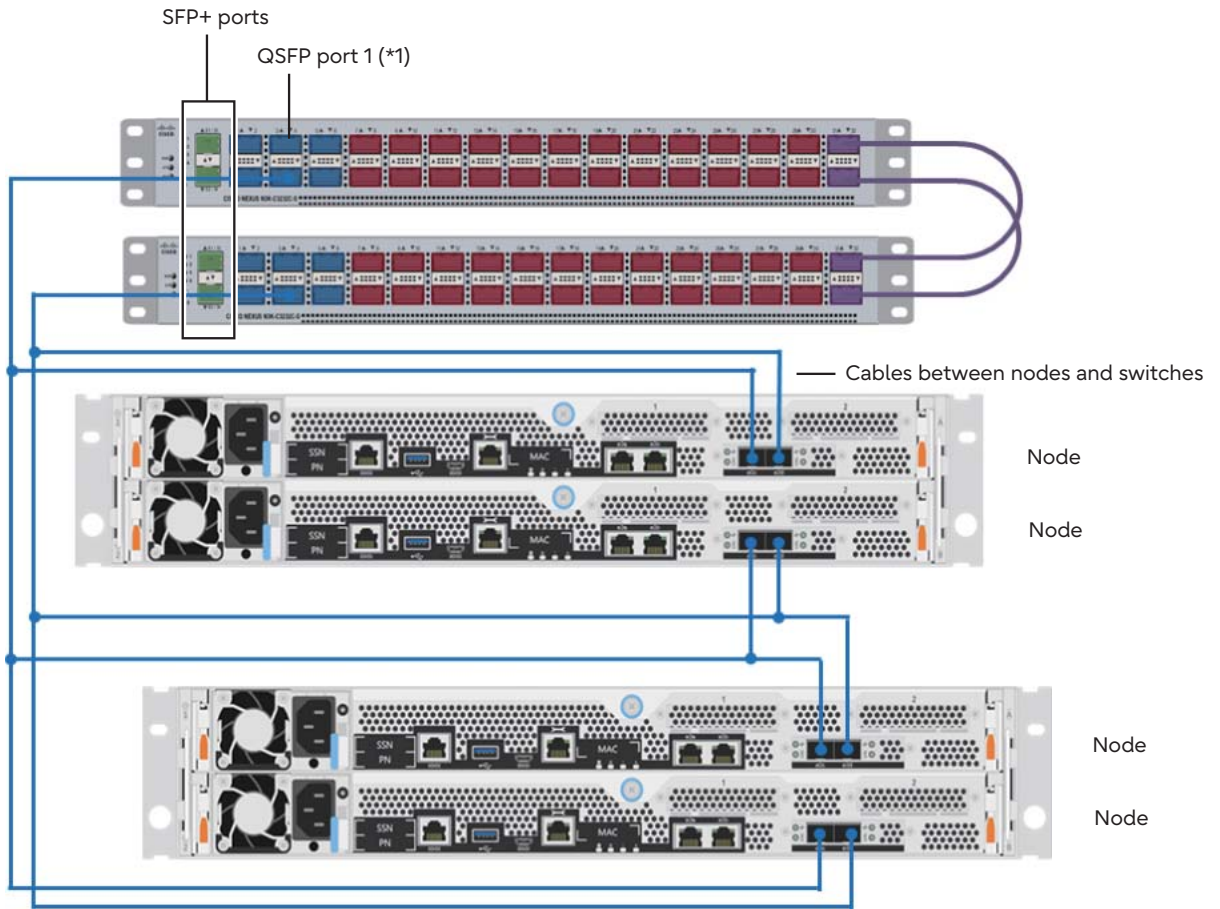


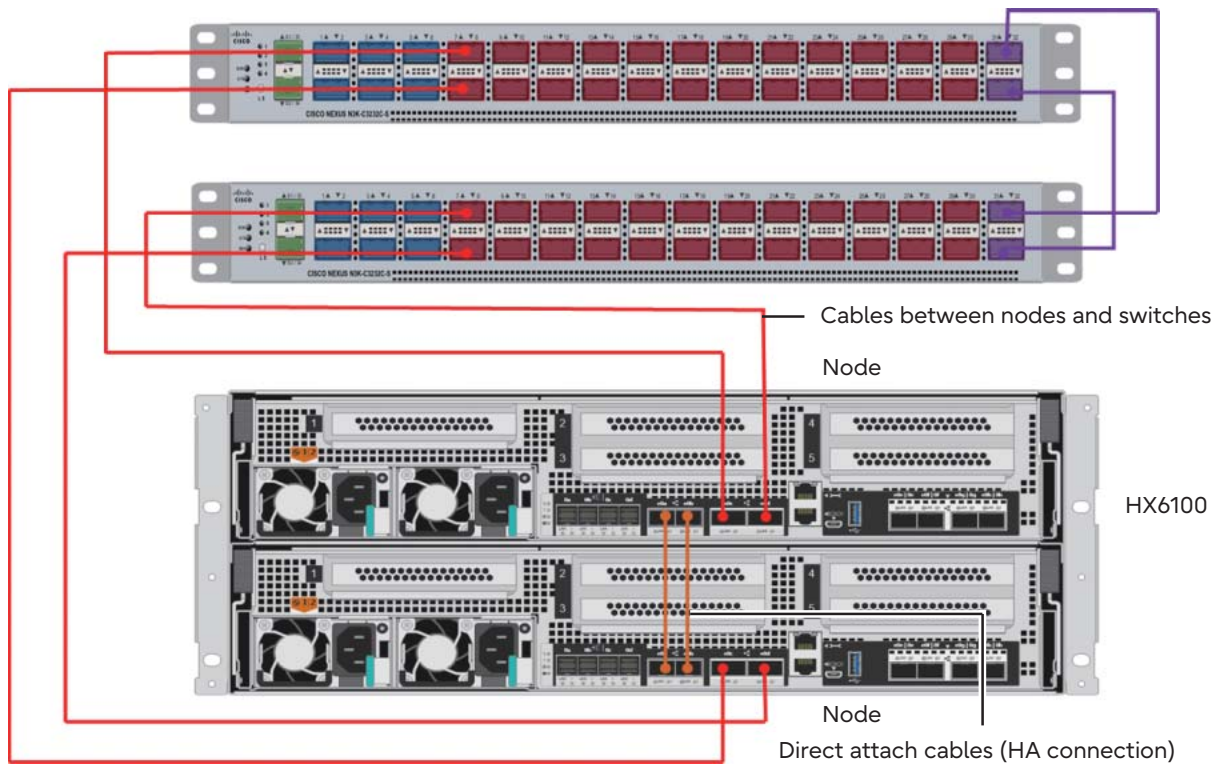
Figure 50 Four-Node Configuration Using Cluster Switches (Nexus 3232C) (for 100GBASE Port Connections)



\*1: QSFP ports 4 to 6 are configured as breakout connections (25GBASE × 4) by the configuration in the Nexus\_3232C\_RCF\_v1.6-Cluster-HA-Breakout.txt file.

2. Rack Installation Specifications  
Rack Installation Requirements

Figure 51 Two-Node Configuration Using Cluster Switches (Nexus 3232C) (for 100GBASE Port Connections)



## Installable Racks

This section explains the racks in which the ETERNUS AX/AC/HX can be installed.

### Fujitsu Racks

The ETERNUS AX/AC/HX can be installed in a Fujitsu 19-inch rack. For information about whether the ETERNUS AX/AC/HX can be installed in an EOLed rack or not, contact your sales representative.

Table 33 Installable Racks

Model	Rack
<ul style="list-style-type: none"> <li>• Controller shelf                             <ul style="list-style-type: none"> <li>- ETERNUS AX1100/AX1200/AX2100/AX2200/AX4100</li> <li>- ETERNUS AC2100</li> <li>- ETERNUS HX2100/HX2200/HX2300/HX6100</li> </ul> </li> </ul>	19-inch rack
<ul style="list-style-type: none"> <li>• Drive shelf                             <ul style="list-style-type: none"> <li>- DS212C</li> <li>- DS224C</li> <li>- NS224</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>• Controller shelf                             <ul style="list-style-type: none"> <li>- ETERNUS AX1100/AX1200/AX2100/AX2200/AX4100</li> <li>- ETERNUS AC2100</li> <li>- ETERNUS HX2100/HX2200/HX2300/HX6100</li> </ul> </li> </ul>	19-inch wide rack
<ul style="list-style-type: none"> <li>• Drive shelf                             <ul style="list-style-type: none"> <li>- DS212C</li> <li>- DS224C</li> <li>- DS460C (*1)</li> <li>- NS224</li> </ul> </li> </ul>	

\*1: Because the depth is larger, the DS460C drive shelf can only be installed in 19-inch wide racks.

#### ■ Precautions for Installing a DS460C Drive Shelf in a Rack

- Because the depth is larger than other shelves, install the shelf in a 19-inch rack designated by Fujitsu or a rack with a rack space of 922 mm (external depth of the drive shelf) plus an additional 100 mm or more cable area.
- Refer to "[Non-Fujitsu Racks](#)" ([page 72](#)) for the specification of the rack space in a rack.

## Non-Fujitsu Racks

The ETERNUS AX/AC/HX storage systems are developed and their operation is guaranteed on the assumption that they are installed in Fujitsu 19-inch racks. Any problem that may occur by installing the ETERNUS AX/AC/HX in non-Fujitsu racks is not covered by the warranty.

If the ETERNUS AX/AC/HX needs to be installed in a non-Fujitsu rack, the following conditions must be satisfied.

### ■ Rack Specifications

Use the rack mount kit supplied with the product to install the ETERNUS AX/AC/HX in the rack. The rack specifications must satisfy the conditions listed below. For rack specifications, refer to the manual for the rack that is used.

- Pitch for mounting holes  
EIA Standard Universal pitch
- Size for mounting holes (for rack mount kits ordered before September 30, 2021)  
Square hole:  $9.5 \pm 0.1$  mm (recommended)  
Round hole:  $7.1 \pm 0.1$  mm (recommended)
- Size for mounting holes (for rack mount kits ordered after October 1, 2021)

Table 34 Size for Mounting Holes (for Rack Mount Kits Ordered after October 1, 2021)

Target	Model	Size for mounting holes
Basic	AX1100/AX1200/AX2100 HX2100/HX2200/HX2300	Square hole: 9 mm or more Round hole: not supported
	AX2200	Square hole: $9.5 \pm 0.1$ mm Round hole: $7.1 \pm 0.1$ mm
	AC2100	
	AX4100 DS224C drive shelf (*1) NS224 drive shelf	
	HX6100 DS212C drive shelf (*1) DS224C drive shelf (*1) DS460C drive shelf	
Optional	DS212C drive shelf (*1) DS224C drive shelf (*1)	Square hole: 9 mm or more Round hole: not supported
	DS460C drive shelf NS224 drive shelf	Square hole: $9.5 \pm 0.1$ mm Round hole: $7.1 \pm 0.1$ mm

\*1: Note that the size of the mounting holes on the drive shelves included in the basic configuration differs from that on the optional drive shelves.

- Load bearing capacity  
The load bearing capacity must be equal to or larger than the total weight of the ETERNUS AX/AC/HX.
- Unit installation area  
The dimensions of the area shown in [Figure 52](#) must match the conditions described in [Table 35](#).



Figure 52 Unit Installation Area

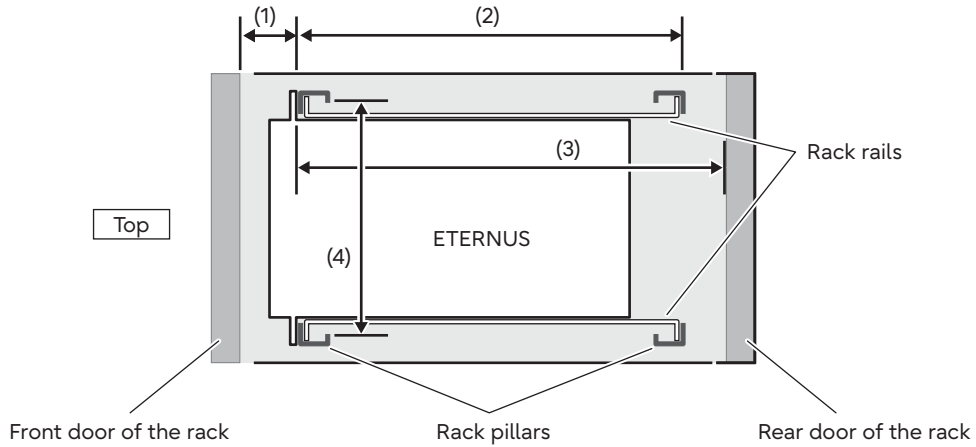


Table 35 Specifications for the Unit Installation Area

Specification		Condition
(1)	Rack front space (Space between the fixed part of the ETERNUS AX/AC/HX on the front side and the front of the rack)	50 mm or more
(2)	Mount bracket length (Size between each end of the front and rear rack pillars)	600 mm to 790 mm
(3)	Rack space (Space between the fixed part of the ETERNUS AX/AC/HX on the front side and the rear of the rack)	The depth of the shelf body (*1) + 100 mm or more (recommended for the extra cable length)
(4)	Rack mount kit installation area	483 mm or more (recommended)

\*1: For the DS460C, the recommended depth of the rack space is equal to the depth of the shelf body (922 mm) + 60 mm or more because the cable connection interface has depth of 40 mm from the rear surface of the shelf.

### ■ Installation Requirements

When determining service areas, refer to the manual of the rack that is to be used. Be sure to perform the installation according to the requirements described in ["Installation Specifications" \(page 10\)](#) and ["Installation Environment" \(page 36\)](#).

# A. Components and LEDs

## Controller: ETERNUS AX1x00/AX2100, ETERNUS HX2100/HX2200

For the ETERNUS AX1200 and ETERNUS HX2100/HX2200, there are two types of controllers that contain the following host interface ports as standard: a 4-port UTA2 or a 4-port 10Gbase-T. For the ETERNUS AX1x00/AX2100, a controller that contains a 4-port UTA2 host interface port is available.

Figure 53 Controller: UTA2 (Unified Target Adapter2) Onboard Host Port

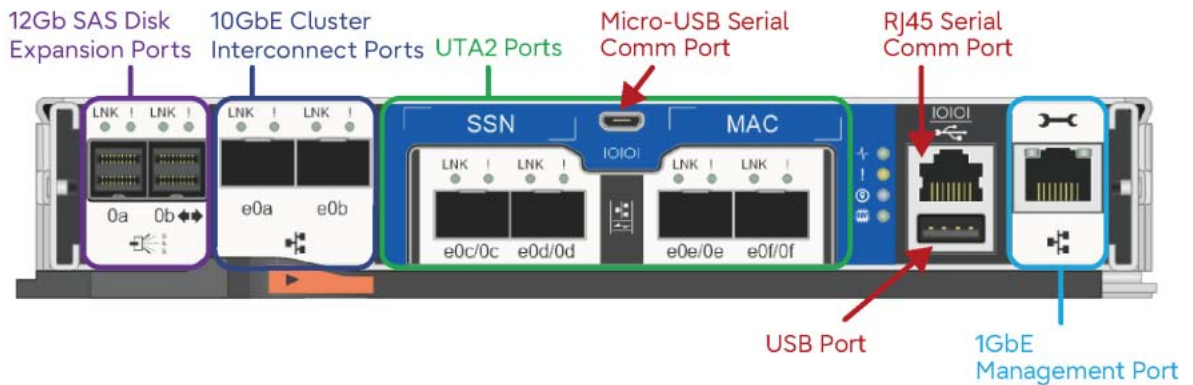


Figure 54 Controller: 10GbE (RJ45) Onboard Host Port

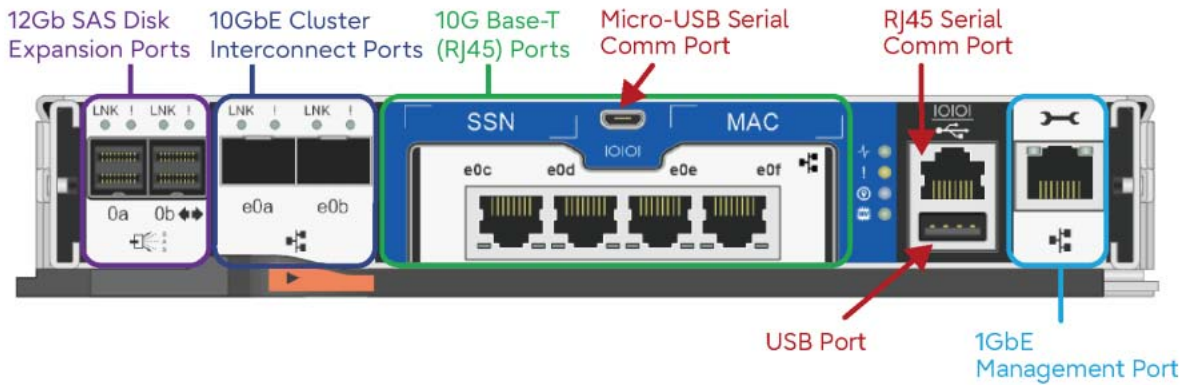


Figure 55 Controller LEDs: UTA2 (Unified Target Adapter2)

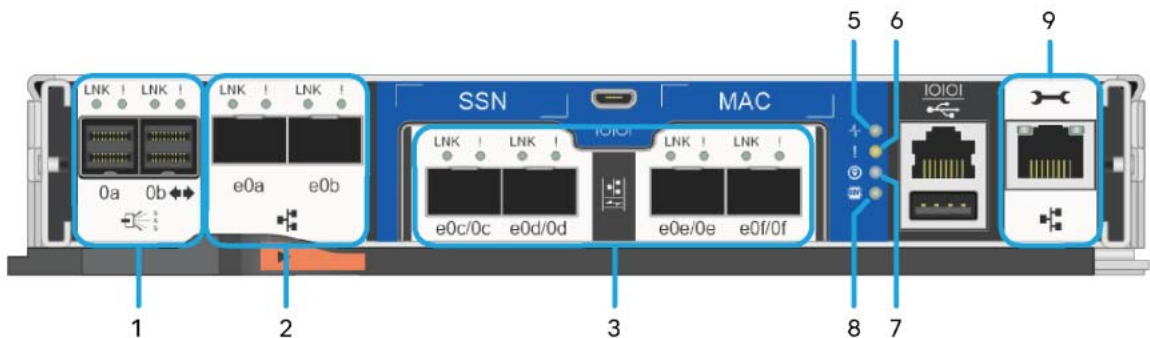


Figure 56 Controller LEDs: 10GbE (RJ45)

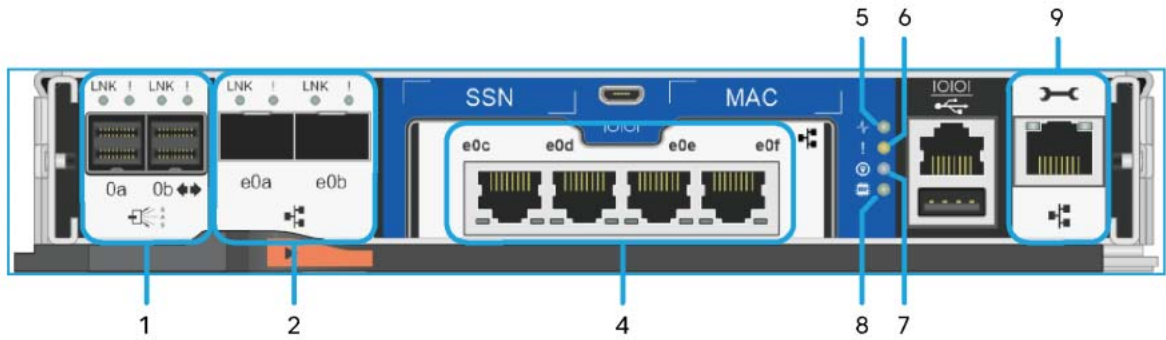






Table 36 Controller LED Status Display

No.	LED icon	LED name	Status	Description
1		SAS Port Attention	Yellow	The SAS link requires attention.
			Off	The SAS link is operating normally.
		SAS Port Link	Green	A link to at least one external SAS has been established.
			Off	There are no links to an external SAS lane.
2		Ethernet Port Attention	Yellow	The Ethernet port requires attention.
			Off	The Ethernet port is operating normally.
		Ethernet Port Link	Green	A connection to the port has been established.
			Off	A connection to the port has not been established.
3		UTA2 Port Attention	Off	The port is operating normally.
			Green	A connection to the port has been established.
		UTA2 Port Link	Yellow	The port requires attention.
			Off	A connection to the port has not been established.
4	No	Ethernet Port Activity	Off	The port is operating normally.
			Green	A connection to the port has been established.
		Ethernet Port Link	Yellow	The port requires attention.
			Off	A connection to the port has not been established.
5		Controller Activity Back	Green	ONTAP is being operated by the controller. The lighting pattern is based on the activities of the controller.
			Off	ONTAP is not being operated by the controller.
6		Controller Attention Back	Amber	An error occurred or the storage is being stopped while the controller is starting.
			Off	The controller module is operating normally.

No.	LED icon	LED name	Status	Description
7		Chassis Location Back	Blue	The locate function is enabled (turned on manually).
			Off	The locate function is disabled.
8		NVRAM	Green	A battery backup is being performed for the NVRAM.
			Off	The NVRAM is operating normally.
9	 	Management Port Activity	Brinks amber	Data communication is in progress.
			Off	There are no network activities.
		Management Port Link	Green	There is a network connection.
			Off	There are no network connections.

## Controller: ETERNUS HX2300

For ETERNUS HX2300 controllers, two PCIe cards can be mounted. Controllers contain a 2-port 25GbE SFP for cluster interconnects and a 4-port Mini SAS HD for drive shelf connections.

Figure 57 Controller: Onboard Host Port

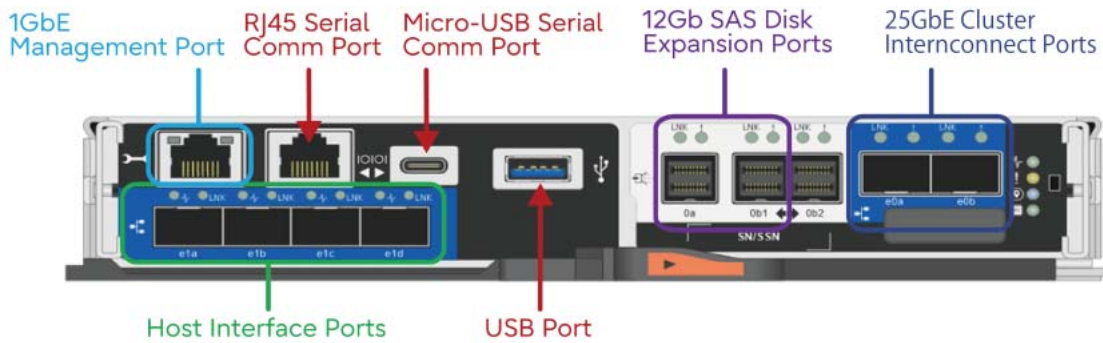


Figure 58 Controller LEDs

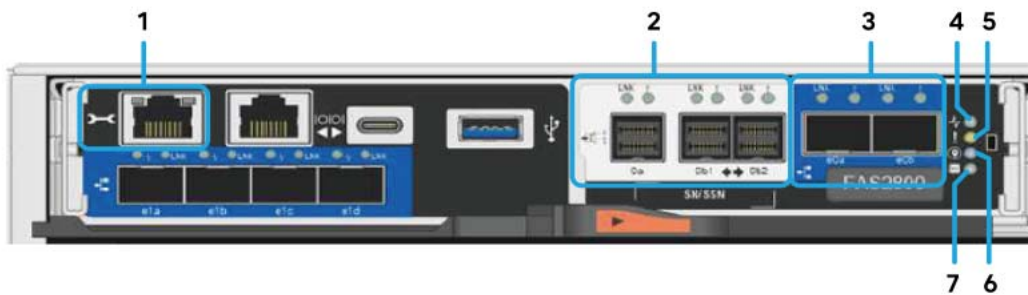









Table 37 Controller LED Status Display

No.	LED icon	LED name	Status	Description
1		Management Port Activity	Brinks amber	Data communication is in progress.
			Off	There are no network activities.
		Management Port Link	Green	There is a network connection.
			Off	There are no network connections.
2		SAS Port Attention	Yellow	The SAS link requires attention.
			Off	The SAS link is operating normally.
		SAS Port Link	Green	A link to at least one external SAS has been established.
			Off	There are no links to an external SAS lane.
3		Ethernet Port Attention	Yellow	The Ethernet port requires attention.
			Off	The Ethernet port is operating normally.
		Ethernet Port Link	Green	A connection to the port has been established.
			Off	A connection to the port has not been established.
4		Controller Activity Back	Green	ONTAP is being operated by the controller. The lighting pattern is based on the activities of the controller.
			Off	ONTAP is not being operated by the controller.
5		Controller Attention Back	Amber	An error occurred or the storage is being stopped while the controller is starting.
			Off	The controller module is operating normally.
6		Chassis Location Back	Blue	The locate function is enabled (turned on manually).
			Off	The locate function is disabled.
7		NVRAM	Green	A battery backup is being performed for the NVRAM.
			Off	The NVRAM is operating normally.

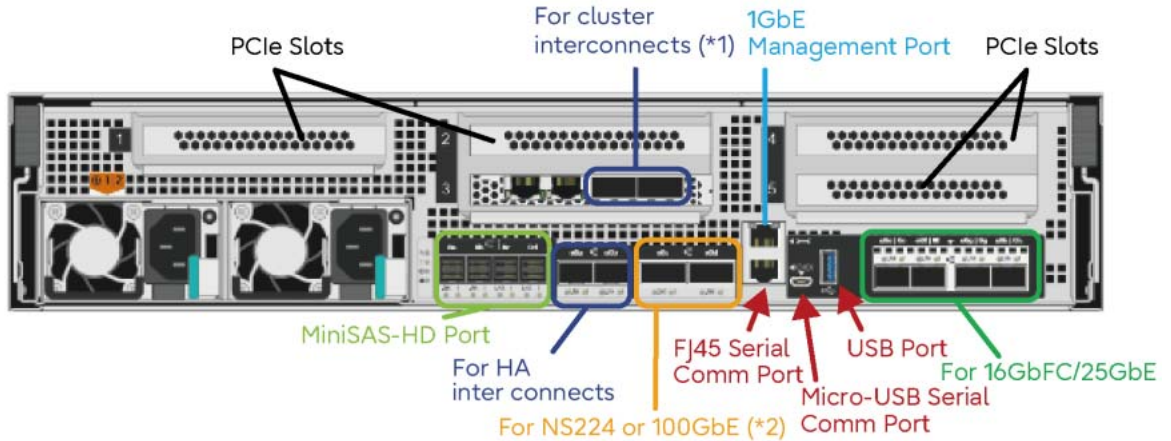
## Controller: ETERNUS AX4100, ETERNUS HX6100

For the ETERNUS AX410 and the ETERNUS HX6100, there are two types of controllers that contain the following ports as standard: a 4-port FC16G or a 4-port 25GbE.

Four PCIe cards can be installed in the ETERNUS AX4100 and five in the ETERNUS HX6100.

Also, a 2-port 25GbE SFP28 and QSFP28 are available as a cluster interconnects, and a 4-port Mini SAS HD is available as a drive shelf connection.

Figure 59 Controller: Onboard Host Port



- \*1: These ports are used for cluster interconnects on the ETERNUS AX4100. On the ETERNUS HX6100, a PCI slot is installed instead.
- \*2: These ports are used for cluster interconnects on the ETERNUS HX6100. On the ETERNUS AX4100, they are used to connect NS224 drive shelves or are 100GbE ports. To use them as 100GbE ports, some settings must be changed. To change the settings, contact your sales representative.

Figure 60 Controller LEDs

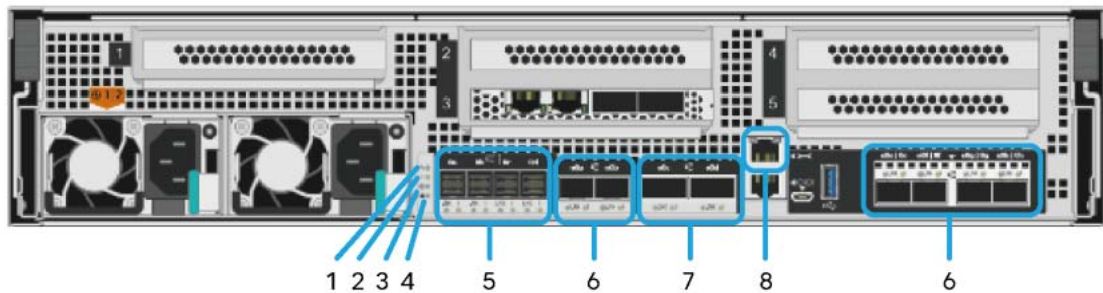









Table 38 Controller LED Status Display

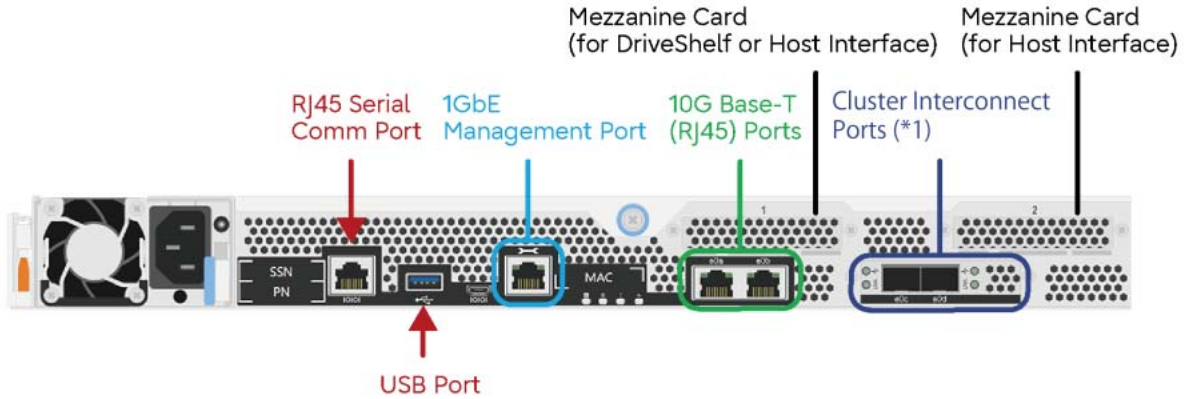
No.	LED icon	LED name	Status	Description
1		Controller Activity Back	Green	ONTAP is being operated by the controller. The lighting pattern is based on the activities of the controller.
			Off	ONTAP is not being operated by the controller.

A. Components and LEDs  
 Controller: ETERNUS AX4100, ETERNUS HX6100

No.	LED icon	LED name	Status	Description
2		Controller Attention Back	Amber	An error occurred or the storage is being stopped while the controller is starting.
			Off	The controller module is operating normally.
3		Chassis Location Back	Blue	The locate function is enabled (turned on manually).
			Off	The locate function is disabled.
4		NVRAM	Green	A battery backup is being performed for the NVRAM.
			Off	The NVRAM is operating normally.
5		SAS Port Attention	Amber	The port requires attention.
			Off	The port is operating normally.
		SAS Port Link	Green	A link has been established.
			Off	There are no links.
6		Ethernet Port Attention: Ethernet SFP Config (e0a,e0b,e0e,e0f,e0g,e0h)	Yellow	The Ethernet port requires attention.
			Off	The Ethernet port is operating normally.
		Ethernet Port Link: Ethernet SFP Config (e0a,e0b,e0e,e0f,e0g,e0h)	Green	A connection to the port has been established.
			Off	A connection to the port has not been established.
7		Ethernet Port Attention: Ethernet QSFP Config (e0c,e0d)	Amber	The Ethernet port requires attention.
			Off	The Ethernet port is operating normally.
		Ethernet Port Link: Ethernet QSFP Config (e0c,e0d)	Green	A link has been established.
			Off	There are no links.
8		Management Port Activity	Brinks amber	Data communication is in progress.
			Off	There are no network activities.
		Management Port Link	Green	There is a network connection.
			Off	There are no network connections.

# Controller: ETERNUS AX2200, ETERNUS AC2100

Figure 61 Controller



\*1: These are 10GbE ports for the ETERNUS AX2200 or 25GbE ports for the ETERNUS AC2100.

Figure 62 Controller LEDs

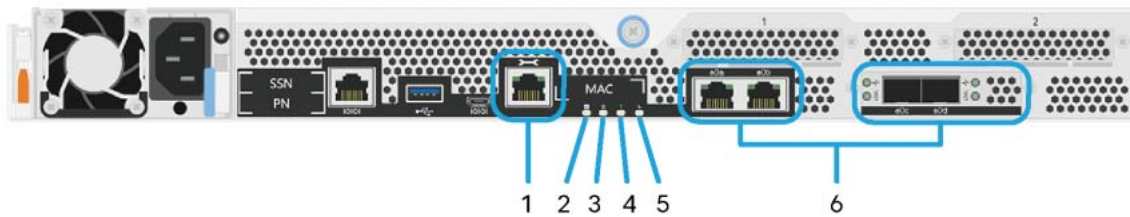



Table 39 Controller LED Status Display

No.	LED icon	LED name	Status	Description
1		Ethernet Port Activity	Brinks green	Traffic exists on the active link.
			Off	Traffic is off.
		Ethernet Port Link	Green	Link is on.
			Off	The link has not been established.
2		NVRAM	Green	A battery backup is being performed for the NVRAM.
			Off	The NVRAM is operating normally.
3		Chassis Location Back	Blue	The locate function is enabled (turned on manually).
			Off	The locate function is disabled.
4		Controller Attention Back	Amber	An error occurred or the storage is being stopped while the controller is starting.
			Off	The controller module is operating normally.
5		Controller Activity Back	Green	ONTAP is being operated by the controller. The lighting pattern is based on the activities of the controller.
			Off	ONTAP is not being operated by the controller.

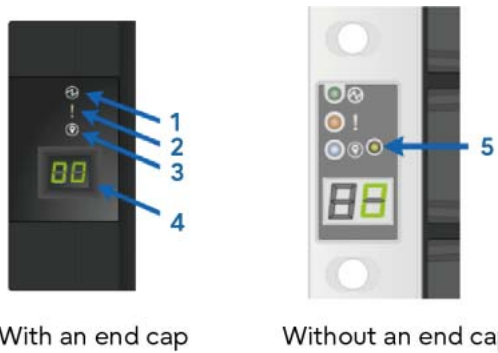


No.	LED icon	LED name	Status	Description
6		Ethernet Port Attention	Brinks green	Traffic exists on the active link.
			Off	Traffic is off.
		Ethernet Port Link	Green	A connection to the port has been established.
			Off	A connection to the port has not been established.

## Operator Display Panel (ODP)

The Operator Display Panel (hereinafter referred to as panel) on the controller shelves and drive shelves has LEDs, a Shelf ID, and a push button.

Figure 63 Panel: Controller Shelf and 2.5"/3.5" Drive Shelf of the ETERNUS AX1x00/AX2100 and ETERNUS HX2x00



1. Shelf Power LED
2. Shelf Attention LED
3. Shelf Locate LED
4. Shelf identity
5. ODP Push Button (\*1)

\*1: Used to change the Shelf ID from the outside.

Table 40 Panel LED Status

LED name	Color	LED on	LED off
Shelf Power	Green	The power is being supplied.	The power is not being supplied.
Shelf Attention	Amber	The components in the controller shelf require attention.	Normal state.
Shelf Locate	Blue	The physical installation location of the shelf is being requested.	Normal state.

Figure 64 Panel: Controller Shelf and High-Density Drive (60 Drives) Shelf of the ETERNUS AX4100 and ETERNUS HX6100

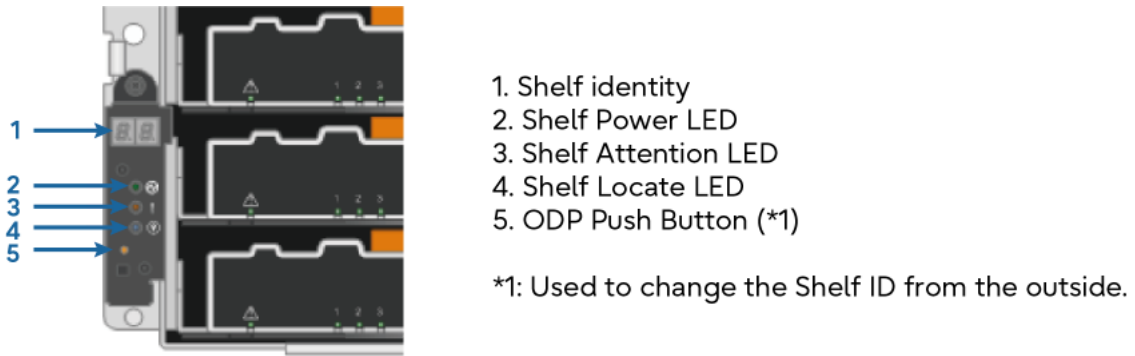


Table 41 Panel LED Status

LED name	Color	LED on	LED off
Shelf Power	Green	The power is being supplied.	The power is not being supplied.
Shelf Attention	Amber	A functional error occurred in the drive.	Normal state.
Shelf Locate	Blue	The physical installation location of the shelf is being requested.	Normal state.

## Power Supply Unit (PSU)

This section describes the external view of the PSU that is installed on the controller shelf and drive shelf and describes the PSU LEDs.

Figure 65 PSU: Controller Shelf and 2.5"/3.5" Drive Shelf of the ETERNUS AX1x00/AX2100 and ETERNUS HX2x00

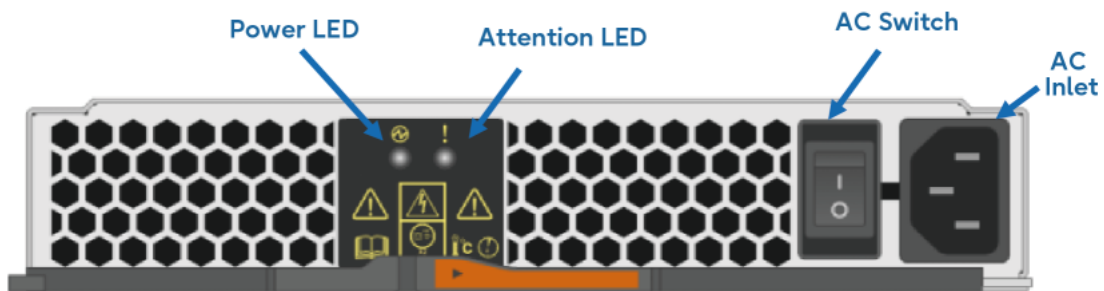


Table 42 PSU LED Status

LED name	Color	LED on	LED off
Power	Green	The AC power is on.	The AC power is off.
Attention	Amber	An error occurred in the power supply unit or unified FAN.	Normal state.

A. Components and LEDs  
Power Supply Unit (PSU)

Figure 66 PSU: Controller Shelf and NVMe Drive Shelf of the ETERNUS AX4100 and ETERNUS HX6100



Table 43 PSU LED Status

Color	LED on	LED off
Green	The power supply unit is operating normally.	The power is not being supplied.
Red	An error occurred in the power supply unit.	

Figure 67 PSU: High-Density Drive (60 Drives) Shelf

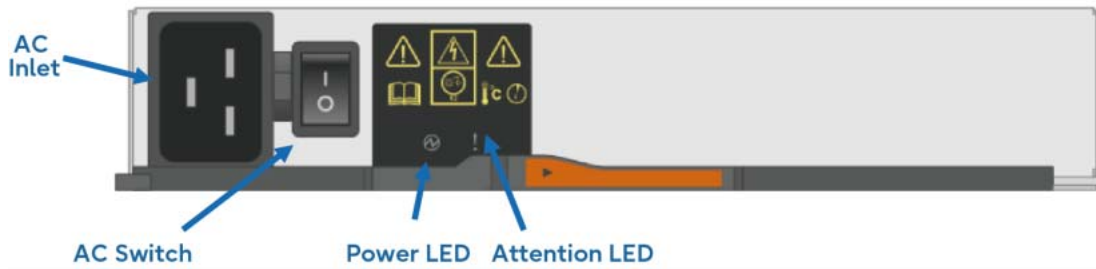


Table 44 PSU LED Status

LED name	Color	LED on	LED off
Power	Green	The AC power is on.	The AC power is off.
Attention	Amber	An error occurred in the power supply unit.	Normal state.

## FAN Modules (FAN)

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This section describes the external view of the FAN that is installed on the high-density drive (60 drives) shelf and describes the FAN LEDs.

Figure 68 FAN

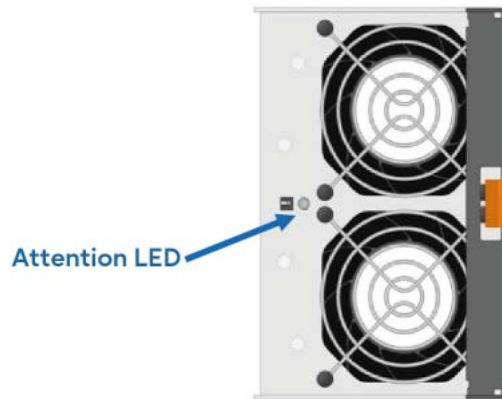


Table 45 FAN LED Status

LED name	Color	LED on	LED off
Attention	Amber	An error occurred in the FAN.	Normal state.

## I/O Modules (IOM)

There are two types of IOMs that are installed in the drive shelf, IOM12B and IOM12. This section describes the appearance and LEDs of the IOM12B and IOM12.

### Caution

- IOM12B and IOM12 cannot be installed in the same drive shelf.
- IOM12B mounted drive shelves and IOM12 mounted drive shelves can be connected to each other.

Figure 69 IOM12B

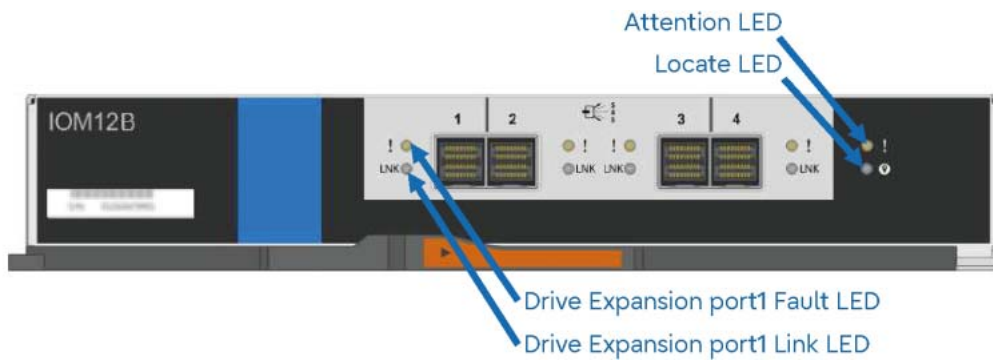


Figure 70 IOM12

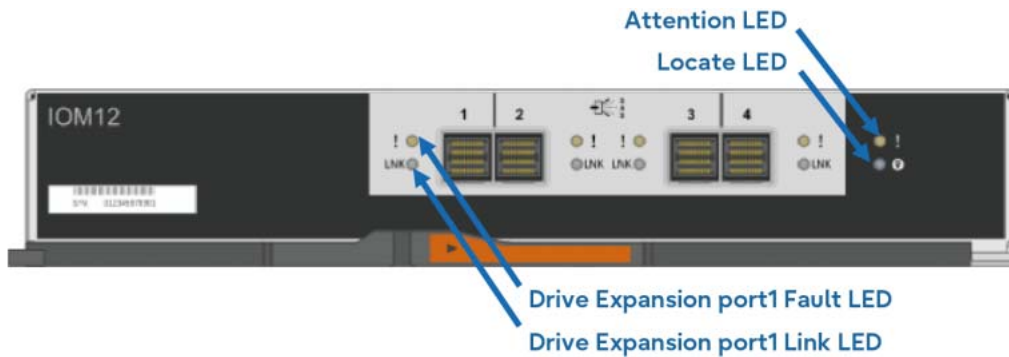


Table 46 IOM LED Status

LED name	Color	LED on	LED off
Drive Expansion link	Green	The IOM is linked up.	The IOM is linked down.
Drive Expansion fault	Amber	At least one of the four PHYs of the output port is in operation, but the other PHYs cannot establish the same link to the expansion output connector.	The port has been optimized (links have been established on all the PHYs of the port).
Attention	Amber	An error occurred in the IOM.	Normal state.
Locate	Blue	The physical installation location of the enclosure is being requested.	Normal state.

# NSM

This section describes the external view of the NSM that is installed on the NVMe drive shelf and describes the NSM LEDs.

Figure 71 NSM

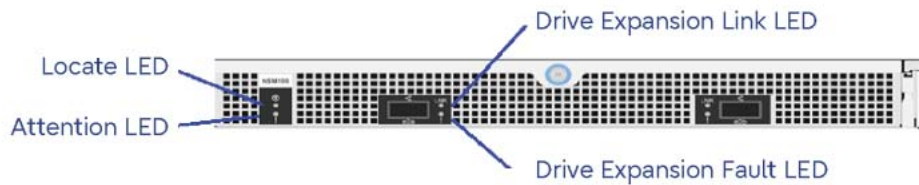


Table 47 NSM LED Status

LED name	Color	LED on	LED off
Drive Expansion link	Green	The NSM is linked up.	Normal state.
Drive Expansion fault	Amber	At least one of the four PHYs of the output port is in operation, but the other PHYs cannot establish the same link to the expansion output connector.	The port has been optimized (links have been established on all the PHYs of the port).
Attention	Amber	An error occurred in the IOM.	Normal state.
Locate	Blue	The physical installation location of the enclosure is being requested.	Normal state.

## Drive Drawer

There are two types of drawers in the drive drawer that is installed in the high-density drive (60-drive) shelf: Drawer B and Drawer.

### Caution

- Drawer B and Drawer cannot be installed in the same IOM12 mounted drive shelf.
- Drawer B and Drawer can be installed in the same IOM12B mounted drive shelf.

Figure 72 Drawer B

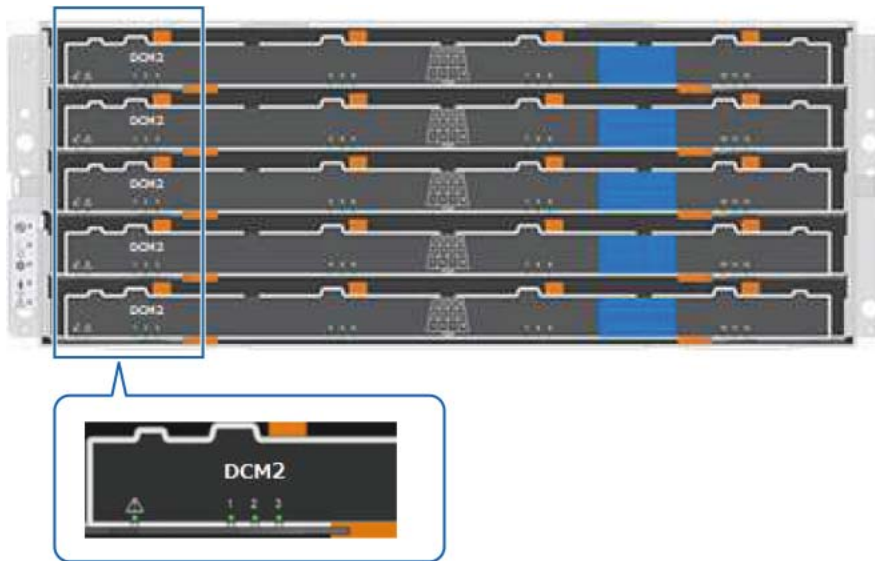
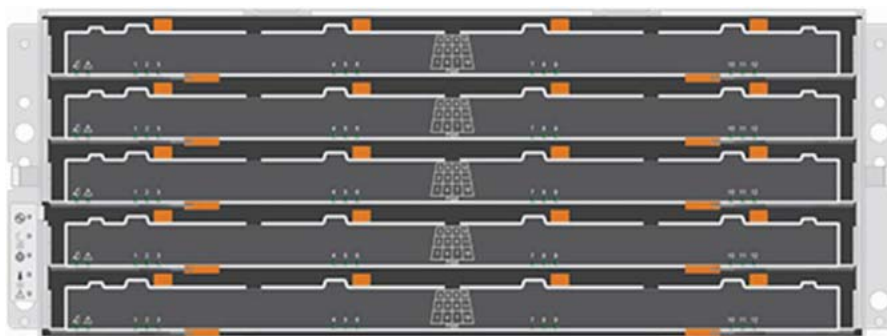


Figure 73 Drawer



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Fujitsu Storage  
ETERNUS AX series All-Flash Arrays,  
ETERNUS AC series All-Flash Arrays,  
ETERNUS HX series Hybrid Arrays  
Site Planning Guide

P3AG-4822-14ENZ0

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