

FUJITSU Storage
ETERNUS DX500 S4/DX600 S4,
ETERNUS DX500 S3/DX600 S3
Hybrid Storage Systems

Site Planning Guide



Requirements for transportation/installation

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Fujitsu would like to thank you for purchasing the FUJITSU Storage ETERNUS DX500 S4/DX600 S4, ETERNUS DX500 S3/DX600 S3 (hereinafter collectively referred to as ETERNUS DX).

The ETERNUS DX 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 DX.

This manual is intended for use of the ETERNUS DX in regions other than Japan.

Please carefully review the information outlined in this manual.

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Trademarks

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

Intended Audience

This manual is intended for managers of facilities where the ETERNUS DX is installed.

Related Information and Documents

The latest version of this manual and the latest information for your model are available at:

<https://www.fujitsu.com/global/support/products/computing/storage/manuals-list.html>

Document Conventions

■ Third-Party Product Names

- Oracle Solaris may be referred to as "Solaris", "Solaris Operating System", or "Solaris OS".
- Microsoft® Windows Server® may be referred to as "Windows Server".

■ Notice Symbols

The following notice symbols are used in this manual:



Caution

Indicates information that you need to observe when using the ETERNUS storage system. Make sure to read the information.



Note

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

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 DX is not used properly.



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

IMPORTANT This symbol indicates IMPORTANT information for the user to note when using the ETERNUS DX.

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



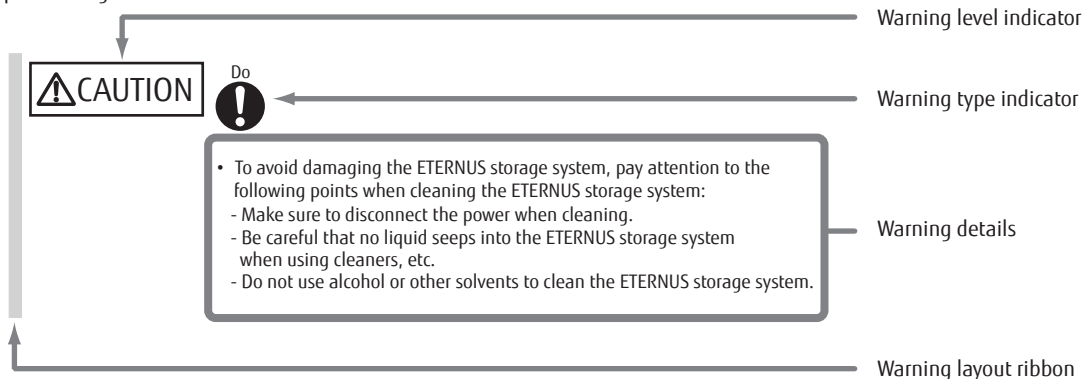
The black "Must Do..." circle indicates actions that must be taken. The required action is both illustrated inside the black disk and written above it (e.g. Unplug).

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.

A display example is shown here.

Example warning



1. ETERNUS DX Installation

This chapter provides the installation specification of the ETERNUS DX.

Installation Specifications

ETERNUS DX500 S4

The following table shows the installation specifications of the ETERNUS DX500 S4.

Table 1 ETERNUS DX500 S4 Installation Specifications

Item		ETERNUS DX500 S4		
Dimensions (W × D × H)	Controller enclosure		482 × 805 × 133mm (3U)	
	Drive enclosure	2.5" type	482 × 540 × 88mm (2U)	
		3.5" type	482 × 560 × 88mm (2U)	
		High-density type	482 × 980 × 176mm (4U)	
	Power distribution unit (*1)	1U	435 × 148 × 38mm (*2), 482 × 111 × 44mm (*3)	
2U (*4)		(485 × 280 × 43mm) × 2 (*5), (485 × 123 × 44mm) × 2 (*6)		
Maximum weight	Controller enclosure		54kg	
	Drive enclosure (*7)	2.5" type	35kg	
		3.5" type	35kg	
		High-density type	100kg	
	Power distribution unit (*1)	1U	2.0kg (*2), 2.5kg (*3)	
2U (*4)		(6.0kg) × 2 (*5), (3.0kg) × 2 (*6)		
Power	Voltage		AC 100 – 120V, AC 200 – 240V	
	Phase		Single	
	Frequency		50Hz/60Hz	
Maximum power consumption	Controller enclosure		AC 100 – 120V	650W (660VA)
			AC 200 – 240V	760W (770VA)
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	430W (440VA)
			AC 200 – 240V	430W (440VA)
		3.5" type	AC 100 – 120V	340W (350VA)
			AC 200 – 240V	340W (350VA)
	High-density type	AC 100 – 120V	1,300W (1,320VA)	
		AC 200 – 240V	1,300W (1,320VA)	

Item			ETERNUS DX500 S4	
Maximum heat generation	Controller enclosure		AC 100 – 120V	2,400kJ/h
			AC 200 – 240V	2,800kJ/h
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	1,600kJ/h
			AC 200 – 240V	1,600kJ/h
		3.5" type	AC 100 – 120V	1,300kJ/h
			AC 200 – 240V	1,300kJ/h
High-density type		AC 100 – 120V	4,700kJ/h	
		AC 200 – 240V	4,700kJ/h	
Maximum amount of exhaust air	Controller enclosure		5.1m ³ /min	
	Drive enclosure (*7)		2.5" type	4.0m ³ /min
			3.5" type	4.0m ³ /min
			High-density type	12.0m ³ /min
Environmental conditions	Temperature		Operating	10 – 40°C
			Not operating	0 – 50°C
			Shipping	-40 – 60°C
	Temperature gradient		15°C/Hr or less	
	Humidity		Operating	20 – 80%RH
			Not operating	8 – 80%RH
			Shipping	8 – 90%RH
	Humidity gradient		30%/day or less	
	Maximum wet bulb temperature		29°C	
	Altitude above sea level		0 – 3,000m	
	Airborne dust		0.15mg/m ³ or less	
	Gas concentration tolerance level		Cl ₂ : 6.8ppb or less, H ₂ S: 7.1ppb or less, SO ₂ : 37ppb or less, NH ₃ : 423.5ppb or less, NO ₂ : 52ppb or less, O ₃ : 5ppb or less, HCl: 6.6ppb or less, HF: 3.6ppb or less	
	Oil vapor		0.2mg/m ³ or less	
Seawater (salt corrosion)		If the ETERNUS DX is installed on the ocean or premises within 0.5km from the coast, necessary measures must be taken to prevent salt corrosion.		
Vibration limit	Operating		400gal	
	Not operating		1,000gal	
Noise emission (*8)	Sound pressure level		53dB (A)	
	Sound power level		7.0B	

*1: For power distribution units, there are multiple types of exteriors. For details, refer to "[Specifications for Optional Power Supply Products](#)" (page 28).

*2: These values are for product ID ETPP4BU-L.

*3: These values are for product ID ETPP4DU-L.

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

- *5: These values are for product ID ETPP16U / ETPP16U-L / ETPP12U-L.
- *6: These values are for product ID ETPP48U / ETPP48U-L / ETPP32U-L.
- *7: These values are for each drive enclosure when 24 drives are installed in a 2.5" type drive enclosure, 12 drives are installed in a 3.5" type drive enclosure, or 60 drives are installed in a high-density drive enclosure.
- *8: These values are measured when a single controller enclosure and four drive enclosures are configured in an environment in which the temperature is $23 \pm 2^{\circ}\text{C}$ at 0 meters above sea level.

ETERNUS DX500 S3

The following table shows the installation specifications of the ETERNUS DX500 S3.

Table 2 ETERNUS DX500 S3 Installation Specifications

Item		ETERNUS DX500 S3		
Dimensions (W × D × H)	Controller enclosure		482 × 805 × 133mm (3U)	
	Drive enclosure	2.5" type	482 × 540 × 88mm (2U)	
		3.5" type	482 × 560 × 88mm (2U)	
		High-density type	482 × 980 × 176mm (4U)	
	Power distribution unit (*1)	1U	435 × 148 × 38mm (*2), 482 × 111 × 44mm (*3)	
2U (*4)		(485 × 280 × 43mm) × 2 (*5), (485 × 123 × 44mm) × 2 (*6)		
Maximum weight	Controller enclosure		54kg	
	Drive enclosure (*7)	2.5" type	35kg	
		3.5" type	35kg	
		High-density type	100kg	
	Power distribution unit (*1)	1U	2.0kg (*2), 2.5kg (*3)	
2U (*4)		(6.0kg) × 2 (*5), (3.0kg) × 2 (*6)		
Power	Voltage		AC 100 – 120V, AC 200 – 240V	
	Phase		Single	
	Frequency		50Hz/60Hz	
Maximum power consumption	Controller enclosure		AC 100 – 120V	650W (660VA)
			AC 200 – 240V	760W (770VA)
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	430W (440VA)
			AC 200 – 240V	430W (440VA)
		3.5" type	AC 100 – 120V	340W (350VA)
			AC 200 – 240V	340W (350VA)
	High-density type	AC 100 – 120V	1,300W (1,320VA)	
		AC 200 – 240V	1,300W (1,320VA)	

Item			ETERNUS DX500 S3	
Maximum heat generation	Controller enclosure		AC 100 – 120V	2,400kJ/h
			AC 200 – 240V	2,800kJ/h
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	1,600kJ/h
			AC 200 – 240V	1,600kJ/h
		3.5" type	AC 100 – 120V	1,300kJ/h
			AC 200 – 240V	1,300kJ/h
High-density type		AC 100 – 120V	4,700kJ/h	
		AC 200 – 240V	4,700kJ/h	
Maximum amount of exhaust air	Controller enclosure		5.1m ³ /min	
	Drive enclosure (*7)		2.5" type	4.0m ³ /min
			3.5" type	4.0m ³ /min
			High-density type	12.0m ³ /min
Environmental conditions	Temperature		Operating	10 – 40°C
			Not operating	0 – 50°C
			Shipping	-40 – 60°C
	Temperature gradient		15°C/Hr or less	
	Humidity		Operating	20 – 80%RH
			Not operating	8 – 80%RH
			Shipping	8 – 90%RH
	Humidity gradient		30%/day or less	
	Maximum wet bulb temperature		29°C	
	Altitude above sea level		0 – 3,000m	
	Airborne dust		0.15mg/m ³ or less	
	Gas concentration tolerance level		Cl ₂ : 6.8ppb or less, H ₂ S: 7.1ppb or less, SO ₂ : 37ppb or less, NH ₃ : 423.5ppb or less, NO ₂ : 52ppb or less, O ₃ : 5ppb or less, HCl: 6.6ppb or less, HF: 3.6ppb or less	
	Oil vapor		0.2mg/m ³ or less	
Seawater (salt corrosion)		If the ETERNUS DX is installed on the ocean or premises within 0.5km from the coast, necessary measures must be taken to prevent salt corrosion.		
Vibration limit	Operating		400gal	
	Not operating		1,000gal	
Noise emission (*8)	Sound pressure level		53dB (A)	
	Sound power level		7.0B	

***1:** For power distribution units, there are multiple types of exteriors. For details, refer to "[Specifications for Optional Power Supply Products](#)" (page 28).

***2:** These values are for product ID ETPP4BU-L.

***3:** These values are for product ID ETPP4DU-L.

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

- *5: These values are for product ID ETPP16U / ETPP16U-L / ETPP12U-L.
- *6: These values are for product ID ETPP48U / ETPP48U-L / ETPP32U-L.
- *7: These values are for each drive enclosure when 24 drives are installed in a 2.5" type drive enclosure, 12 drives are installed in a 3.5" type drive enclosure, or 60 drives are installed in a high-density drive enclosure.
- *8: These values are measured when a single controller enclosure and four drive enclosures are configured in an environment in which the temperature is $23 \pm 2^{\circ}\text{C}$ at 0 meters above sea level.

ETERNUS DX600 S4

The following table shows the installation specifications of the ETERNUS DX600 S4.

Table 3 ETERNUS DX600 S4 Installation Specifications

Item		ETERNUS DX600 S4		
Dimensions (W × D × H)	Controller enclosure		482 × 805 × 133mm (3U)	
	Drive enclosure	2.5" type	482 × 540 × 88mm (2U)	
		3.5" type	482 × 560 × 88mm (2U)	
		High-density type	482 × 980 × 176mm (4U)	
	Power distribution unit (*1)	1U	435 × 148 × 38mm (*2), 482 × 111 × 44mm (*3)	
2U (*4)		(485 × 280 × 43mm) × 2 (*5), (485 × 123 × 44mm) × 2 (*6)		
Maximum weight	Controller enclosure		54kg	
	Drive enclosure (*7)	2.5" type	35kg	
		3.5" type	35kg	
		High-density type	100kg	
	Power distribution unit (*1)	1U	2.0kg (*2), 2.5kg (*3)	
2U (*4)		(6.0kg) × 2 (*5), (3.0kg) × 2 (*6)		
Power	Voltage		AC 100 – 120V, AC 200 – 240V	
	Phase		Single	
	Frequency		50Hz/60Hz	
Maximum power consumption	Controller enclosure		AC 100 – 120V	800W (810VA)
			AC 200 – 240V	1,000W (1,010VA)
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	430W (440VA)
			AC 200 – 240V	430W (440VA)
		3.5" type	AC 100 – 120V	340W (350VA)
			AC 200 – 240V	340W (350VA)
		High-density type	AC 100 – 120V	1,300W (1,320VA)
			AC 200 – 240V	1,300W (1,320VA)

Item			ETERNUS DX600 S4	
Maximum heat generation	Controller enclosure		AC 100 – 120V	2,900kJ/h
			AC 200 – 240V	3,600kJ/h
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	1,600kJ/h
			AC 200 – 240V	1,600kJ/h
		3.5" type	AC 100 – 120V	1,300kJ/h
			AC 200 – 240V	1,300kJ/h
High-density type		AC 100 – 120V	4,700kJ/h	
		AC 200 – 240V	4,700kJ/h	
Maximum amount of exhaust air	Controller enclosure		6.2m ³ /min	
	Drive enclosure (*7)		2.5" type	4.0m ³ /min
			3.5" type	4.0m ³ /min
			High-density type	12.0m ³ /min
Environmental conditions	Temperature		Operating	10 – 40°C
			Not operating	0 – 50°C
			Shipping	-40 – 60°C
	Temperature gradient		15°C/Hr or less	
	Humidity		Operating	20 – 80%RH
			Not operating	8 – 80%RH
			Shipping	8 – 90%RH
	Humidity gradient		30%/day or less	
	Maximum wet bulb temperature		29°C	
	Altitude above sea level		0 – 3,000m	
	Airborne dust		0.15mg/m ³ or less	
	Gas concentration tolerance level		Cl ₂ : 6.8ppb or less, H ₂ S: 7.1ppb or less, SO ₂ : 37ppb or less, NH ₃ : 423.5ppb or less, NO ₂ : 52ppb or less, O ₃ : 5ppb or less, HCl: 6.6ppb or less, HF: 3.6ppb or less	
	Oil vapor		0.2mg/m ³ or less	
Seawater (salt corrosion)		If the ETERNUS DX is installed on the ocean or premises within 0.5km from the coast, necessary measures must be taken to prevent salt corrosion.		
Vibration limit	Operating		400gal	
	Not operating		1,000gal	
Noise emission (*8)	Sound pressure level		54dB (A)	
	Sound power level		7.2B	

***1:** For power distribution units, there are multiple types of exteriors. For details, refer to "[Specifications for Optional Power Supply Products](#)" (page 28).

***2:** These values are for product ID ETPP4BU-L.

***3:** These values are for product ID ETPP4DU-L.

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

- *5: These values are for product ID ETPP16U / ETPP16U-L / ETPP12U-L.
- *6: These values are for product ID ETPP48U / ETPP48U-L / ETPP32U-L.
- *7: These values are for each drive enclosure when 24 drives are installed in a 2.5" type drive enclosure, 12 drives are installed in a 3.5" type drive enclosure, or 60 drives are installed in a high-density drive enclosure.
- *8: These values are measured when a single controller enclosure and four drive enclosures are configured in an environment in which the temperature is $23 \pm 2^{\circ}\text{C}$ at 0 meters above sea level.

ETERNUS DX600 S3

The following table shows the installation specifications of the ETERNUS DX600 S3.

Table 4 ETERNUS DX600 S3 Installation Specifications

Item		ETERNUS DX600 S3		
Dimensions (W × D × H)	Controller enclosure		482 × 805 × 133mm (3U)	
	Drive enclosure	2.5" type	482 × 540 × 88mm (2U)	
		3.5" type	482 × 560 × 88mm (2U)	
		High-density type	482 × 980 × 176mm (4U)	
	Power distribution unit (*1)	1U	435 × 148 × 38mm (*2), 482 × 111 × 44mm (*3)	
2U (*4)		(485 × 280 × 43mm) × 2 (*5), (485 × 123 × 44mm) × 2 (*6)		
Maximum weight	Controller enclosure		54kg	
	Drive enclosure (*7)	2.5" type	35kg	
		3.5" type	35kg	
		High-density type	100kg	
	Power distribution unit (*1)	1U	2.0kg (*2), 2.5kg (*3)	
2U (*4)		(6.0kg) × 2 (*5), (3.0kg) × 2 (*6)		
Power	Voltage		AC 100 – 120V, AC 200 – 240V	
	Phase		Single	
	Frequency		50Hz/60Hz	
Maximum power consumption	Controller enclosure		AC 100 – 120V	720W (730VA)
			AC 200 – 240V	1,000W (1,010VA)
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	430W (440VA)
			AC 200 – 240V	430W (440VA)
		3.5" type	AC 100 – 120V	340W (350VA)
			AC 200 – 240V	340W (350VA)
		High-density type	AC 100 – 120V	1,300W (1,320VA)
			AC 200 – 240V	1,300W (1,320VA)

Item			ETERNUS DX600 S3	
Maximum heat generation	Controller enclosure		AC 100 – 120V	2,600kJ/h
			AC 200 – 240V	3,600kJ/h
	Drive enclosure (*7)	2.5" type	AC 100 – 120V	1,600kJ/h
			AC 200 – 240V	1,600kJ/h
		3.5" type	AC 100 – 120V	1,300kJ/h
			AC 200 – 240V	1,300kJ/h
High-density type		AC 100 – 120V	4,700kJ/h	
		AC 200 – 240V	4,700kJ/h	
Maximum amount of exhaust air	Controller enclosure		6.2m ³ /min	
	Drive enclosure (*7)		2.5" type	4.0m ³ /min
			3.5" type	4.0m ³ /min
			High-density type	12.0m ³ /min
Environmental conditions	Temperature		Operating	10 – 40°C
			Not operating	0 – 50°C
			Shipping	-40 – 60°C
	Temperature gradient		15°C/Hr or less	
	Humidity		Operating	20 – 80%RH
			Not operating	8 – 80%RH
			Shipping	8 – 90%RH
	Humidity gradient		30%/day or less	
	Maximum wet bulb temperature		29°C	
	Altitude above sea level		0 – 3,000m	
	Airborne dust		0.15mg/m ³ or less	
	Gas concentration tolerance level		Cl ₂ : 6.8ppb or less, H ₂ S: 7.1ppb or less, SO ₂ : 37ppb or less, NH ₃ : 423.5ppb or less, NO ₂ : 52ppb or less, O ₃ : 5ppb or less, HCl: 6.6ppb or less, HF: 3.6ppb or less	
	Oil vapor		0.2mg/m ³ or less	
Seawater (salt corrosion)		If the ETERNUS DX is installed on the ocean or premises within 0.5km from the coast, necessary measures must be taken to prevent salt corrosion.		
Vibration limit	Operating		400gal	
	Not operating		1,000gal	
Noise emission (*8)	Sound pressure level		54dB (A)	
	Sound power level		7.2B	

***1:** For power distribution units, there are multiple types of exteriors. For details, refer to "[Specifications for Optional Power Supply Products](#)" (page 28).

***2:** These values are for product ID ETPP4BU-L.

***3:** These values are for product ID ETPP4DU-L.

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

- *5: These values are for product ID ETPP16U / ETPP16U-L / ETPP12U-L.
- *6: These values are for product ID ETPP48U / ETPP48U-L / ETPP32U-L.
- *7: These values are for each drive enclosure when 24 drives are installed in a 2.5" type drive enclosure, 12 drives are installed in a 3.5" type drive enclosure, or 60 drives are installed in a high-density drive enclosure.
- *8: These values are measured when a single controller enclosure and four drive enclosures are configured in an environment in which the temperature is $23 \pm 2^{\circ}\text{C}$ at 0 meters above sea level.

19-inch Racks

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

Table 5 19-inch Rack Installation Specifications

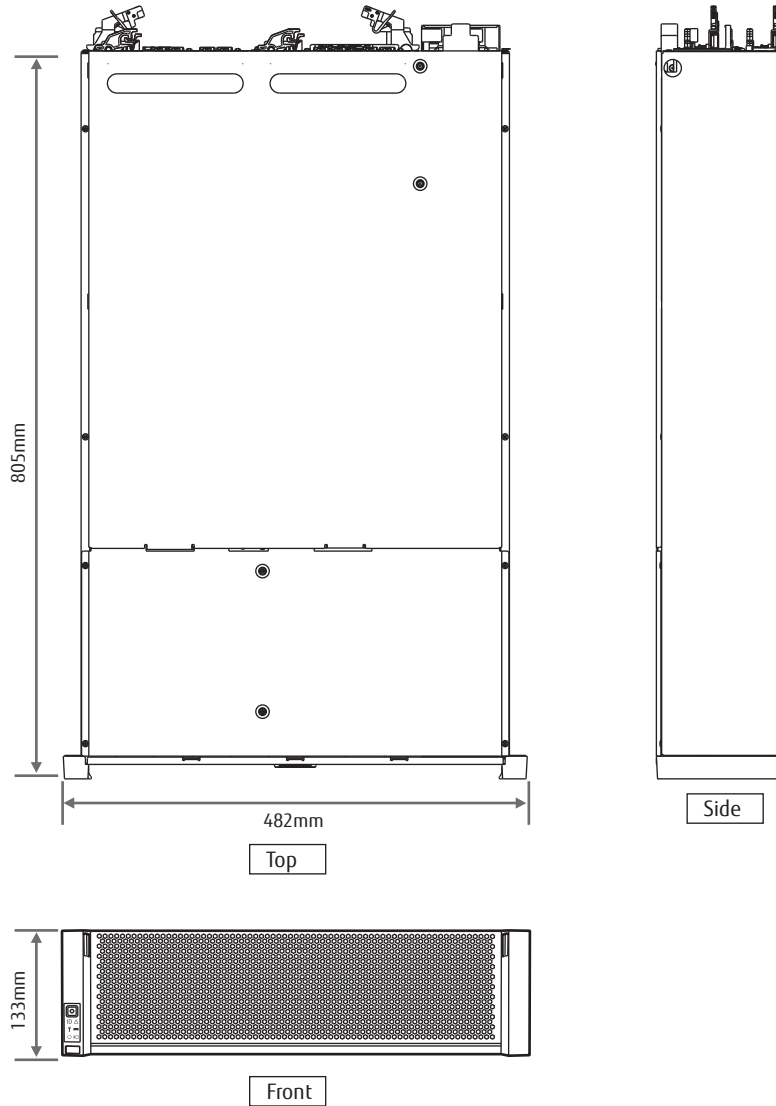
Item	Specification	
	Base rack	Expansion rack
Dimensions (W × D × H)	700 × 1,050 × 2,000mm 700 × 1,272 × 2,000mm (including anti-tipping stabilizer)	
Maximum weight	140kg	115kg
Service area	Front 850mm, rear 850mm, left 0mm, and right 50mm	
Number of units	42U	

Storage System Dimensions

■ Controller Enclosure Dimensions

The following diagrams show the dimensions of a controller enclosure.
The dimension values do not include any protruding parts (approximation).

Figure 1 Controller Enclosure Dimensions

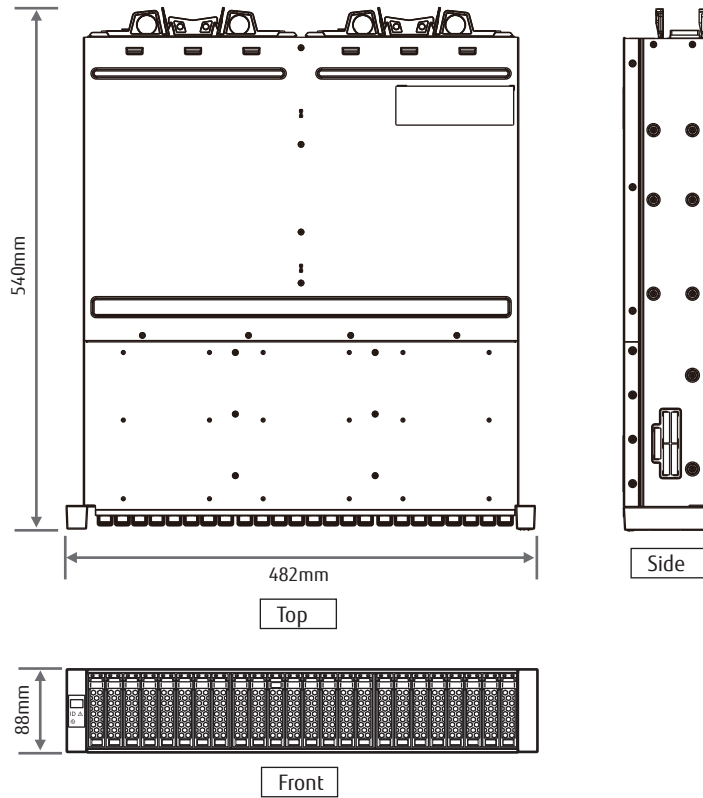


■ Drive Enclosure Dimensions

● 2.5" Type Drive Enclosure

The diagrams below show the dimensions of a 2.5" type drive enclosure. The dimension values do not include any protruding parts (approximation).

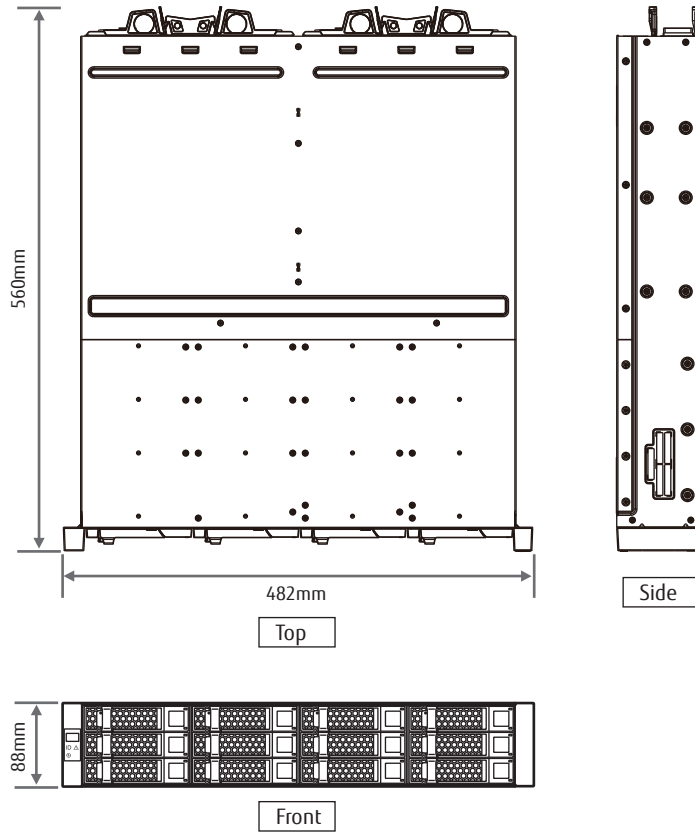
Figure 2 2.5" Type Drive Enclosure Dimensions



● 3.5" Type Drive Enclosure

The diagrams below show the dimensions of a 3.5" type drive enclosure.
The dimension values do not include any protruding parts (approximation).

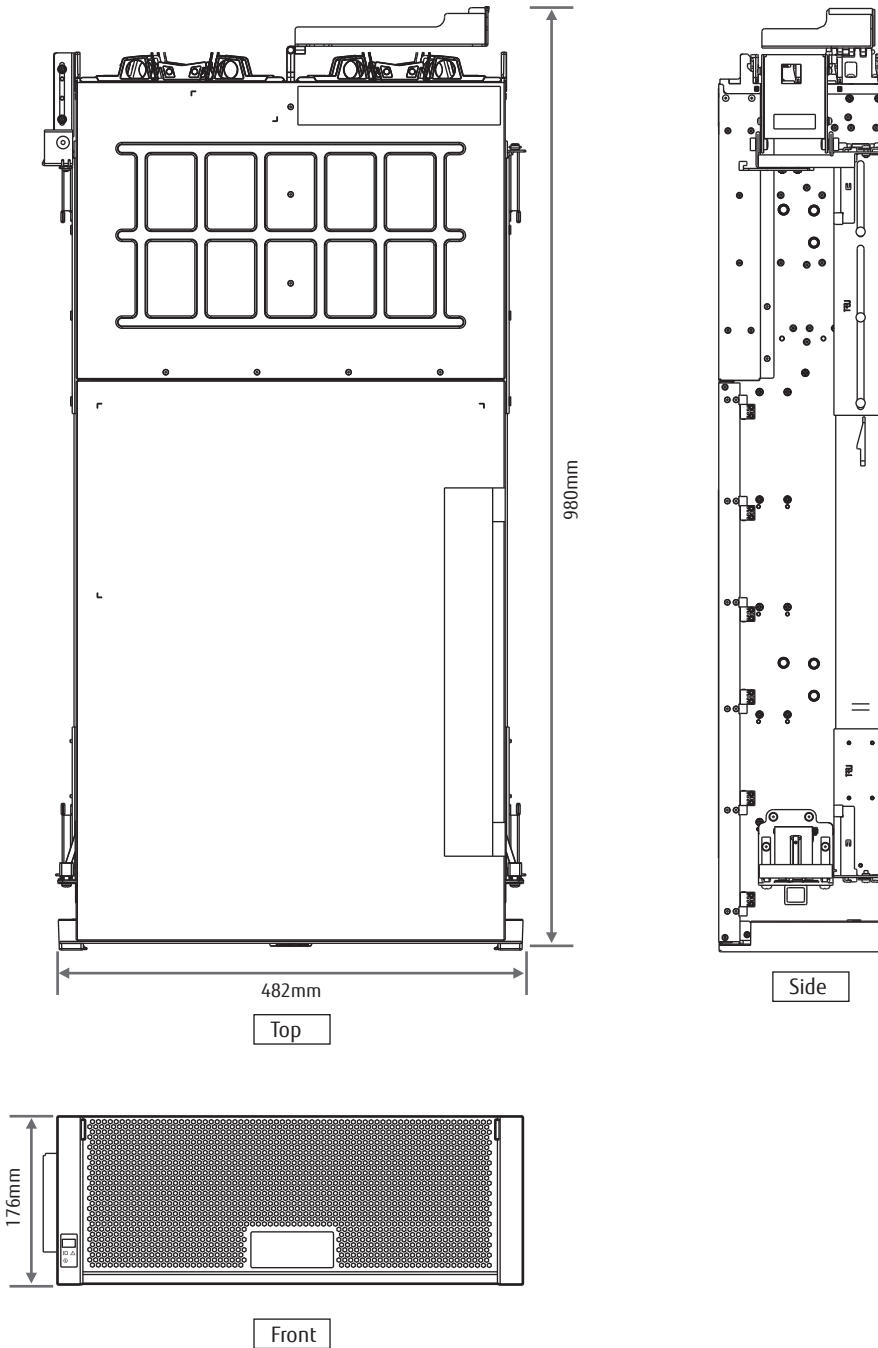
Figure 3 3.5" Type Drive Enclosure Dimensions



● High-Density Drive Enclosure

The diagrams below show the dimensions of a high-density drive enclosure. The dimension values do not include any protruding parts (approximation).

Figure 4 High-Density Drive Enclosure Dimensions

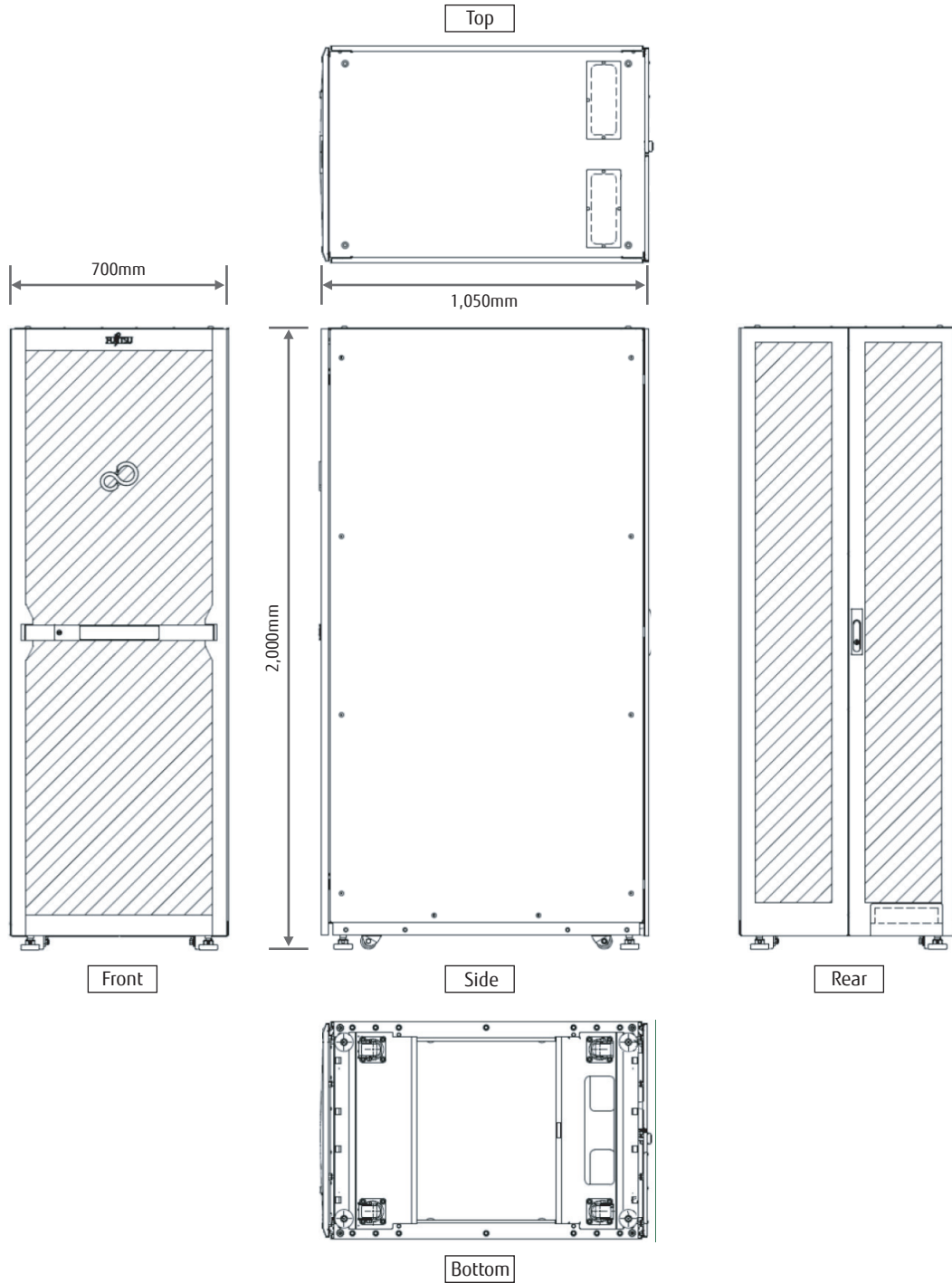


Rack Dimensions

The following diagrams show the dimensions of a 19-inch rack. The dimension values do not include any protruding parts (approximation).

For details on the specification information that is required for securing a rack, refer to [Figure 10](#).

Figure 5 19-inch Rack (2000mm) Dimensions



Compliance Standards

● 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
 - CNS 14336-1:2010
 - TP TC 004/2011
- CE marking
 - 2014/35/EU, Low Voltage Directive
 - 2014/30/EU, Electromagnetic Compatibility Directive
 - 2011/65/EU, (EU) 2015/863 as amended, Restriction of Hazardous Substances (RoHS) Directive
- 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
 - 2011/65/EU, (EU) 2015/863 as amended, Restriction of Hazardous Substances (RoHS) Directive
 - WEEE-compliant (waste electrical and electronic equipment)
- Power conversion efficiency
 - 80PLUS® GOLD

Package Size

The ETERNUS DX 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 DX 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 for regions other than the EMEA, Central American, and Caribbean regions.

Table 6 Package Size (for Regions other than the EMEA, Central American, and Caribbean Regions)

Component		Package size (W × D × H)	Maximum weight
19-inch rack (base/expansion)		780 × 1,130 × 2,000mm	Approximately 1,000kg (*1)
Controller enclosure		600 × 950 × 285mm	Approximately 65kg
Drive enclosure	2.5" type	600 × 660 × 240mm	Approximately 40kg
	3.5" type	600 × 660 × 240mm	Approximately 40kg
	High-density type	640 × 1,115 × 625mm	Approximately 120kg
Drive (*2)	2.5" drive	160 × 278 × 106mm	Approximately 0.5kg
	3.5" drive	189 × 300 × 116mm	Approximately 1.2kg
Power distribution unit (*3)	1U	570 × 710 × 160mm (*4), 540 × 380 × 310mm (*5)	Approximately 4kg (*4), Approximately 5kg (*5)
	2U	(390 × 590 × 180mm) × 2 (*6), (540 × 380 × 310mm) × 2 (*7)	(Approximately 7kg) × 2 (*6), (Approximately 10kg) × 2 (*7)

***1:** This value is for when the maximum number of enclosures are installed in the rack.

***2:** When an order for optional drives to be installed in the factory is placed, enclosures are shipped with the drives preinstalled.

When optional drives are ordered without preinstallation, each drive is shipped in an individual package.

***3:** For power distribution units, there are multiple types of exteriors.

***4:** These values are for product ID ETPP4BU-L.

***5:** These values are for product ID ETPP4DU-L.

***6:** These values are for product ID ETPP16U / ETPP16U-L / ETPP12U-L.

***7:** These values are for product ID ETPP48U / ETPP48U-L / ETPP32U-L.

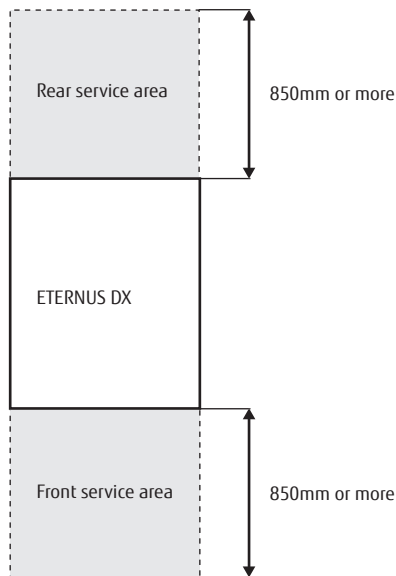
Installation Area

This section explains the installation areas and the service areas that are required for an ETERNUS DX that is installed in a Fujitsu 19-inch rack.

Secure service areas that are 850mm or more in the front and rear of the ETERNUS DX.

To install a high-density drive enclosure, secure a service area that is 1200mm or more in front of the ETERNUS DX and a service area that is 850mm or more at the rear of the ETERNUS DX.

Figure 6 Installation Area and Service Area



Areas need to be secured temporarily around a rack to use a lifter to install a high-density drive enclosure in the rack and perform maintenance work. When an area that is required to install a high-density drive enclosure can be secured on the right side of the rack, refer to [Figure 7](#). When an area that is required to install a high-density drive enclosure can be secured in front of the rack, refer to [Figure 8](#).

Figure 7 Installation and Service Areas (When a High-Density Drive Enclosure Is Installed_1)

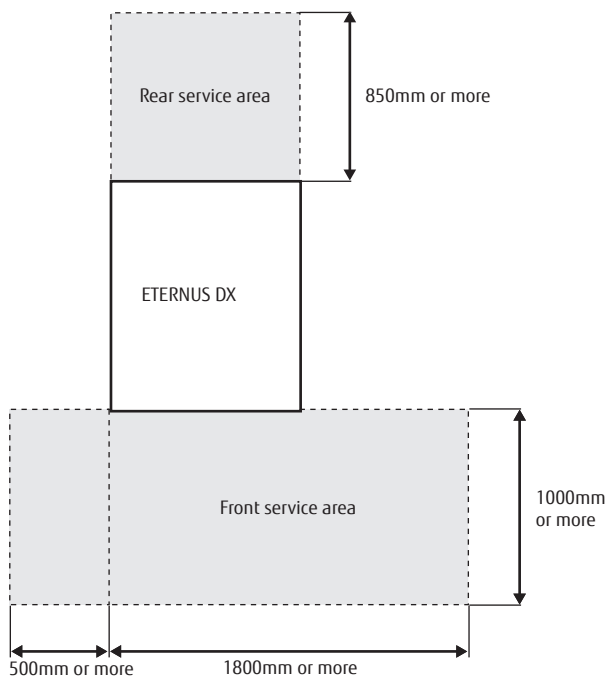
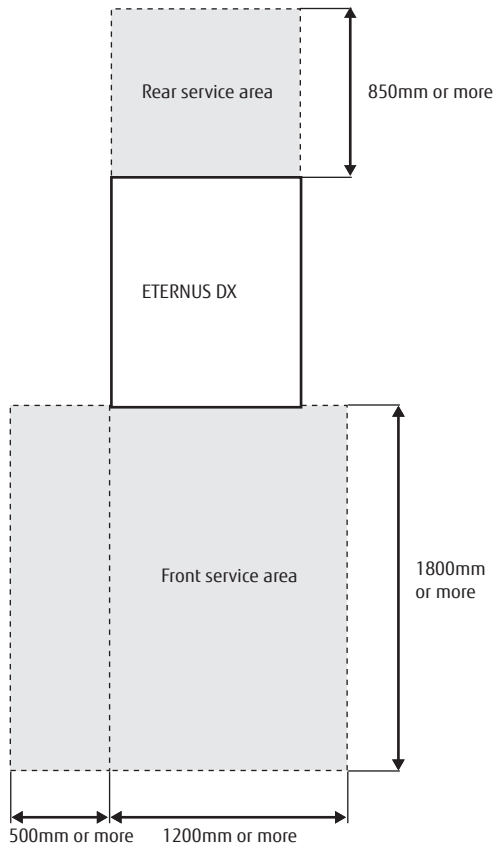
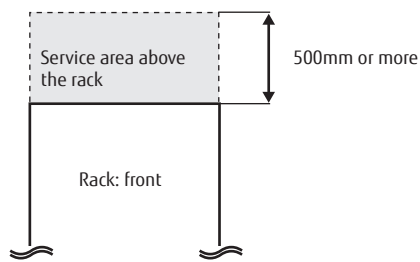


Figure 8 Installation and Service Areas (When a High-Density Drive Enclosure Is Installed_2)



When a high-density drive enclosure is installed in the top part of the rack, secure a service area that is 500mm or more above the rack.

Figure 9 Service Area (When a High-Density Drive Enclosure Is Installed in the Top Part of the Rack)



Installation Environment

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

Installation of the ETERNUS DX in High Altitude Locations

When the ETERNUS DX is used at high altitudes (1,800m or higher above sea level), "Highland Mode" must be enabled. When "Highland Mode" is enabled, the fans rotate at high speed to maintain the cooling effect of the fans.

Caution

- To set "Highland Mode", perform the subsystem parameter settings for each ETERNUS DX. The Maintenance Operation policy is required to perform this setting.
- The "Highland Mode" setting cannot be changed during a host access.
- After the setting is changed, the ETERNUS DX needs to be turned off and on again.

Air Conditioning

It is important to consider the flows of cooling air (intake air and exhaust air) for the installation location of the ETERNUS DX. The temperature in some ETERNUS DX 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.

When installing air conditioning, consider the following:

● Ambient Temperature

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

- Front intake air temperature

Make sure that the front intake air temperature is between 10 and 40°C.

- 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.

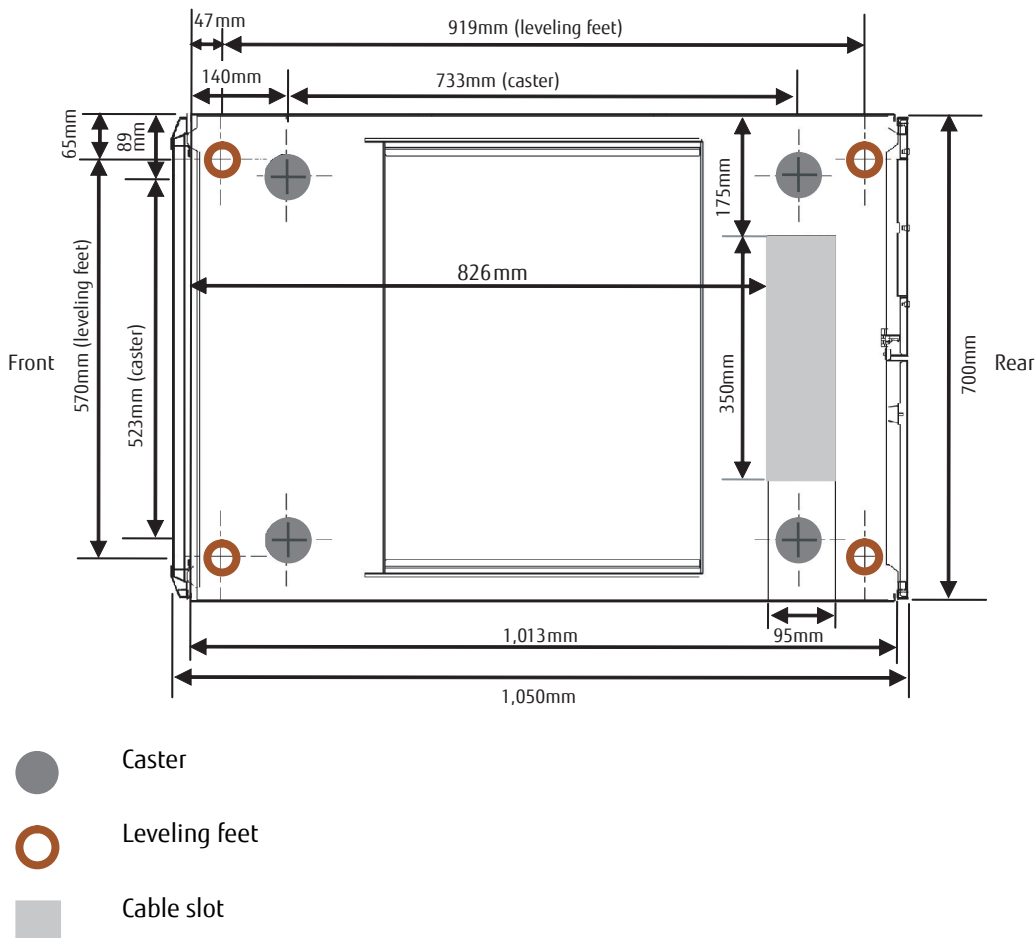
Estimate the amount of heat in the exhaust air from the ETERNUS DX by using the heat generation amount and exhaust air amount that are listed in "[Installation Specifications](#)" ([page 7](#)).

Installation Methods

- Perform one of the following rack installation methods to ensure the safe use of an ETERNUS DX 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.
- Which installation method should be used depends on the installation location, the floor conditions, and the type of racks that are to be used. 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 10 Floor Dimensions of the Rack



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 DX is maintained.

(Load bearing capacity of the floor) > (ETERNUS DX 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 DX storage systems.

■ Power Supply Units

The ETERNUS DX has multiple power supply units in each of its enclosure.

Using the same power supply condition for all of the power supply units is recommended so that different power supply conditions (such as whether power distribution units are used or not and input voltage) are not used for the ETERNUS DX.

● Controller Enclosures, 2.5" Type Drive Enclosures, and 3.5" Type Drive Enclosures

Power can be supplied from two power sources because each enclosure has two power supply units.

During normal operation, each of the power sources supplies half of the necessary power.

When one of the power supply lines fails, all of the necessary power is supplied from only one power source.

● High-Density Drive Enclosures

Power can be supplied from four power sources because each enclosure has four power supply units.

During normal operation, each power source supplies a quarter of the necessary power.

If any of the power supply lines fails, all of the necessary power is supplied from the other power sources. The necessary power can be supplied even when two power supply units fail.

■ Current Consumption

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

Table 7 Current Consumption of Each Power Cord

Component name	Voltage	
	AC100V	AC200V
Controller enclosure	8.8A	4.2A
2.5"/3.5" type drive enclosure	5.3A	2.7A
High-density drive enclosure	7.5A	3.8A

When using power distribution units, make sure that the current capacity totaling the current consumption value of power cords that connect to the enclosures does not exceed the actual usage rating 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 power distribution units, the number of outlets that are required to connect the controller enclosure and drive enclosures should be taken into consideration, and the most appropriate power distribution units should then be selected.

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 (for the EMEIA, Central American, and Caribbean Regions)

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 AC200V.



Table 8 Specifications for AC200V Power Cords (for the EMEIA, Central American, and Caribbean Regions)

Usage	Plug type	Socket type (Socket)	Cable length	Voltage rating/current rating
Used for connection between the ETERNUS DX and the socket (IEC60320 C13 ↔ IEC60320 C14G)	IEC60320 C14G 	IEC60320 C13 	1.5m	250V 10A

■ AC200V Power Cords (for Regions other than the EMEIA, Central American, and Caribbean Regions)

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.

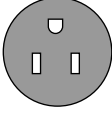
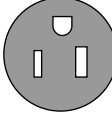
Table 9 Specifications for AC200V Power Cords (for Regions other than the EMEIA, Central American, and Caribbean Regions)

Usage	Plug type	Socket type (Socket)	Cable length	Voltage rating/current rating
Used for connection between the ETERNUS DX and the socket (IEC60320 C13 ↔ NEMA L6-15P)	NEMA L6-15P 	NEMA L6-15R 	4.0m	Rating: 250V 10A (Normal usage rating: 8A)

■ AC125V Power Cords (for Regions other than the EMEA, Central American, and Caribbean Regions)

AC125V 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.

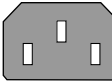

Table 10 Specifications for AC125V Power Cords (for Regions other than the EMEA, Central American, and Caribbean Regions)

Usage	Plug type	Socket type (Socket)	Cable length	Voltage rating/current rating
Used for connection between the ETERNUS DX and the socket (IEC60320 C13 ↔ NEMA 5-15P)	NEMA 5-15P 	NEMA 5-15R 	3.0m	Rating: 125V 13A (Normal usage rating: 10A)

■ AC100V and AC200V Power Cords (for Regions other than the EMEA, Central American, and Caribbean Regions)

AC100V/200V power cords are used to connect devices to the IEC60320 C13 power socket type. These power cords can be used to connect devices with the AC100V and AC200V specifications.

Table 11 Specifications for AC100V and AC200V Power Cords (for Regions other than the EMEA, Central American, and Caribbean Regions)

Usage	Plug type	Socket type (Socket)	Cable length	Voltage rating/current rating
Used for connection between the ETERNUS DX and the socket (IEC60320 C13 ↔ IEC60320 C14)	IEC60320 C14 	IEC60320 C13 	0.5m 1.0m 1.5m 3.0m	Rating: 250V 10A (Normal usage rating: 8A)

■ Power Distribution Units (1U) (Only for Regions other than the EMEIA, Central American, and Caribbean Regions)

Two types (Figure 11 and Figure 12) of 1U power distribution units with different specifications are provided.

- Power distribution unit (AC8A/200-240V, 1U, 4 outlets, 2 inlets)

There are four outlets and two inlets.

Figure 11 Power Distribution Units (AC8A/200-240V, 1U, 4 Outlets, 2 Inlets)

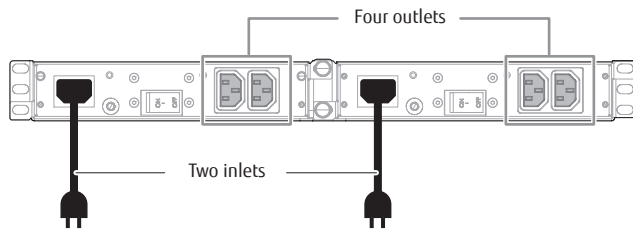


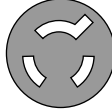


Table 12 Specifications for Power Distribution Units (AC8A/200-240V, 1U, 4 Outlets, 2 Inlets)

Outlet	Inlet			Voltage rating/current rating
Socket type (Socket)	Plug type	Socket type (Socket)	Cable length	
IEC60320 C13 	NEMA L6-15P 	NEMA L6-15R 	4.0m	Rating: 250V 10A (Normal usage rating: 8A)

- Power distribution unit (AC24A/200-240V, 1U, 4 outlets, 1 inlet)

There are four outlets and one inlet.

Figure 12 Power Distribution Units (AC24A/200-240V, 1U, 4 Outlets, 1 Inlet)

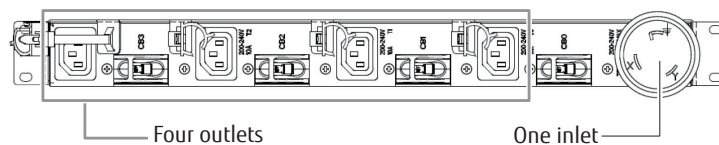
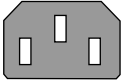
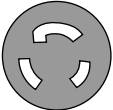
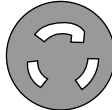


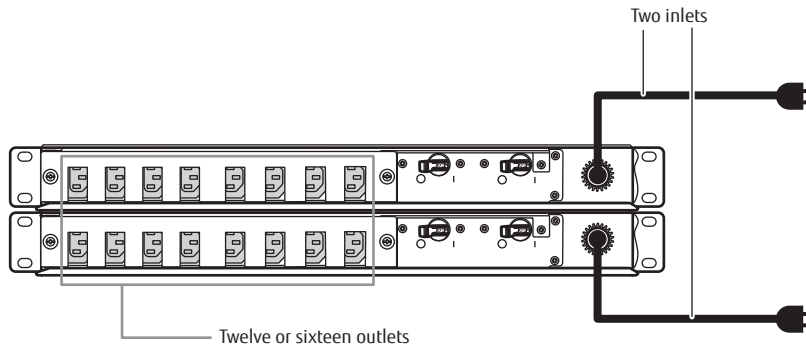
Table 13 Specifications for Power Distribution Units (AC24A/200-240V, 1U, 4 Outlets, 1 Inlet)

Outlet	Inlet			Voltage rating/current rating
Socket type (Socket)	Plug type	Socket type (Socket)	Cable length	
IEC60320 C13 	NEMA L6-30P 	NEMA L6-30R 	4.4m	Rating: 250V 30A (Normal usage rating: 24A)

■ **Power Distribution Units (2U) (Only for Regions other than the EMEIA, Central American, and Caribbean Regions)**

The exterior types that are available for power distribution units (2U) are shown in Figure 13 and Figure 14.


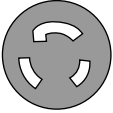
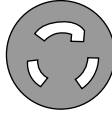
Figure 13 Power Distribution Units (2U)



- Power distribution unit (AC200-240V, 2U, 12 outlets)

There are 12 outlets and two inlets.

Table 14 Power Distribution Unit (AC200-240V, 2U, 12 Outlets) Specifications

Outlet	Inlet			Voltage rating/current rating
Socket type (Socket)	Plug type	Socket type (Socket)	Cable length	
IEC60320 C13 	NEMA L6-20P 	NEMA L6-20R 	4.0m	Rating: 250V 20A (Normal usage rating: 16A)

- Power distribution unit (AC200-240V, 2U, 16 outlets)

There are 16 outlets and two inlets.

Table 15 Power Distribution Unit (AC200-240V, 2U, 16 Outlets) Specifications

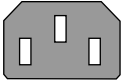
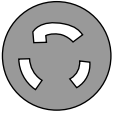
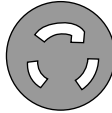
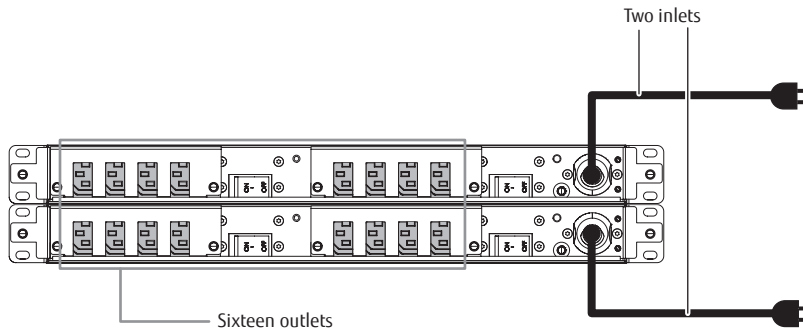

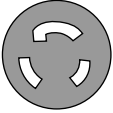
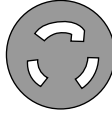
Outlet	Inlet			Voltage rating/current rating
Socket type (Socket)	Plug type	Socket type (Socket)	Cable length	
IEC60320 C13 	NEMA L6-30P 	NEMA L6-30R 	4.0m	Rating: 250V 30A (Normal usage rating: 24A)

Figure 14 Power Distribution Units (2U)



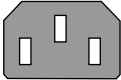
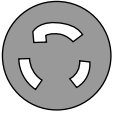
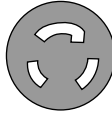
- Power distribution unit (AC16A/200-240V, 2U, 16 outlets)
There are 16 outlets and two inlets.

Table 16 Power Distribution Unit (AC16A/200-240V, 2U, 16 Outlets) Specifications

Outlet	Inlet			Voltage rating/current rating
Socket type (Socket)	Plug type	Socket type (Socket)	Cable length	
IEC60320 C13 	NEMA L6-20P 	NEMA L6-20R 	4.0m	Rating: 250V 20A (Normal usage rating: 16A)

- Power distribution unit (AC24A/200-240V, 2U, 16 outlets)
There are 16 outlets and two inlets.

Table 17 Power Distribution Unit (AC24A/200-240V, 2U, 16 Outlets) Specifications

Outlet	Inlet			Voltage rating/current rating
Socket type (Socket)	Plug type	Socket type (Socket)	Cable length	
IEC60320 C13 	NEMA L6-30P 	NEMA L6-30R 	4.0m	Rating: 250V 30A (Normal usage rating: 24A)

Required Number of Outlets/sockets

The number of power outlets/sockets required to install the ETERNUS DX depends on the number of drive enclosures and power distribution units.

It is recommended that the power cords of the drive enclosures 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 enclosures.

■ Without Power Distribution Units

Two power sockets are required for every controller enclosure, 2.5" type drive enclosure, and 3.5" type drive enclosure.

Four power sockets are required for each high-density drive enclosure.

■ 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 DX or power distribution units to protect the ETERNUS DX 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 18 Required Conditions for Distribution Board Circuit Protectors

Connected device	Power supply voltage	Current capacity	
		Regions other than the EMEIA, Central American, and Caribbean regions	The EMEIA, Central American, and Caribbean regions
Power distribution unit (AC8A/200-240V, 1U, 4 outlets)	AC 200 – 240V	15A	—
Power distribution unit (AC200-240V, 2U, 12 outlets)	AC 200 – 240V	20A	—
Power distribution unit (AC16A/200-240V, 2U, 16 outlets)			
Power distribution unit (AC200-240V, 2U, 16 outlets)	AC 200 – 240V	30A	—
Power distribution unit (AC24A/200-240V, 2U, 16 outlets)			
Power distribution unit (AC24A/200-240V, 1U, 4 outlets)			
ETERNUS DX (without power distribution units)	AC 100 – 120V AC 200 – 240V	15A	16A

■ Breaking Characteristics

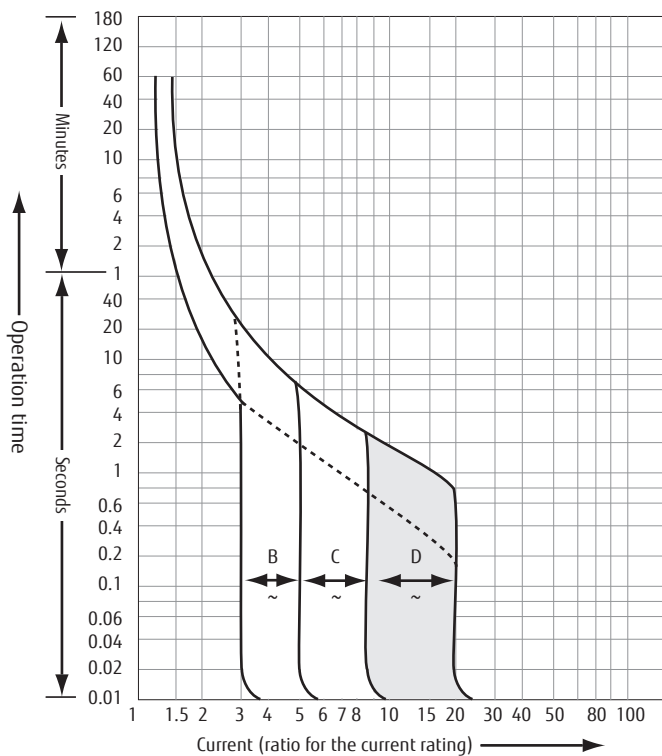
▶ Caution

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 15.

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 15 Breaking Characteristics of Distribution Board Circuit Protectors



■ Connection Diagrams

The following diagrams show connections between the power distribution units, the ETERNUS DX, and the power sockets of the distribution boards.

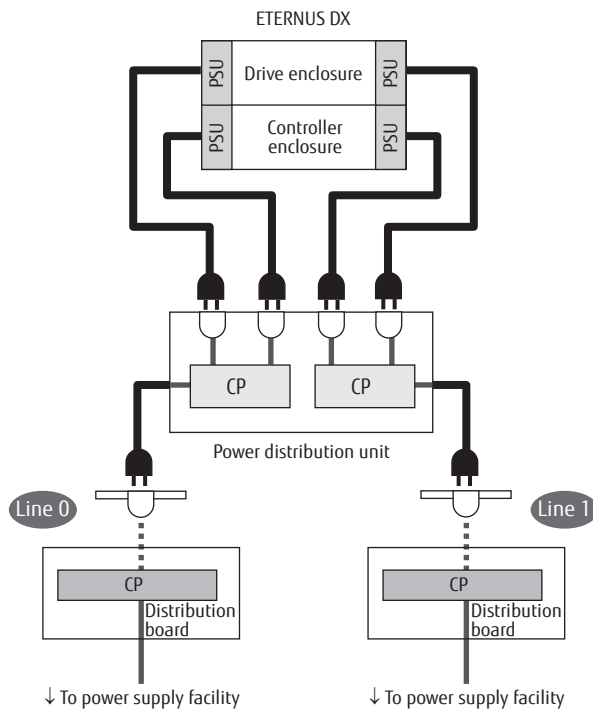
▶ Caution

Do not connect just one power distribution unit to multiple ETERNUS storage systems.

● For Power Distribution Unit (1U) Connections

The following diagram shows a power supply connection example when power distribution unit (AC200-240V, 1U, 4 outlets) is used.

Figure 16 Example of a Power Supply Connection When a Power Distribution Unit (1U) Is Used



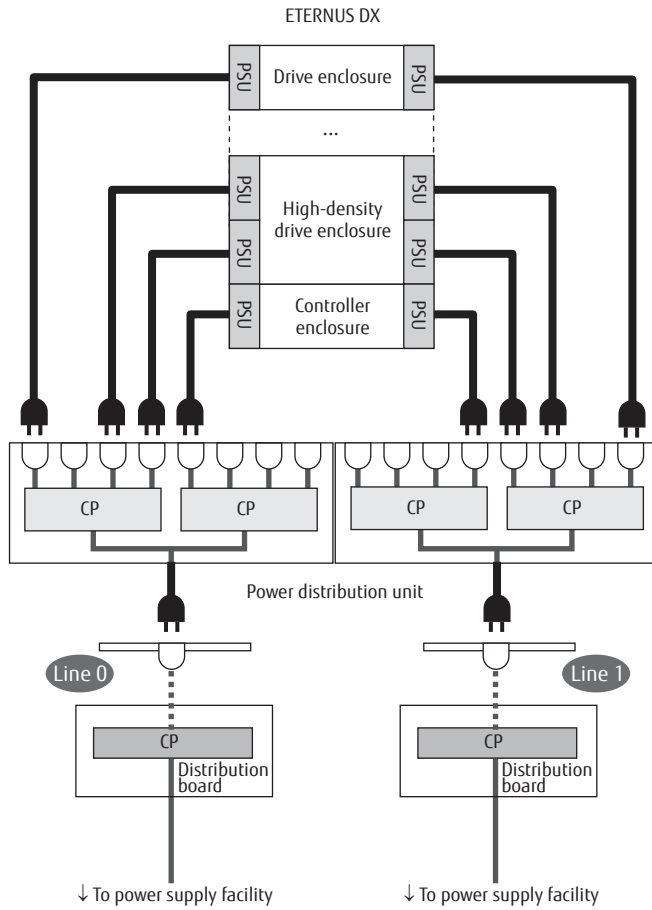
PSU: Power Supply Unit

CP: Circuit Protector

● For Power Distribution Unit (2U) Connections

The following diagram shows a power supply connection example when power distribution unit (AC200-240V, 2U, 12 outlets) or power distribution unit (AC200-240V, 2U, 16 outlets) is used.

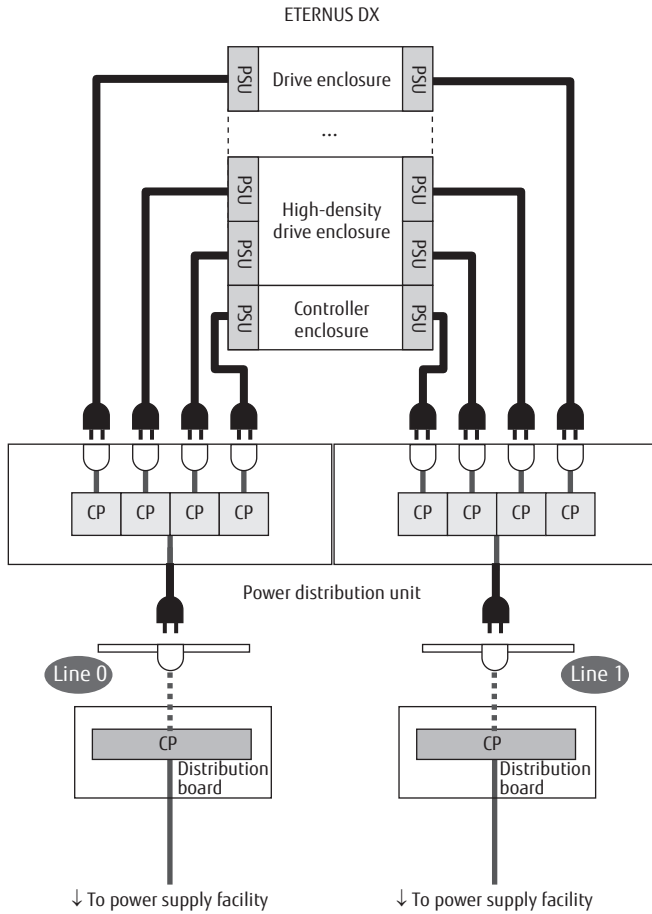
Figure 17 Example of a Power Supply Connection When a Power Distribution Unit (2U) Is Used



PSU: Power Supply Unit
CP: Circuit Protector

Note

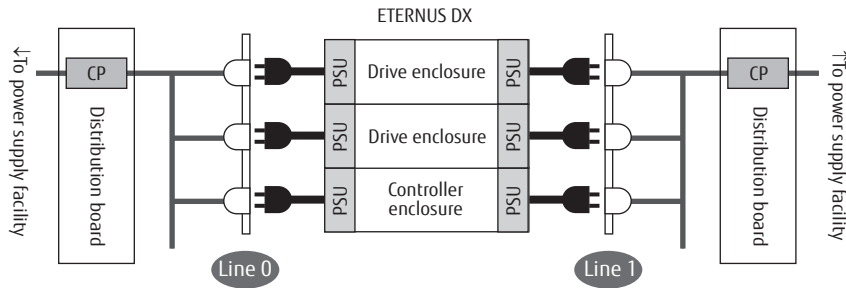
When power cords are connected to a single power supply line, the connections are more secure if each power cord is connected to a different circuit breaker.



• For Direct (No Power Distribution Unit) Connections

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

Figure 18 Example of a Power Supply Connection When a Power Distribution Unit Is Not Used



PSU: Power Supply Unit

CP: Circuit Protector



- Only connect the ETERNUS DX to circuit protectors.

Input Power Supply Lines

Use multiple power supply facilities in the building or multiple UPS units for power supply redundancy, and divide the AC input system for the ETERNUS DX into a dual system (line 0 and line 1).

Figure 19 Input Power Supply Lines (When Connecting to Power Sockets)

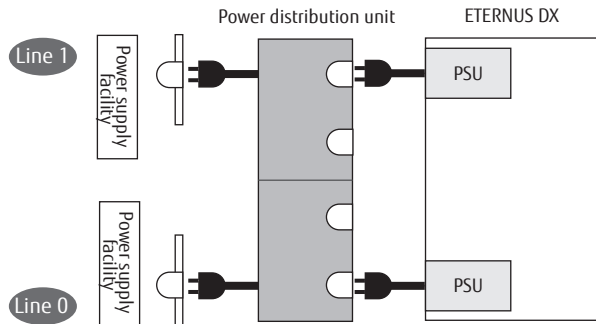
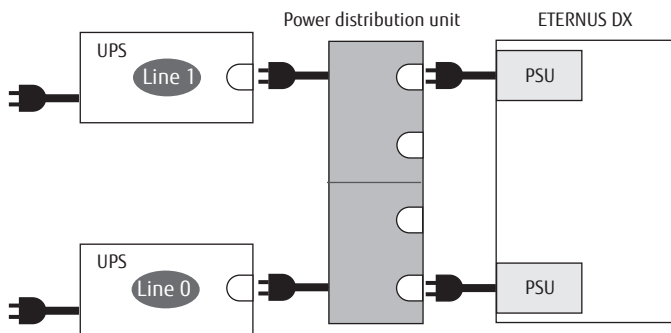
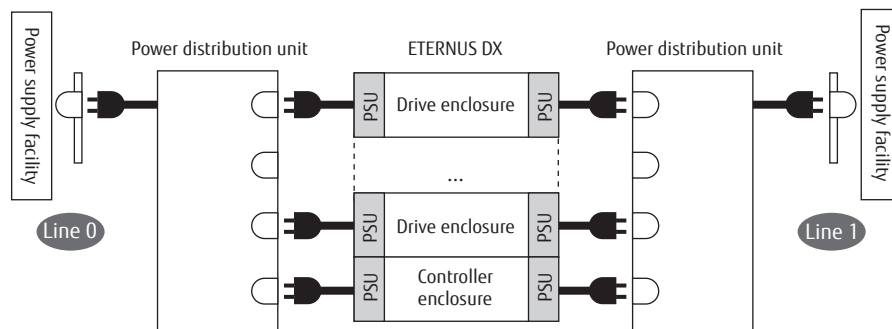


Figure 20 Input Power Supply Lines (When Connecting to a UPS Unit)



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 rack installation specification of the ETERNUS DX.

Rack Installation Requirements

This section explains the requirements for installing the ETERNUS DX in a 19-inch rack.

Placement in the Rack

Note the following when installing the ETERNUS DX in the rack.

- The center of gravity must be taken into consideration to prevent a rack from toppling over. Enclosures should generally be installed from bottom to top to lower the center of gravity and to ensure the safe use of racks.
- Enclosures are installed in the following order (from bottom to top).

Table 19 Enclosure Installation Order

Installation order	Enclosure	Size (height)
4	Drive enclosure High-density drive enclosure	2U 4U
3	Controller enclosure	3U
2	Power distribution unit Power Synchronized Unit (*1)	1U/2U 1U
1	UPS (*2)	—

***1:** This is an optional product for only the ETERNUS DX.

***2:** This is an Uninterruptible Power Supply.

Note

- When determining the rack-mounting layout of each enclosure and power distribution unit, consider the length of each cable. For example, if the ETERNUS DX is installed at the top of a 2000mm rack and a 4m power cord is used, the surplus length of the power cord at the bottom of a rack should be about 2m.
- If the storage system is installed at the bottom of a rack, a space for the surplus of cables may not be available in some racks, preventing the storage system 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 storage system.
- If drive enclosures are to be added in the future, securing sufficient space for power distribution units in the bottom of the rack is recommended.

Cable Connection

Cable Connection (Power)

This section describes the power cord connection with the ETERNUS DX.

■ Estimated Power Cable Length

The required cable length may differ depending on the application of the connection. This section describes the estimated cable length according to the application of each connection.

▶ Caution

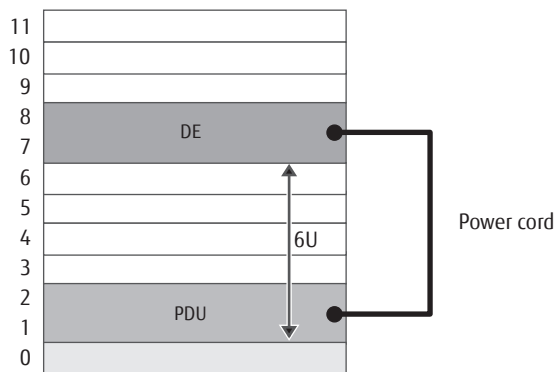
This section describes the cable lengths used to connect to a rack for the ETERNUS DX.
The required cable length may differ depending on the racks that are used.

● When Connecting Each Enclosure to the Power Distribution Unit

Table 20 Cable Lengths When Connecting Each Enclosure to the Power Distribution Unit

Distance between each enclosure and the power distribution unit	Power cable length
5U or shorter	1.0m or more
6 - 16U	1.5m or more
17U or longer	3.0m

Figure 21 Distance between Each Enclosure and the Power Distribution Unit (Example)

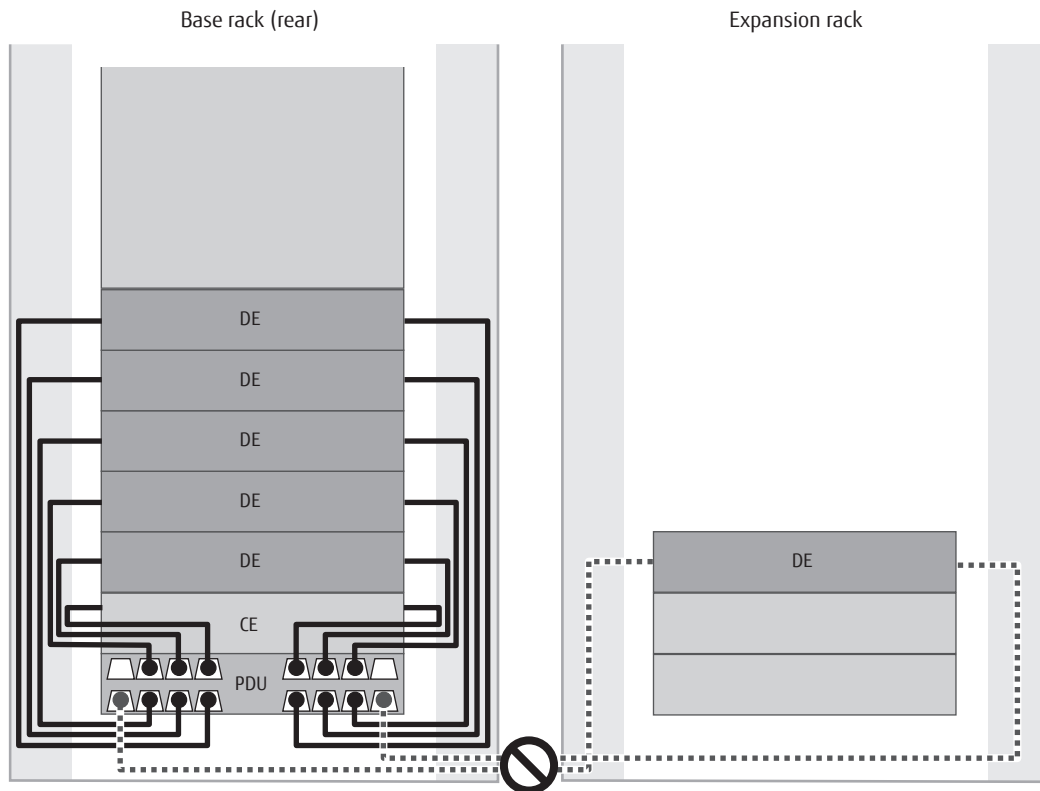


The distance between the enclosure and the power distribution unit in this example is 6U, which is calculated by subtracting the PDU in location 1 from the DE in location 7.

■ Connection Method When Multiple Racks Are Installed

When connecting the power cords (AC cables) of the enclosures to the power distribution units, make sure to secure the necessary number of power outlets within the same rack. Avoid exceeding the power cord length and connecting power cords to different racks.

Figure 22 AC Cable Connection



- : AC cable
- CE: Controller Enclosure
- DE: Drive Enclosure
- PDU: Power Distribution Unit

This section explains the requirements for connecting a power distribution unit with the ETERNUS DX.

● Power Distribution Units (2U, 16 Outlets, 24A)

- When connecting, keep the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT8 within 24A for each power distribution unit.
 - When connecting, keep the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT4 and the current capacity totaling the current consumption value of power cords that connect to outlets OUT5 to OUT8 within 12A for each power distribution unit.
 - When connecting a new enclosure, if the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT4 exceeds 12A, connect to OUT5.
- When the current capacity totaling the current consumption value of power cords that connect to outlets OUT5 to OUT8 exceeds 12A, connect to the next power distribution unit.

● **Power Distribution Units (2U, 16 Outlets, 16A)**

- When connecting, keep the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT8 within 16A for each power distribution unit.
- When connecting, keep the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT4 and the current capacity totaling the current consumption value of power cords that connect to outlets OUT5 to OUT8 within 8A for each power distribution unit.
- When connecting a new enclosure, if the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT4 exceeds 8A, connect to OUT5.

When the current capacity totaling the current consumption value of power cords that connect to outlets OUT5 to OUT8 exceeds 8A, connect to the next power distribution unit.

● **Power Distribution Units (2U, 12 Outlets, 16A)**

- When connecting, keep the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT6 within 16A for each power distribution unit.
- When connecting, keep the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT3 and the current capacity totaling the current consumption value of power cords that connect to outlets OUT4 to OUT6 within 8A for each power distribution unit.
- When connecting a new enclosure, if the current capacity totaling the current consumption value of power cords that connect to outlets OUT1 to OUT3 exceeds 8A, connect to OUT4.

When the current capacity totaling the current consumption value of power cords that connect to outlets OUT4 to OUT6 exceeds 8A, connect to the next power distribution unit.

For details on the current consumption of each power cord for each type of enclosure, refer to "[Outlet/Socket Specifications](#)" (page 27).

Cable Connection (Between Enclosures)

Reverse cabling can be used to connect enclosures in the ETERNUS DX. For reverse cabling, the length of the provided cable between controller 1 (CM#1) and the last drive enclosure (connection destination) may not be enough. Longer cables may also be required according to the installation locations of enclosures that are used in the same rack or the installation locations of enclosures that are used in multiple racks.

For 2U drive enclosures (2.5" type and 3.5" type), the length of the provided cables between enclosures is 1.1m.

For 4U drive enclosures (high-density drive enclosures), the length of the provided cables between enclosures is 3.5m.

For extended connections, 2.5m, 3.5m, 6.0m, 15m, and 30m cables are available.

Cables with a length of 1.1m, 2.5m, 3.5m, and 6.0m are Mini SAS HD copper cables, and cables with a length of 15m and 30m are Mini SAS HD active optical cables. There are no operational issues even if different types of cables exist in the ETERNUS DX.

The following guideline shows how the mini SAS HD cables between enclosures should be used according to their cable length.

Table 21 Usage of Cables for Connecting Enclosures

Cable length	Usage
1.1m	Provided with 2U drive enclosures and used for connecting 2U drive enclosures.
2.5m	Used as extension cables when the lengths of the cables that are supplied with 2U drive enclosures as standard are not sufficient.
3.5m	Provided with 4U drive enclosures. These cables can also be used as extension cables when the lengths of the provided cables are insufficient. These cables are used for the following purposes: <ul style="list-style-type: none">• Connection between 4U drive enclosures• Reverse cabling when five or more 2U drive enclosures are installed• When crossing over racks
6.0m	Used as extension cables when the connection length between the racks is more than 3.5m.
15m	Used as extension cables when the connection length between the racks is more than 6.0m.
30m	Used as extension cables when the connection length between the racks is more than 15.0m.

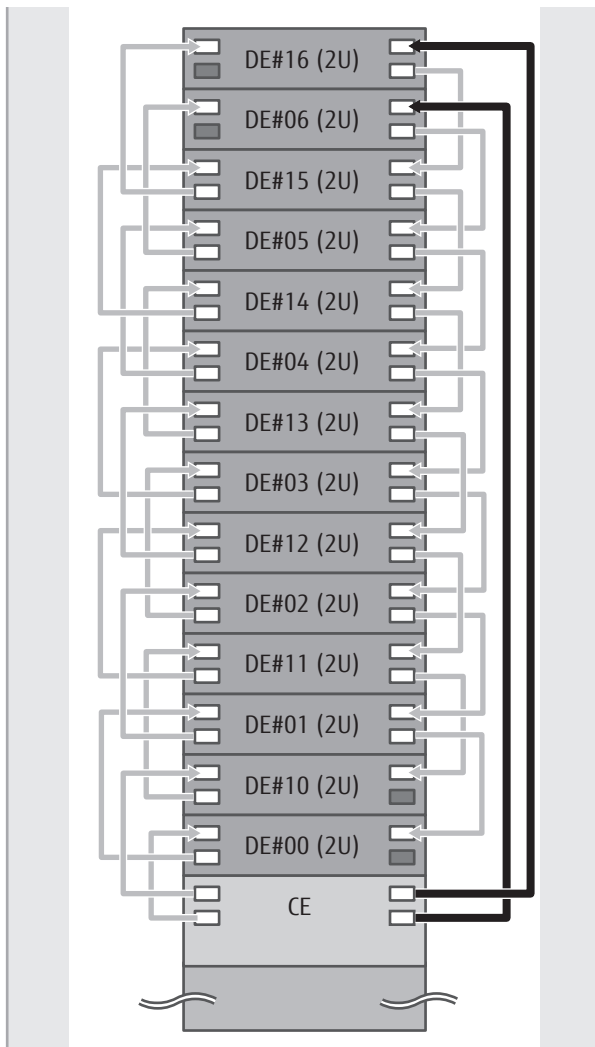
■ ETERNUS DX500 S3 Connection Example

● Installing 2U Drive Enclosures in the Same Rack

This section describes a connection configuration in which all of the enclosures are installed in the same rack. The following figure shows an example when one controller enclosure and 14 drive enclosures (2U) are installed in a rack.

For this type of configuration, the length of cables that are provided with the drive enclosures is not enough to connect the enclosures. Obtaining extra extension cables for reverse cabling to connect the controller enclosure to the last drive enclosure is required.

Figure 23 Connection Example 1 (ETERNUS DX500 S3 Connections in the Same Rack)



Cables that are supplied as standard

— 1.1m

Extension cables

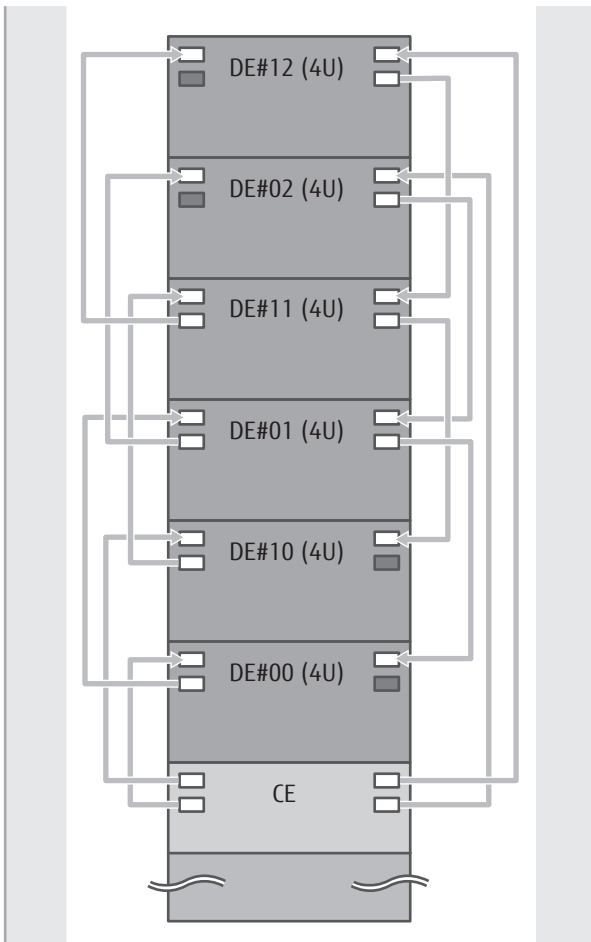
— 2.5m

● **Installing 4U Drive Enclosures in the Same Rack**

This section describes a connection configuration in which all of the enclosures are installed in the same rack. The following figure shows an example when one controller enclosure and six high-density drive enclosures (4U) are installed in a rack.

For this type of configuration, connections between enclosures can be performed with the cables that are provided with the drive enclosures. Obtaining extra extension cables for reverse cabling is not required.

Figure 24 Connection Example 2 (ETERNUS DX500 S3 Connections in the Same Rack)



Cables that are supplied as standard

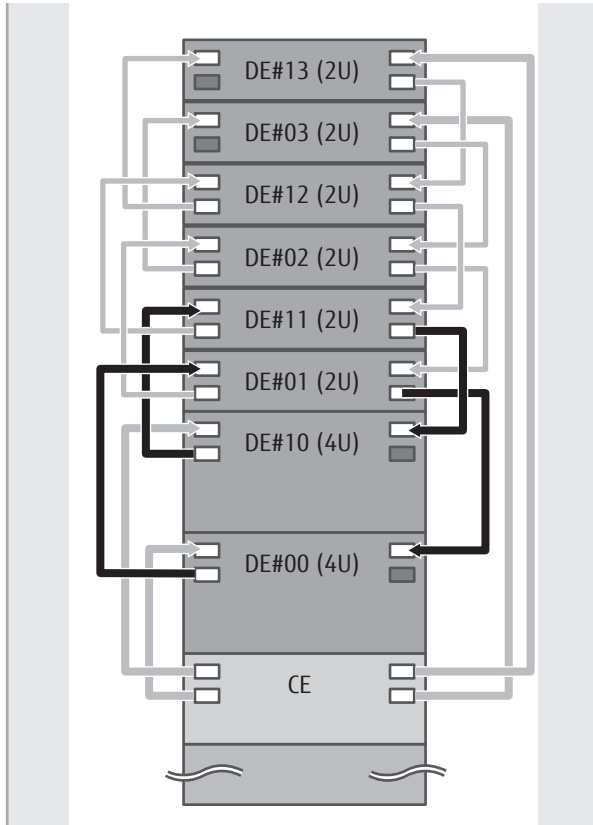
— 3.5m

● **Installing 2U and 4U Drive Enclosures in the Same Rack**

The following figure shows an example for installing one controller enclosure, two 4U high-density drive enclosures, and six 2U drive enclosures in the same rack.

For this type of configuration, obtaining extra extension cables to connect 4U drive enclosures and 2U drive enclosures is required.

Figure 25 Connection Example 3 (ETERNUS DX500 S3 Connections in the Same Rack)



Cables that are supplied as standard

— 1.1m

— 3.5m

Extension cables

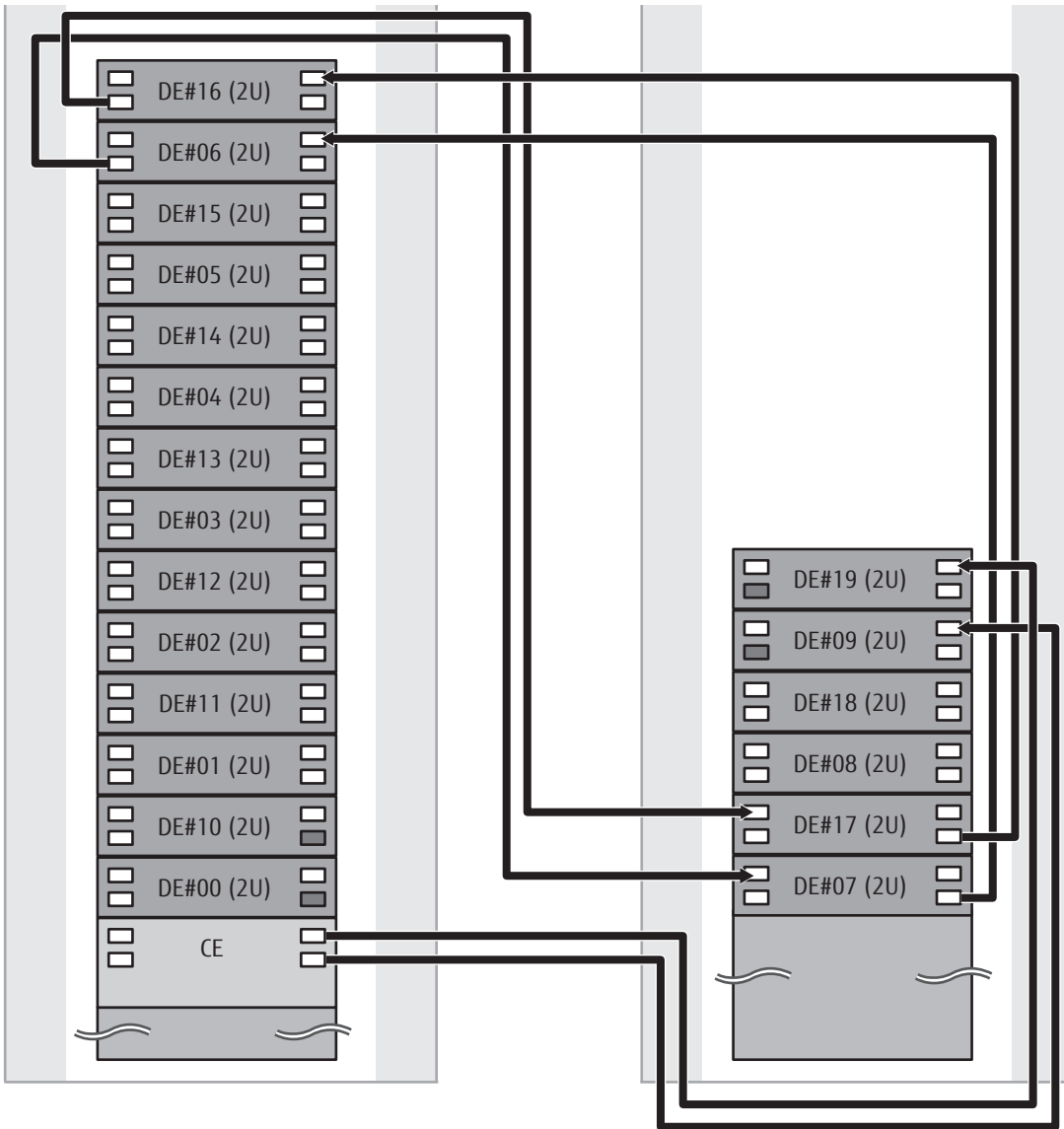
— 3.5m

● **Installing Enclosures in Multiple Racks**

This section describes a connection configuration in which the enclosures are installed in multiple racks.

The following figure shows an example when one controller enclosure and 20 drive enclosures (2U) are distributed between two racks. Obtaining extra extension cables for these connections between the racks is required.

Figure 26 Connection Example 4 (ETERNUS DX500 S3 Connections in Multiple Racks)



Extension cables

— 6.0m/15m/30m

● **Note**

- Connections in the same rack are omitted in the above figure.
- The number of extension cables required is determined by the total number of installed drive enclosures.

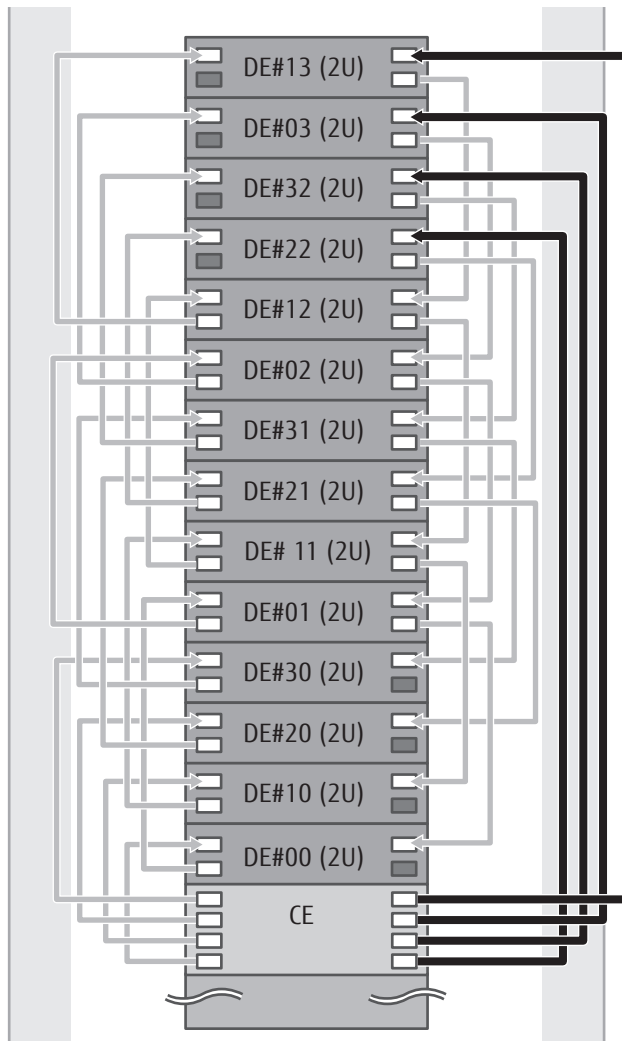
■ ETERNUS DX600 S3 Connection Example

● Installing 2U Drive Enclosures in the Same Rack

This section describes a connection configuration in which all of the enclosures are installed in the same rack. The following figure shows an example when one controller enclosure and 14 drive enclosures (2U) are installed in a rack.

For this type of configuration, the length of cables that are provided with the drive enclosures is not enough to connect the enclosures. Obtaining extra extension cables for reverse cabling to connect the controller enclosure to the last drive enclosure is required.

Figure 27 Connection Example 1 (ETERNUS DX600 S3 Connections in the Same Rack)



Cables that are supplied as standard

— 1.1m

Extension cables

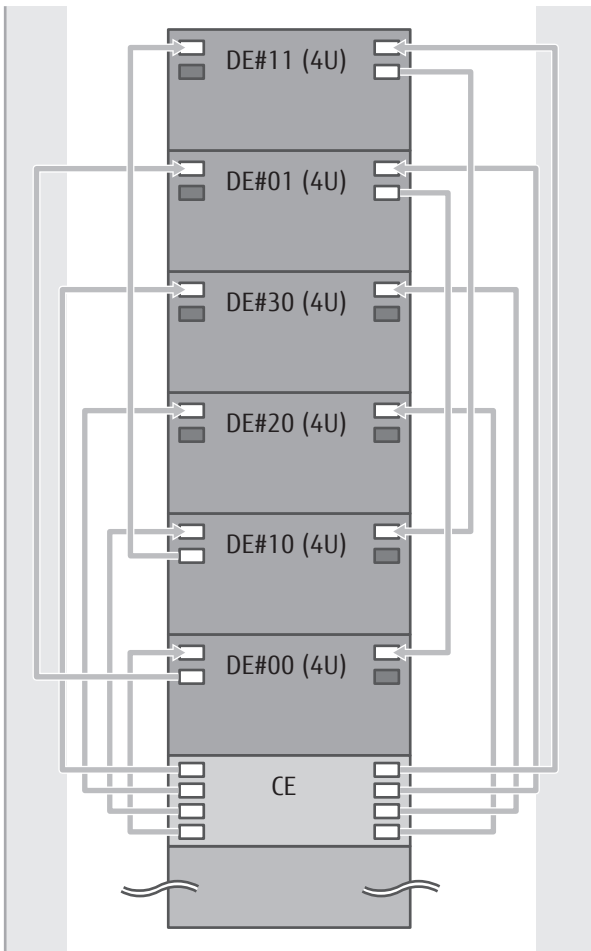
— 3.5m

● **Installing 4U DEs in the Same Rack**

This section describes a connection configuration in which all of the enclosures are installed in the same rack. The following figure shows an example when one controller enclosure and six high-density drive enclosures (4U) are installed in a rack.

For this type of configuration, connections between enclosures can be performed with the cables that are provided with the drive enclosures. Obtaining extra extension cables for reverse cabling is not required.

Figure 28 Connection Example 2 (ETERNUS DX600 S3 Connections in the Same Rack)



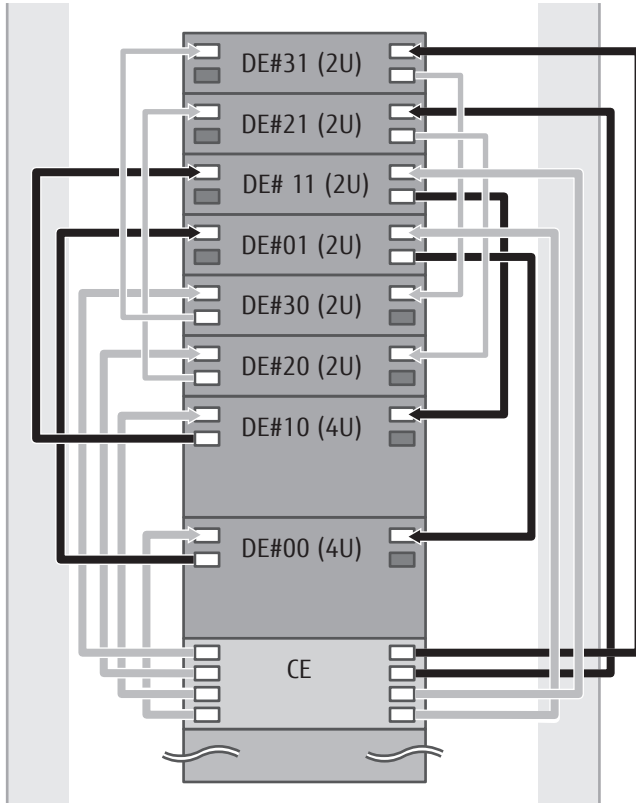
Cables that are supplied as standard
—— 3.5m

● **Installing 2U and 4U Drive Enclosures in the Same Rack**

The following figure shows an example when one controller enclosure, two 4U high-density drive enclosures, and six 2U drive enclosures are installed in the same rack.

For this type of configuration, obtaining extra extension cables to connect 4U drive enclosures and 2U drive enclosures is required. Extra extension cables are also needed for reverse cabling.

Figure 29 Connection Example 3 (ETERNUS DX600 S3 Connections in the Same Rack)



Cables that are supplied as standard

— 1.1m

— 3.5m

Extension cables

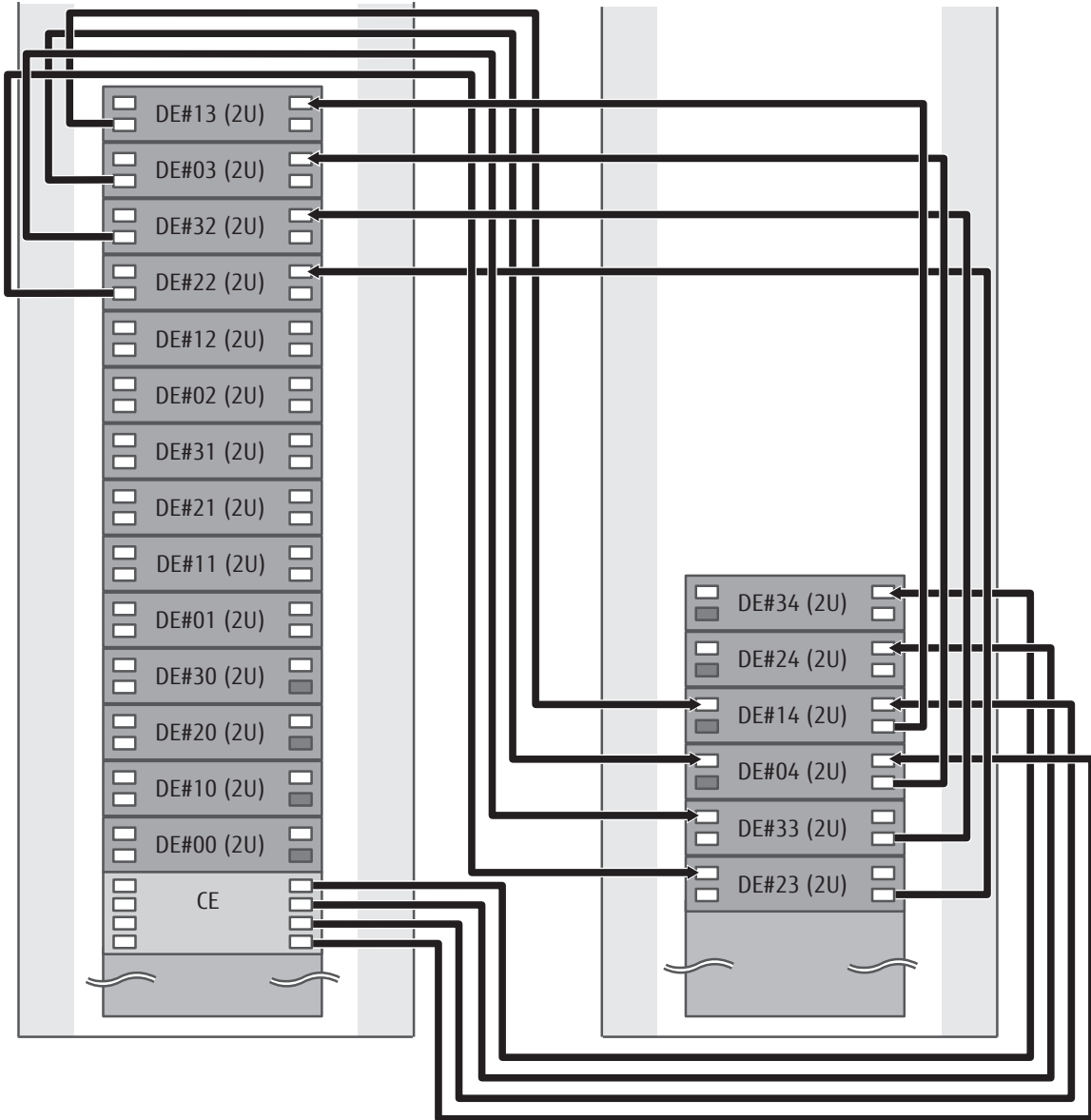
— 3.5m

● Installing Enclosures in Multiple Racks

This section describes a connection configuration in which the enclosures are installed in multiple racks.

The following figure shows an example when one controller enclosure and 20 drive enclosures (2U) are distributed between two racks. Obtaining extra extension cables for these connections between the racks is required.

Figure 30 Connection Example 4 (ETERNUS DX600 S3 Connections in Multiple Racks)



Extension cables

— 6.0m/15m/30m

● Note

- Connections in the same rack are omitted in the above figure.
- The number of extension cables required is determined by the total number of installed drive enclosures.

Installable Racks

This section explains the racks in which the ETERNUS DX can be installed.

Fujitsu Racks

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

Non-Fujitsu Racks

The ETERNUS DX storage systems are developed and their operation is guaranteed on the assumption that they are installed in Fujitsu 19-inch racks. Since the ETERNUS DX cannot be tested (for cooling and strength) in non-Fujitsu 19-inch racks, the operations of ETERNUS DX storage systems cannot be guaranteed. Any problem that may occur by installing the ETERNUS DX in non-Fujitsu racks is not covered by the warranty.

If the ETERNUS DX 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 DX 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
The size of the square holes must be 9mm or more.
- Load bearing capacity
The load bearing capacity must be equal to or larger than the total weight of the ETERNUS DX.
- Unit Installation Area
The dimensions of the area shown in [Figure 31](#) must match the conditions described in [Table 22](#).

Figure 31 Unit Installation Area

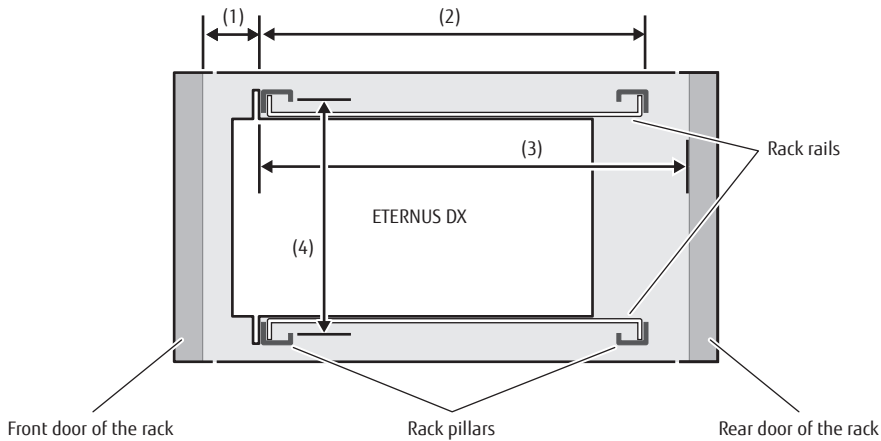


Table 22 Specifications for the Unit Installation Area

Specification		Condition	Conditions when high-density drive enclosures are installed
(1)	Rack front space (Space between the fixed part of the ETERNUS DX on the front side and the front of the rack)	40mm or more	80mm or more
(2)	Mount bracket length (Size between each end of the front and rear rack pillars)	685mm or more 775mm or less	685mm or more 750mm or less
(3)	Rack space (Space between the fixed part of the ETERNUS DX on the front side and the rear of the rack)	890mm or more	915mm or more
(4)	Rack mount kit installation area	482mm or more (recommended)	490mm or more

■ **Placement Requirements**

When determining service areas, refer to the manual of the rack that is to be used.

Make sure to perform the installation according to the placement requirements described in "[Installation Specifications](#)" (page 7) and "[Installation Environment](#)" (page 25).

FUJITSU Storage ETERNUS DX500 S4/DX600 S4, ETERNUS DX500 S3/DX600 S3 Hybrid Storage Systems
Site Planning Guide

P3AM-7712-16ENZO

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