

1.4 Model 120Rh-1

120Rh-1

Features

- 1U slim rack-optimized
- Quad-Core Xeon E5405/E5420/X5450/X5460 and Dual-Core Xeon E5205/X5260
- DDR2-667 FB-DIMM memory of up to 48GB with memory mirroring and on-line spare
- Universal hard disk bays supporting up to 900GB SAS and 2.25TB SATA



MODEL		Model 120Rh-1					
		2.5-inch hard disk drive model					
N-code		N8100-1388F	N8100-1389F	N8100-1390F	N8100-1391F	N8100-1438F	N8100-1392F
CPU		Dual-Core Xeon E5205	Dual-Core Xeon X5260	Quad-Core Xeon E5405	Quad-Core Xeon E5420	Quad-Core Xeon X5450	Quad-Core Xeon X5460
Clock		1.86GHz	3.33GHz	2GHz	2.50GHz	3GHz	3.16GHz
2nd Cache		6MB		2x6MB			
No. of CPU		1 (standard) - 2 (max.)					
Intel® 64		Supported					
Chip set		Intel 5000P					
Front Side Bus		1066MHz	1333MHz				
Memory		DDR2-667 FB-DIMM, x4/x8 SDDC, Memory Mirroring, On-line Spare Memory					
	Standard Capacity	2GB (1GB x2)					
	Maximum Capacity	48GB (4GB x12) (when standard DIMMs are removed)					
Internal HDD	Standard Capacity	Diskless					
	Maximum Capacity	SAS 879GB (146.5GB x 6)					
	Disk Controller	SAS					
	RAID *7	RAID 0,1: Standard*1, RAID 5,6: Option					
	Hot-Plug	Supported					
FDD (USB)		Option*2					
Optical disk drive		CD-RW/DVD-ROM Combo drive*3 x1 (DVD:x8 max. speed, CD: x24 max. speed)					
LAN Interface		1000BASE-T x2 (100BASE-TX and 10BASE-T are supported) (standard)					
Device Bays (3.5") [open]		- (dedicated for FDD)					
Disk Drive Bays(2.5") [open]		6[6]					
Expansion Slots [open]	Full-Height slots	PCI Express (x8) : 1[1] *4				LowProfile slots	
						PCI Express (x8) : 1[0] (occupied by RAID controller)	
Graphics	Chip	Integrated in the Server Management Controller					
	VRAM	8MB					
External Interface		Serial(D-Sub 9pin) x2 (front x1, rear x1), USB2.0 x6 (front x2, rear x2, internal x2), 1000BASE-T(RJ-45) x2, LAN for Management(100BASE-TX) x1, Display(Mini D-Sub 15pin) x1, Keyboard/Mouse(PS/2) x1*5					
Server Management		Server Management Controller (EXPRESSSCOPE Engine 2) is installed as standard.					
Power supply		Standard: Not redundant, Option: Redundant					
Cooling fan		Redundant (standard)					
Keyboard		Option (not included in server as standard)					
Mouse		Option (not included in server as standard)					
Main unit form		19inch rack mountable, 1U rack height					
	Dimension (WxDxH)mm	425 x 718 x 43 485 x 823 x 43 (when front bezel and the protruding objects are included)					
Weight std. (max.)		16Kg (20Kg)					
Consumption power Max.	Max.	600VA/590W	630VA/620W	630VA/620W	630VA/620W	710VA/700W	710VA/700W
	Standby	467VA/457W	474VA/464W	474VA/464W	474VA/464W	486VA/476W	486VA/476W
Temperature and Humidity Condition		During operation: 10 to 35°C / 20 to 80% (Non-condensing) When stored: -10°C to 55°C / 20% to 80% (Non-condensing) *6					
Supported OS (see chapter of S/W for details)		Windows Server 2003, Standard Edition (SP1 or later) / Enterprise Edition (SP1 pr later) Windows Server 2003 R2, Standard Edition /Enterprise Edition Windows Server 2003 R2, Standard x64 Edition / Enterprise x64 Edition Red Hat Linux *7					

*1 On-board RAID is not supported on Linux configuration.

*2 The Internal FDD is not available for 2.5" hard disk drive models.

*3 Writing software is not supported.

*4 2.5-inch hard disk drive models do not provide the Riser Card option.

*5 The keyboard and mouse can be connected together by using a Y cable provided with the main unit.

*6 When stored at a low or high temperature, the system clock may largely deviate from the current time.

*7 Please refer to "Linux on NEC Express5800" (<http://www.nec.co.jp/express/linux/index.htm>)

MODEL		Model 120Rh-1					
		3.5-inch hard disk drive model					
N-code	N8100-1394F	N8100-1395F	N8100-1396F	N8100-1397F	N8100-1439F	N8100-1398F	
CPU	Dual-Core Xeon E5205	Dual-Core Xeon X5260	Quad-Core Xeon E5405	Quad-Core Xeon E5420	Quad-Core Xeon X5450	Quad-Core Xeon X5460	
Clock	1.86GHz	3.33GHz	2GHz	2.50GHz	3GHz	3.16GHz	
2nd Cache	6MB		2x6MB				
No. of CPU	1 (standard) - 2 (max.)						
Intel® 64	Supported						
Chip set	Intel 5000P						
Front Side Bus	1066MHz	1333MHz					
Memory	DDR2-667 FB-DIMM, x4/x8 SDDC, Memory Mirroring, On-line Spare Memory						
	Standard Capacity	2GB (1GB x2)					
	Maximum Capacity	48GB (4GB x12) (when standard DIMMs are removed)					
Internal HDD	Standard Capacity	Diskless					
	Maximum Capacity	SATA: 2.25TB (750GB x 3), SAS 900GB (300GB x 3)					
	Disk Controller	SATA / SAS(option)					
	RAID *6	RAID 0,1: Standard, RAID 5: Option					
	Hot-Plug	Supported					
FDD (USB)	Option*1						
Optical disk drive	CD-RW/DVD-ROM Combo drive*2 x1 (DVD:x8 max. speed, CD: x24 max. speed)						
LAN Interface	1000BASE-T x2 (100BASE-TX and 10BASE-T are supported) (standard)						
Device Bays (3.5") [open]	- (dedicated for FDD)						
Disk Drive Bays(2.5") [open]	3[3]						
Expansion Slots [open]	Full-Height slots		LowProfile slots				
	PCI Express (x8) : 1[1] *3		PCI Express (x8) : 1[1]				
Graphics	Chip	Integrated in the Server Management Controller					
	VRAM	8MB					
External Interface	Serial(D-Sub 9pin) x2 (front x1, rear x1), USB2.0 x4 (front x2, rear x2, internal x2), 1000BASE-T(RJ-45) x2, LAN for Management(100BASE-TX) x1 Display(Mini D-Sub 15pin) x1, Keyboard/Mouse(PS/2) x1*4						
Server Management	Server Management Controller (EXPRESSSCOPE Engine 2) is installed as standard.						
Power supply	Standard: Not redundant, Option: Redundant						
Cooling fan	Redundant (standard)						
Keyboard	Option (not included in server as standard)						
Mouse	Option (not included in server as standard)						
Main unit form	19inch rack mountable, 1U rack height						
Dimension (WxDxH)mm	425 x 718 x 43						
	485 x 823 x 43 (when front bezel and the protruding objects are included)						
Weight std. (max.)	16Kg (20Kg)						
Consumption power Max.	600VA/590W	630VA/620W	630VA/620W	630VA/620W	710VA/700W	710VA/ 700W	
	Standby 467VA/457W	474VA/464W	474VA/464W	474VA/464W	486VA/476W	486VA/ 476W	
Temperature and Humidity Condition	During operation: 10 to 35°C / 20 to 80% (Non-condensing) When stored: -10°C to 55°C / 20% to 80% (Non-condensing) *5						
Supported OS (see chapter of S/W for details)	Windows Server 2003, Standard Edition (SP1 or later) / Enterprise Edition (SP1 pr later) Windows Server 2003 R2, Standard Edition /Enterprise Edition Windows Server 2003 R2, Standard x64 Edition / Enterprise x64 Edition Red Hat Linux *6						

*1 The Internal FDD is not available for 2.5" hard disk drive models.

*2 Writing software is not supported.

*3 By replacing the standard riser card with the optional card [N8116-14], one PCI-X 64bit/100MHz slot becomes available instead of a PCIe (x8) full height slot.

*4 The keyboard and mouse can be connected together by using a Y cable provided with the main unit.

*5 When stored at a low or high temperature, the system clock may largely deviate from the current time.

*6 Please refer to "Linux on NEC Express5800" (<http://www.nec.co.jp/express/linux/index.html>)

MODEL		Model 120Rh-1		
		3.5-inch hard disk drive model (non-redundant power supply)		
N-code		N8100-1401F	N8100-1402F	N8100-1405F
CPU		Dual-Core Xeon E5205	Dual-Core Xeon X5260	Quad-Core Xeon X5460
Clock		1.86GHz	3.33GHz	3.16GHz
2nd Cache		6MB		2x6MB
No. of CPU		1 (standard) - 2 (max.)		
Intel® 64		Supported		
Chip set		Intel 5000P		
Front Side Bus		1066MHz	1333MHz	
Memory		DDR2-667 FB-DIMM, x4/x8 SDDC, Memory Mirroring, On-line Spare Memory		
	Standard Capacity	2GB (1GB x2)		
	Maximum Capacity	48GB (4GB x12) (when standard DIMMs are removed)		
Internal HDD	Standard Capacity	Diskless		
	Maximum Capacity	SATA: 2.25TB (750GB x 3), SAS 900GB (300GB x 3)		
	Disk Controller	SATA / SAS (option)		
	RAID *6	RAID 0,1: Standard, RAID 5: Option		
	Hot-Plug	Supported		
FDD (USB)		Option*1		
Optical disk drive		CD-RW/DVD-ROM Combo drive*2 x1 (DVD:x8 max. speed, CD: x24 max. speed)		
LAN Interface		1000BASE-T x2 (100BASE-TX and 10BASE-T are supported) (standard)		
Device Bays (3.5") [open]		- (dedicated for FDD)		
Disk Drive Bays(2.5") [open]		3[3]		
Expansion Slots [open]	Full-Height slots	Low profile slots		
	PCI Express (x8) : 1[1] *3	PCI Express (x8): 1[1]		
Graphics	Chip	Integrated in the Server Management Controller		
	VRAM	8MB		
External Interface		Serial(D-Sub 9pin) x2 (front x1, rear x1), USB2.0 x4 (front x2, rear x2, internal x2), 1000BASE-T(RJ-45) x2, LAN for Management(100BASE-TX) x1 Display(Mini D-Sub 15pin) x1, Keyboard/Mouse(PS/2) x1*4		
Server Management		Server Management Controller (EXPRESSSCOPE Engine 2) is installed as standard.		
Power supply		Not redundant		
Cooling fan		Not redundant		
Keyboard		Option (not included in server as standard)		
Mouse		Option (not included in server as standard)		
Main unit form		19inch rack mountable, 1U rack height		
	Dimension (WxDxH)mm	425 x 718 x 43 485 x 823 x 43 (when front bezel and the protruding objects are included)		
Weight std. (max.)		16Kg (19Kg)		
Consumption power Max.	Max.	600VA/590W	630VA/620W	710VA/ 700W
	Standby	467VA/457W	474VA/464W	486VA/ 476W
Temperature and Humidity Condition		During operation: 10 to 35°C / 20 to 80% (Non-condensing) When stored: -10°C to 55°C / 20% to 80% (Non-condensing) *5		
Supported OS (see chapter of S/W for details)		Windows Server 2003, Standard Edition (SP1 or later) / Enterprise Edition (SP1 pr later) Windows Server 2003 R2, Standard Edition /Enterprise Edition Windows Server 2003 R2, Standard x64 Edition / Enterprise x64 Edition Red Hat Linux *6		

*1 The Internal FDD is not available for 2.5" hard disk drive models.

*2 Writing software is not supported.

*3 By replacing the standard riser card with the optional card [N8116-14], one PCI-X 64bit/100MHz slot becomes available instead of a PCIe (x8) full height slot.

*4 The keyboard and mouse can be connected together by using a Y cable provided with the main unit.

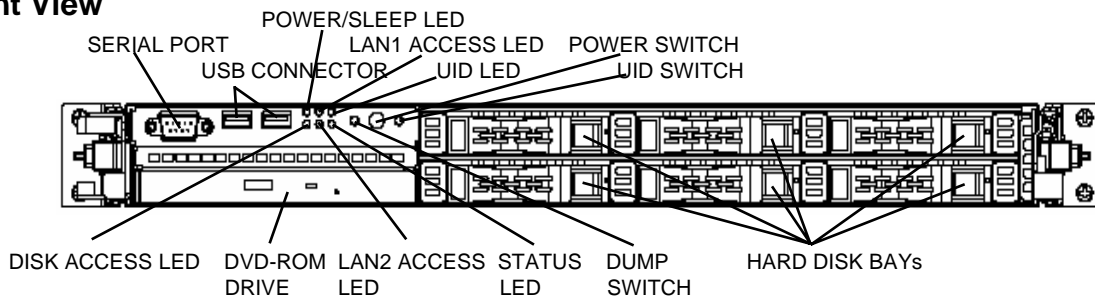
*5 When stored at a low or high temperature, the system clock may largely deviate from the current time.

*6 Please refer to "Linux on NEC Express5800" (<http://www.nec.co.jp/express/linux/index.html>)

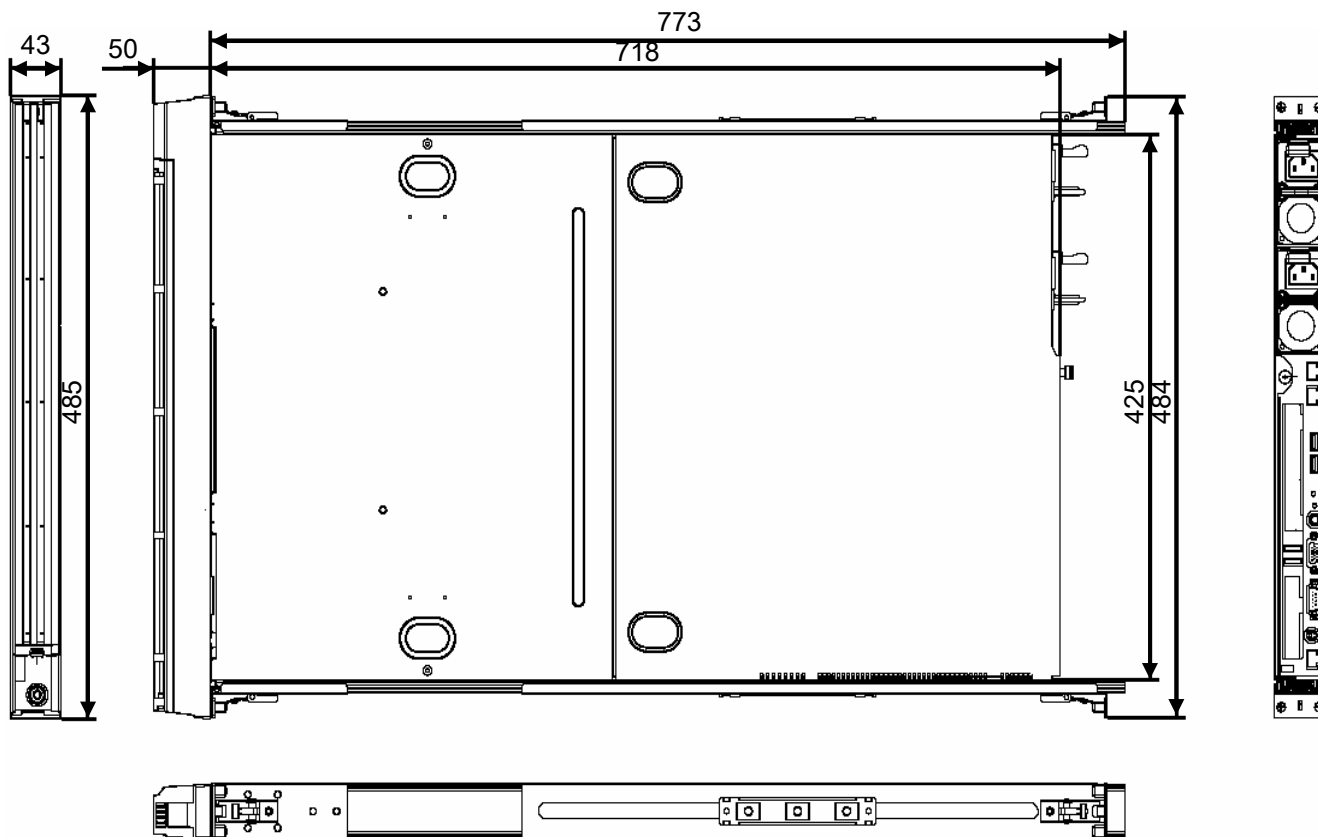
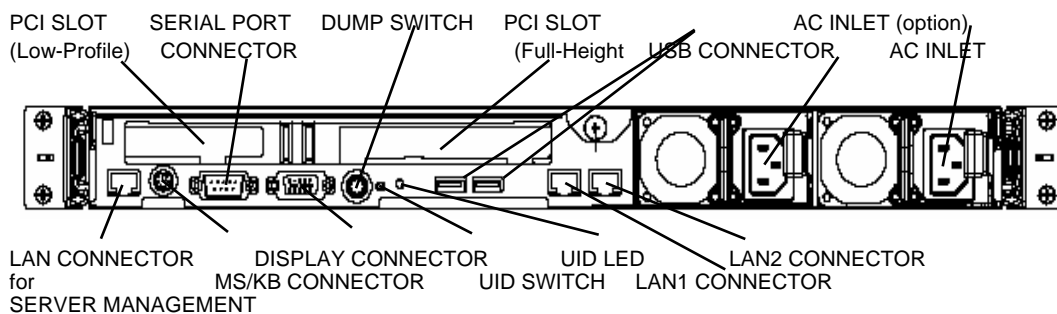
External Design

120Rh-1 (2.5-inch HDD model)

Front View



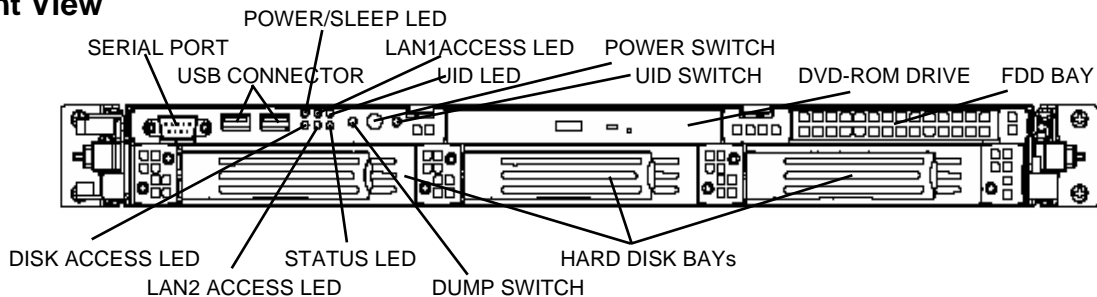
Rear View



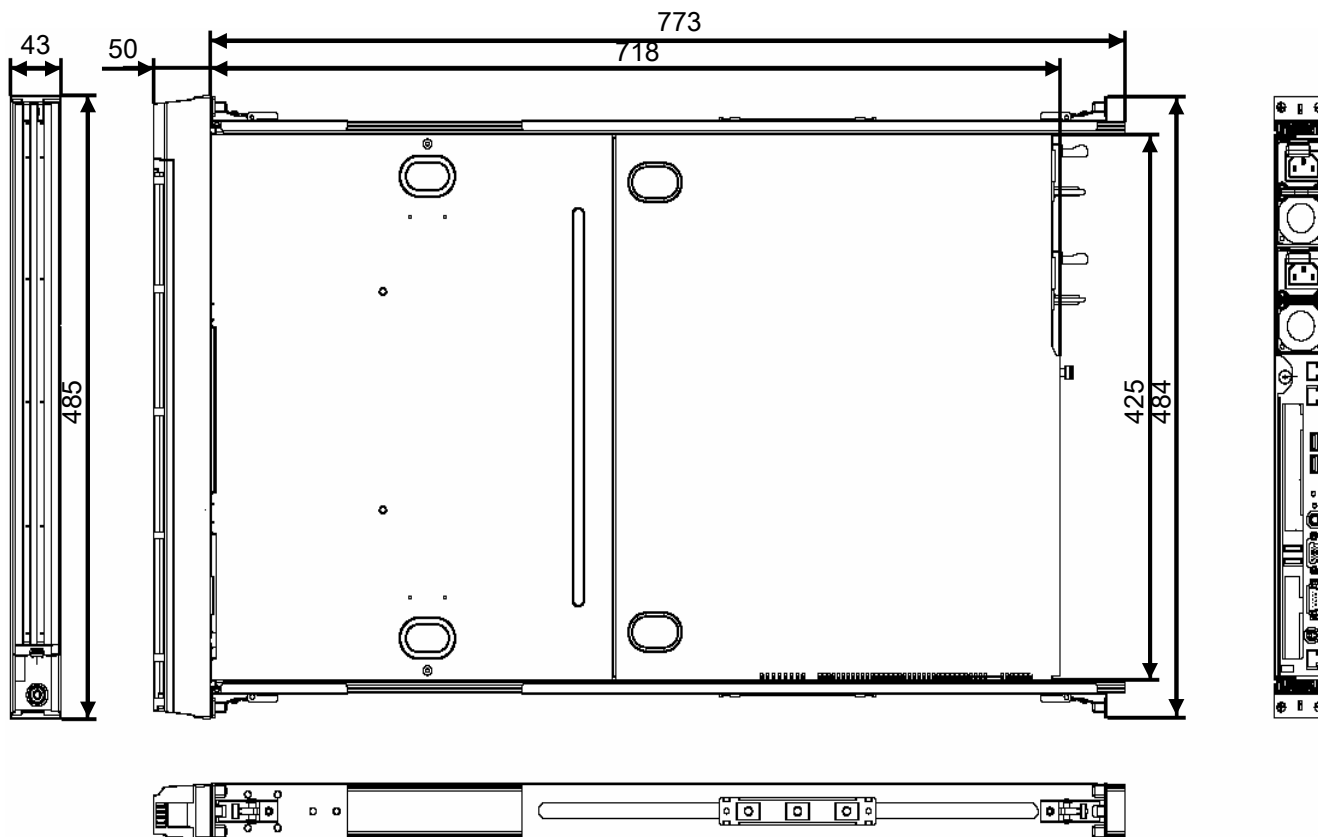
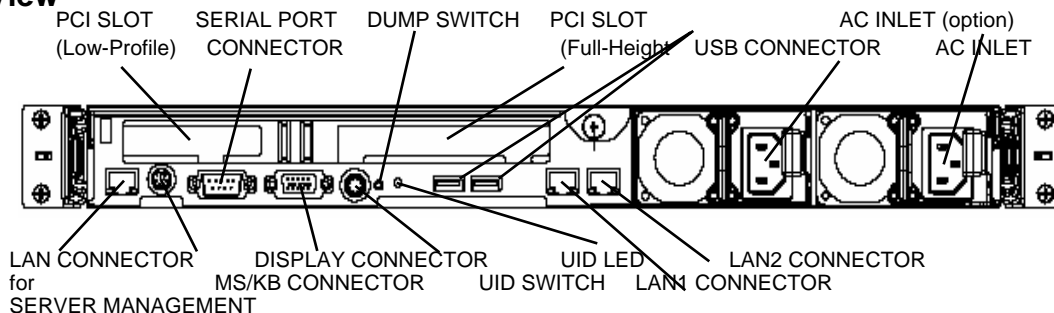
External Design

120Rh-1 (3.5-inch HDD model)

Front View



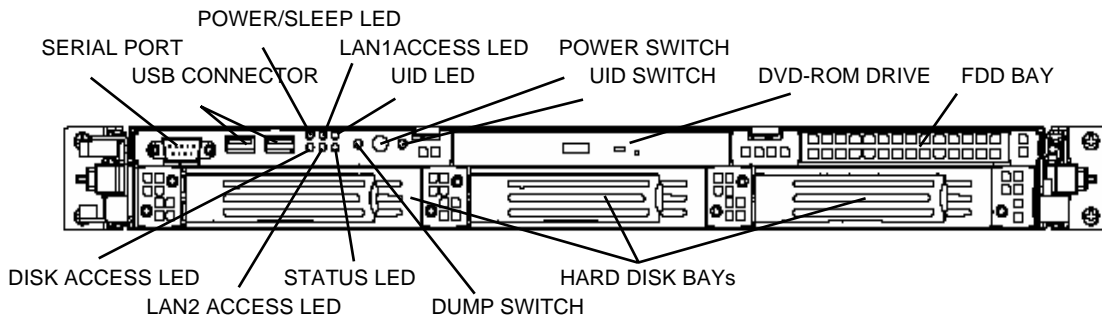
Rear View



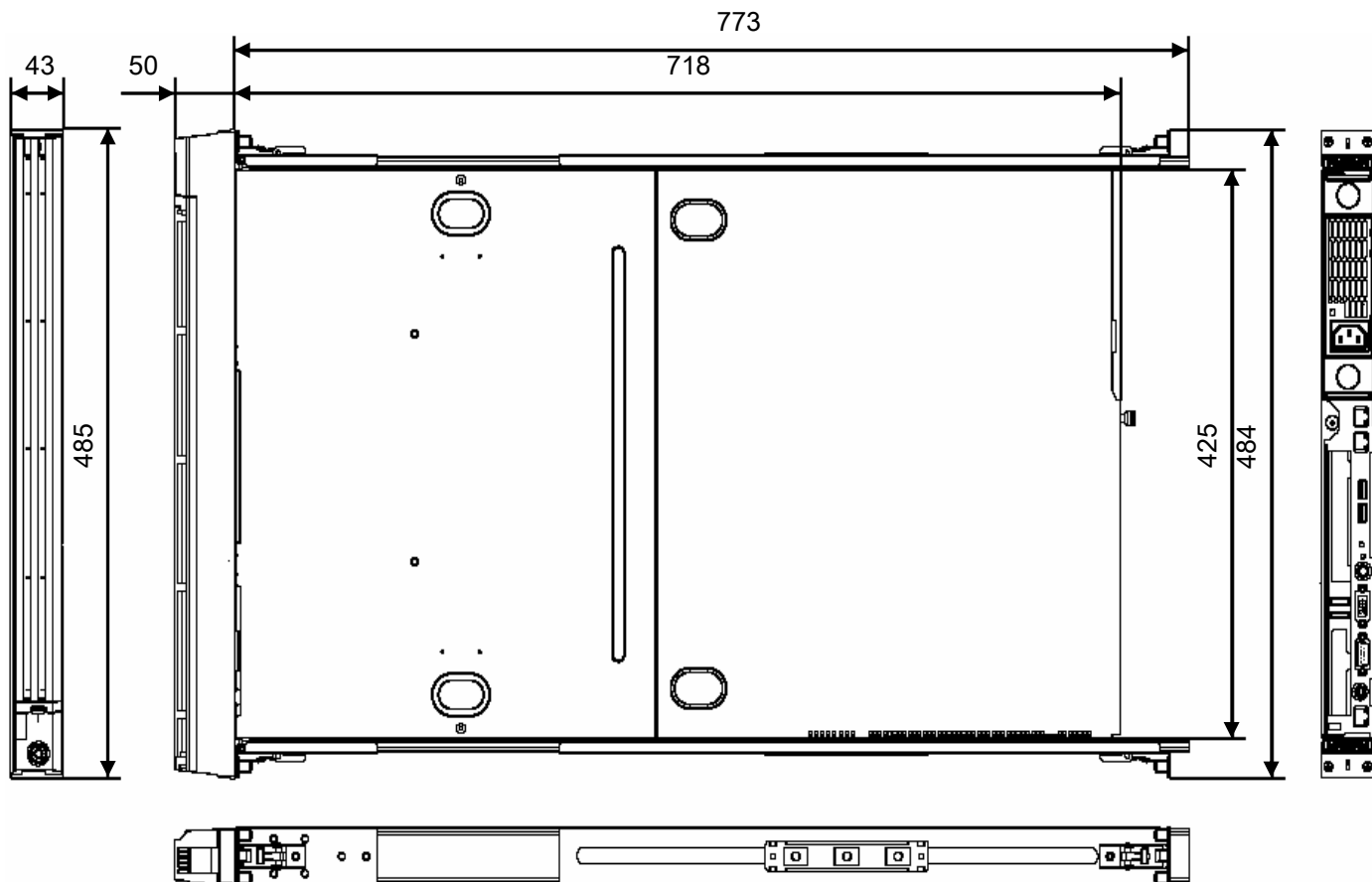
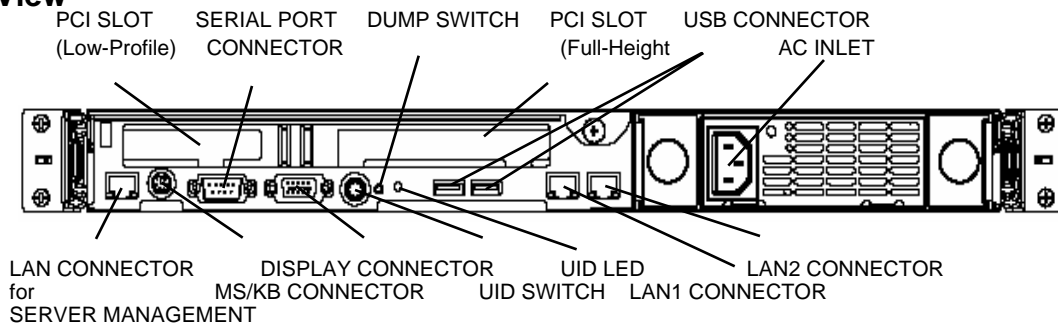
External Design

120Rh-1 (3.5-inch HDD, non-redundant power model)

Front View




Rear View

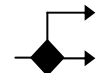


2.5-inch HDD model [N8100-1388F/-1389F/-1390F/-1391F/-1438F/-1392F]

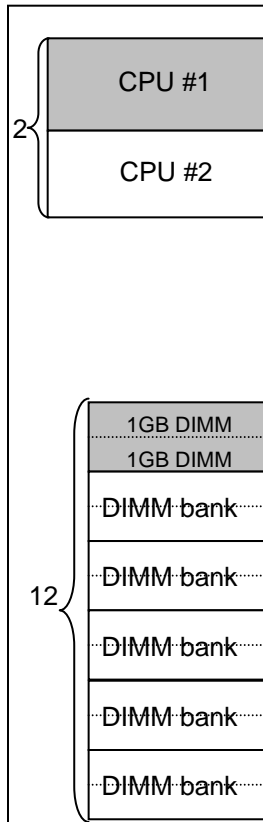
3.5-inch HDD model [N8100-1394F/-1395F/-1396F/-1397F/-1439F/-1398F]

3.5-inch HDD model (non-redundant power/fan) [N8100-1401F/-1402F/-1405F]

 : Standard

 : Exclusive connection

* You cannot use the two slots or ports at the same time.



CPU Kit

- CPU Kit (XD/1.86G(6)) [N8101-379] <Dual-Core Xeon E5205>
- CPU Kit (XD/3.33G(6)) [N8101-380] <Dual-Core Xeon X5260>
- CPU Kit (XQ/2G(2x6)) [N8101-381] <Quad-Core Xeon E5405>
- CPU Kit (XQ/2.50G(2x6)) [N8101-382] <Quad-Core Xeon E5420>
- CPU Kit (XQ/3G(2x6)) [N8101-403] <Quad-Core Xeon X5450>
- CPU Kit (XQ/3.16G(2x6)) [N8101-383] <Quad-Core Xeon X5460>

• Do not use processors of different processor numbers at the same time.

Additional Memory Module

- Additional 1GB memory module set [N8102-309] (512MB x2)
- Additional 2GB memory module set [N8102-310] (1GB x2)
- Additional 4GB memory module set [N8102-311] (2GB x2)
- Additional 8GB memory module set [N8102-312] (4GB x2)

• **Each memory module set includes a pair of DIMMs.**

- Two 1GB DIMMs are factory-installed.
- You can expand the memory capacity up to 48GB by replacing the standard DIMMs.
- The 120Rh-1 supports x4/x8 SDDC, Memory Mirroring, and On-line Sparing.
- **DIMM must be inserted from Group #1 toward Group#6 in ascending order.**
- To enable the memory mirroring and on-line sparing mode, see the next page.
- When you use locally procured non-NEC memory modules, see Chapter 2 Information of Local Procurement.

Maximum available memory

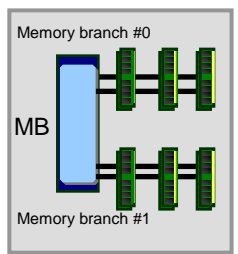
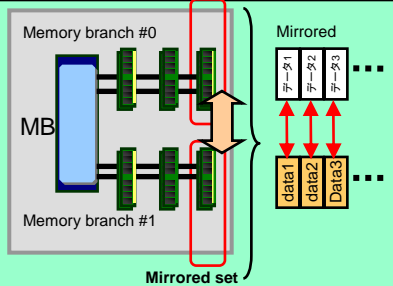
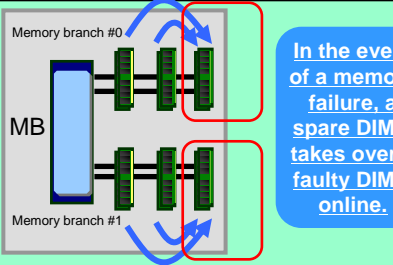
- See the table below for the maximum memory size that you can actually use on your system.
- The maximum available memory is less than the maximum physical memory supported by your system because some chipsets require PCI resource space of about 750MB. The PCI resource capacity varies by type and number of PCI cards you are using.

Maximum memory size supported by OS		Maximum available memory (The 120Rh-1 supports up to 48GB.)
4GB	Microsoft Windows Server 2003, Standard Edition (SP1) Microsoft Windows Server 2003 R2, Standard Edition	4GB
32GB	Microsoft Windows Server 2003, Enterprise Edition (SP1) Microsoft Windows Server 2003 R2, Enterprise Edition Microsoft Windows Server 2003 R2, Standard x64 Edition	32GB
128GB	Microsoft Windows Server 2003 R2, Enterprise x64 Edition	48GB All maximum physical memory available
16GB	RedHat Enterprise Linux ES4 (x86 / EM64T)	16GB
64GB	RedHat Enterprise Linux AS4 (x86)	48GB All maximum physical memory available
128GB	RedHat Enterprise Linux AS4 (EM64T)	48GB All maximum physical memory available

Memory Mirroring / On-line Spare Memory

The 120Rh-1 supports memory mirroring and online spare memory as standard to improve memory reliability.

- Follow the rules for installing memory DIMMs.
- To enable online spare memory, go to BIOS Setup.
- You cannot use the standard memory mode, memory mirroring, and online spare memory at the same time in the same system.

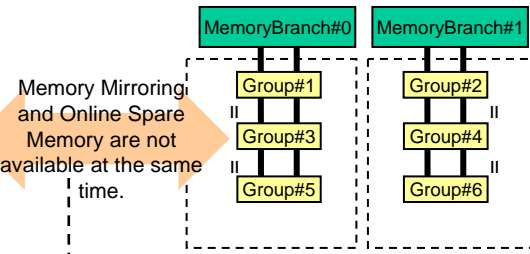
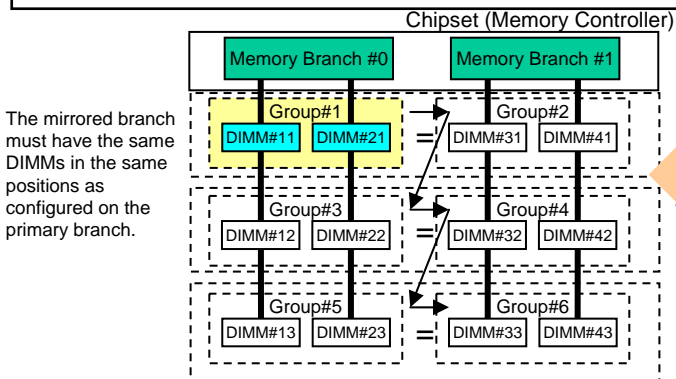
	Standard memory mode	Memory Mirroring	On-line Spare Memory
Configuration			 <div style="position: absolute; top: 10px; right: 10px; background-color: #007bff; color: white; padding: 5px; border-radius: 10px;"> In the event of a memory failure, a spare DIMM takes over a faulty DIMM online. </div>
Functions	Not redundant (default)	Data mirrored between memory branch #0 and #1	A faulty DIMM automatically fails over to a spare memory on the same memory branch.
Capacity	Same as physical capacity	Half the physical capacity	Physical capacity does not include spare memory.
Hot plug	Not removable during operation	Not removable during operation	Not removable during operation
Reliability	Not redundant	Fully redundant	A faulty DIMM automatically fails over to a spare memory on the same memory branch.

Requirements for Memory Mirroring

- The branch #0 and #1 must be identical in DIMM configuration (size and position).
- No mirroring can be configured between the DIMMs on the same memory branch.

Requirements for Online Spare Memory

- Memory sizes must be the same across memory groups on the same memory branch.
- Memory sizes may vary by memory branches.
- The memory groups farthest from the memory branches are spares.



Memory combinations for memory mirroring

	Group#1 DIMM#11, #21	Group#2 DIMM#31, #41	Group#3 DIMM#12, #22	Group#4 DIMM#32, #42	Group#5 DIMM#13, #23	Group#6 DIMM#33, #43	Physical capacity	Logical capacity
combination1	2GB	2GB					4GB	2GB
combination2	2GB	2GB	1GB	1GB			6GB	3GB
combination3	2GB	2GB	2GB	2GB			8GB	4GB
combination4	2GB	2GB	1GB	1GB	1GB	1GB	8GB	4GB
combination5	2GB	2GB	1GB	1GB	2GB	2GB	10GB	5GB
combination6	2GB	2GB	2GB	2GB	1GB	1GB	10GB	5GB
combination7	2GB	2GB	4GB	4GB			12GB	6GB
combination8	2GB	2GB	2GB	2GB	2GB	2GB	12GB	6GB
combination9	2GB	2GB	1GB	1GB	4GB	4GB	14GB	7GB
combination10	2GB	2GB	4GB	4GB	1GB	1GB	14GB	7GB
combination11	2GB	2GB	2GB	2GB	4GB	4GB	16GB	8GB
combination12	2GB	2GB	4GB	4GB	2GB	2GB	16GB	8GB
combination13	2GB	2GB	4GB	4GB	4GB	4GB	20GB	10GB
combination14	4GB	4GB	4GB	4GB	4GB	4GB	24GB	12GB
combination22	8GB	8GB	8GB	8GB	8GB	8GB	48GB	24GB

Memory combinations for Online Spare Memory Memory branch #0

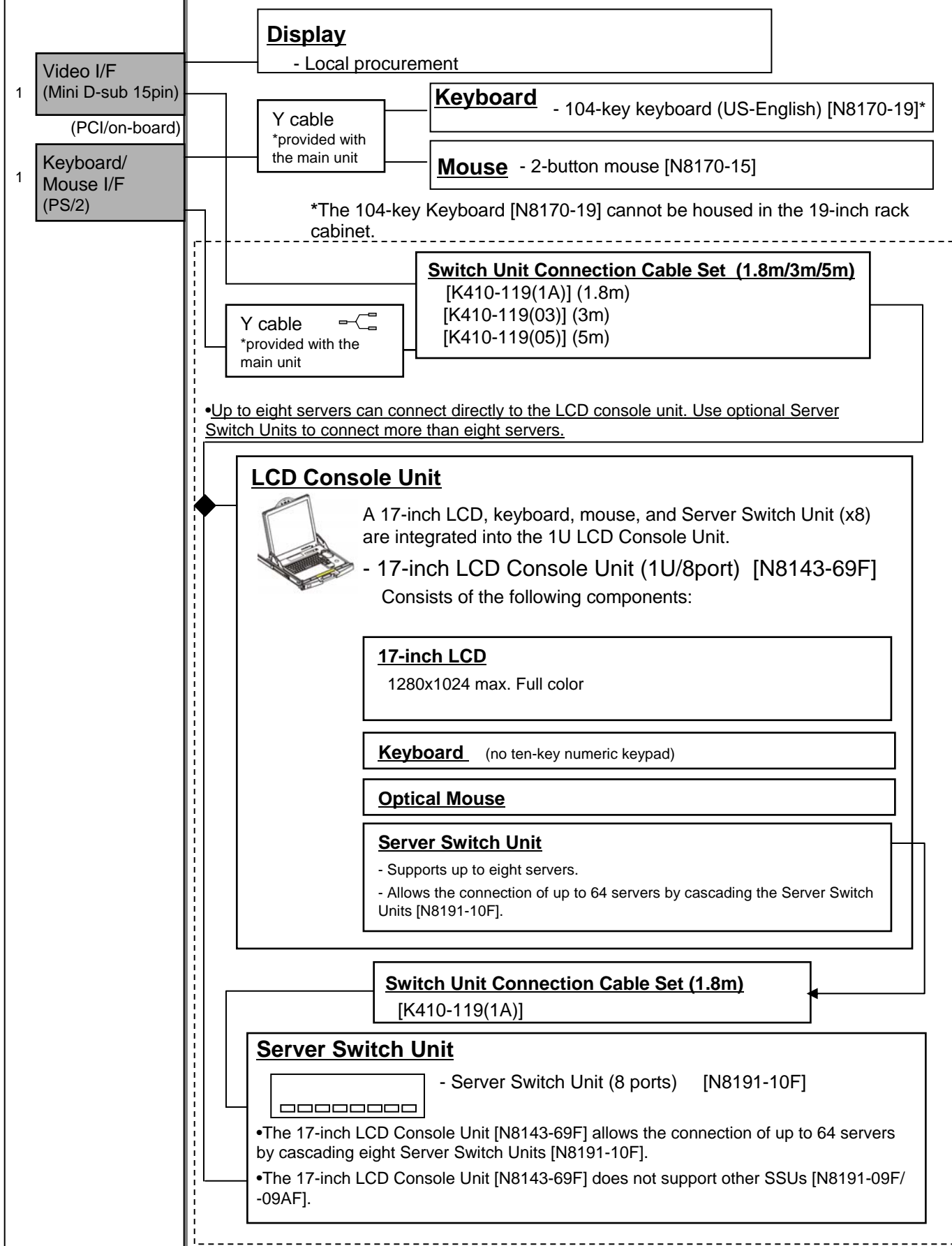
Config.	Group#1 DIMM#A1, #B1	Group#2 DIMM#A2, #B2	Group#3 DIMM#A3, #B3	Physical capacity	Logical capacity
1	1GB	1GB		2GB	1GB
2	1GB	1GB	1GB	3GB	2GB
3	2GB (std.)	2GB		4GB	3GB
4	2GB (std.)	2GB	2GB	6GB	5GB
5	4GB	4GB		8GB	6GB
6	4GB	4GB	4GB	12GB	10GB
7	8GB	8GB		16GB	12GB
8	8GB	8GB	8GB	24GB	20GB

Your logical memory capacity is calculated using one of the following two formulas:

When you are using 1GB Memory Module Set [N8102-309]:
 [Logical capacity]
 = [Total of physical capacities] - [Physical capacity per memory group]

When you are using Standard 1GB memory or
 Additional 2GB/4GB/8GB Memory Module Set [N8102-310/-311/-312]:
 [Logical capacity]
 = [Total of physical capacities] - [Physical capacity per memory group] / 2

• **A color display, a keyboard and a 2-button mouse are necessary but NOT provided with the main unit as standard.**



Display
- Local procurement

1 Video I/F
(Mini D-sub 15pin)
(PCI/on-board)

Keyboard - 104-key keyboard (US-English) [N8170-19]*

Y cable
*provided with the main unit

Mouse - 2-button mouse [N8170-15]

1 Keyboard/
Mouse I/F
(PS/2)

*The 104-key Keyboard [N8170-19] cannot be housed in the 19-inch rack cabinet.

Switch Unit Connection Cable Set (1.8m/3m/5m)
[K410-119(1A)] (1.8m)
[K410-119(03)] (3m)
[K410-119(05)] (5m)

Y cable
*provided with the main unit

•Up to eight servers can connect directly to the LCD console unit. Use optional Server Switch Units to connect more than eight servers.

LCD Console Unit



A 17-inch LCD, keyboard, mouse, and Server Switch Unit (x8) are integrated into the 1U LCD Console Unit.

- 17-inch LCD Console Unit (1U/8port) [N8143-69F]
Consists of the following components:

17-inch LCD
1280x1024 max. Full color

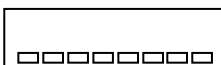
Keyboard (no ten-key numeric keypad)

Optical Mouse

Server Switch Unit
- Supports up to eight servers.
- Allows the connection of up to 64 servers by cascading the Server Switch Units [N8191-10F].

Switch Unit Connection Cable Set (1.8m)
[K410-119(1A)]

Server Switch Unit

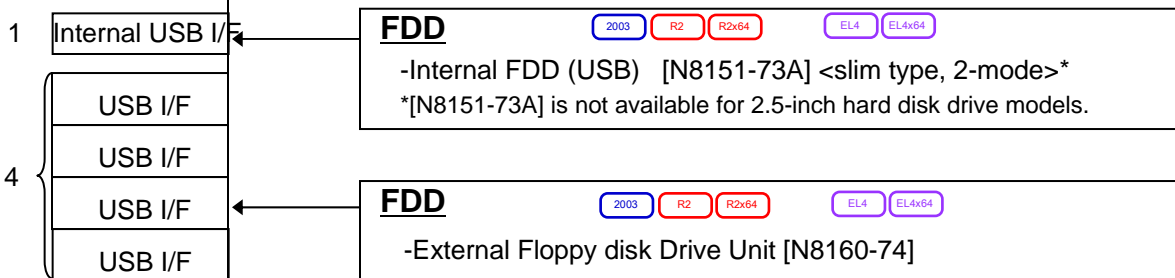


- Server Switch Unit (8 ports) [N8191-10F]

- The 17-inch LCD Console Unit [N8143-69F] allows the connection of up to 64 servers by cascading eight Server Switch Units [N8191-10F].
- The 17-inch LCD Console Unit [N8143-69F] does not support other SSUs [N8191-09F/-09AF].



- Provide either a Built-in or an External FDD for maintenance and OS installation purpose.
- Automatic System Recovery of Windows Server 2003 operating system and Disaster Recovery Option of backup software are available for both FDD.



- Each of the front and rear panels features two USB ports.



- Standard on-board LAN interfaces can configure AFT/ALB.
- Standard LAN interface and optional LAN board cannot configure AFT/ALB.

(Front panel)

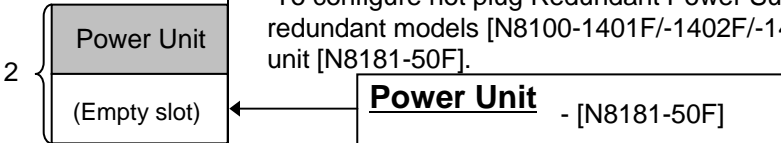


- One serial I/F is on the front panel and the other is on the rear panel.

(Rear panel)



- One power unit is supplied as standard.
- To configure hot plug Redundant Power Supply in the 120Rh-1 (except non-redundant models [N8100-1401F/-1402F/-1405F]), use an optional power supply unit [N8181-50F].

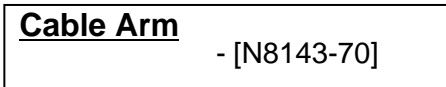


***An empty power unit slot is not provided in N8100-1401F/-1402F/-1405F.**



- The 120Rh-1 (except non-redundant models [N8100-1401F/-1402F/-1405F]) is equipped with redundant cooling fans as standard.
- Additional cooling fans cannot be installed.

Rack mount option



- The Cable arm [N8143-70] is used to bundle cables at rear.
- The dimension with the Cable arm [N8143-70] is 485Wx890Dx43Hmm (including front bezel and protruding objects).

HDD Configuration

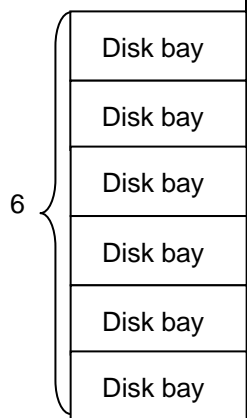
- Choose one configuration from the varieties below.
- The HDD carriers are NOT required for locally purchased non-NEC HDDs as the HDD carriers are provided with the main unit. See the “Information of Local Procurement” in the Chapter 2 for details.

HDD Configuration (1)
2.5-inch hard disk model
SAS / RAID0,1 / Hot Plug

2003 R2 R2x64
 EL4 EL4x64

HDD Configuration (2)
2.5-inch hard disk model model
SAS / RAID0,1,5,6 / Hot Plug

2003 R2 R2x64
 EL4 EL4x64



HDDs <2.5-inch SAS HDD>

- 36.3GB HDD (10,000rpm) [N8150-219]
- 73.2GB HDD (10,000rpm) [N8150-220]
- 146.5GB HDD (10,000rpm) [N8150-228]
- 36.3GB HDD (15,000rpm) [N8150-240]
- 73.2GB HDD (15,000rpm) [N8150-241]

The cables are provided with the main unit.

- **Allows up to six HDDs**
- Supports RAID0,1
- To configure RAID 5 and 6, a RAID Upgrade Kit [N8103-119] is required.

Inserted to a PCIe slot as standard

RAID controller (PCIe card installed in as standard)
 <PCIe (x8) RAID 0,1 128MB cache>

Additional DAC Battery
 - RAID Battery Backup Unit [N8103-120]

RAID Upgrade Kit
 For RAID 5/6 configuration
 - [N8103-119]

HDD Configuration (3)

2003 R2 R2x64

3.5-inch hard disk model

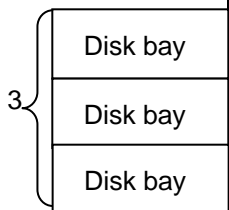
SATA / non-RAID / non-Hot Plug

HDD Configuration (4)

2003 R2 R2x64

3.5-inch hard disk model

SATA / RAID 0,1 / Hot Plug

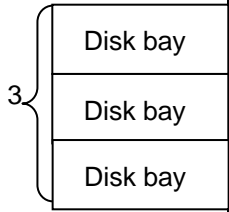


- HDDs** <3.5-inch SATA HDD>
- 80GB HDD (7,200rpm) [N8150-207A]
 - 160GB HDD (7,200rpm) [N8150-208A]
 - 250GB HDD (7,200rpm) [N8150-209A]
 - 500GB HDD (7,200rpm) [N8150-229]
 - 750GB HDD (7,200rpm) [N8150-237]

The cables are provided with the main unit.

- **Allows up to three HDDs**
- Supports RAID0,1 (LSI Logic Embedded MegaRAID™)

Internal Serial ATA I/F <Serial ATAII/300>



HDD Configuration (5)
3.5-inch hard disk model
SAS,SATA / RAID 0,1 / Hot Plug



- HDDs** <3.5-inch SATA HDD>
- 80GB HDD (7,200rpm) [N8150-207A]
 - 160GB HDD (7,200rpm) [N8150-208A]
 - 250GB HDD (7,200rpm) [N8150-209A]
 - 500GB HDD (7,200rpm) [N8150-229]
 - 750GB HDD (7,200rpm) [N8150-237]

The cables are provided with the main unit.

- HDDs** <3.5-inch SAS HDD>
- 36.3GB HDD (15,000rpm) [N8150-199]
 - 73.2GB HDD (15,000rpm) [N8150-200]
 - 146.5GB HDD (15,000rpm) [N8150-201]
 - 300GB HDD (15,000rpm) [N8150-226]

• **Allows up to three HDDs**

Internal SAS I/F

RAID controller
 - [N8103-116] <PCIe(x8), RAID 0/1, 128MB cache>

Insert into
PCIe slot

Additional DAC battery
 - RAID Battery Backup Unit [N8103-120]

HDD Configuration (6)
3.5-inch hard disk model
SAS,SATA / RAID 0,1,5 / Hot Plug

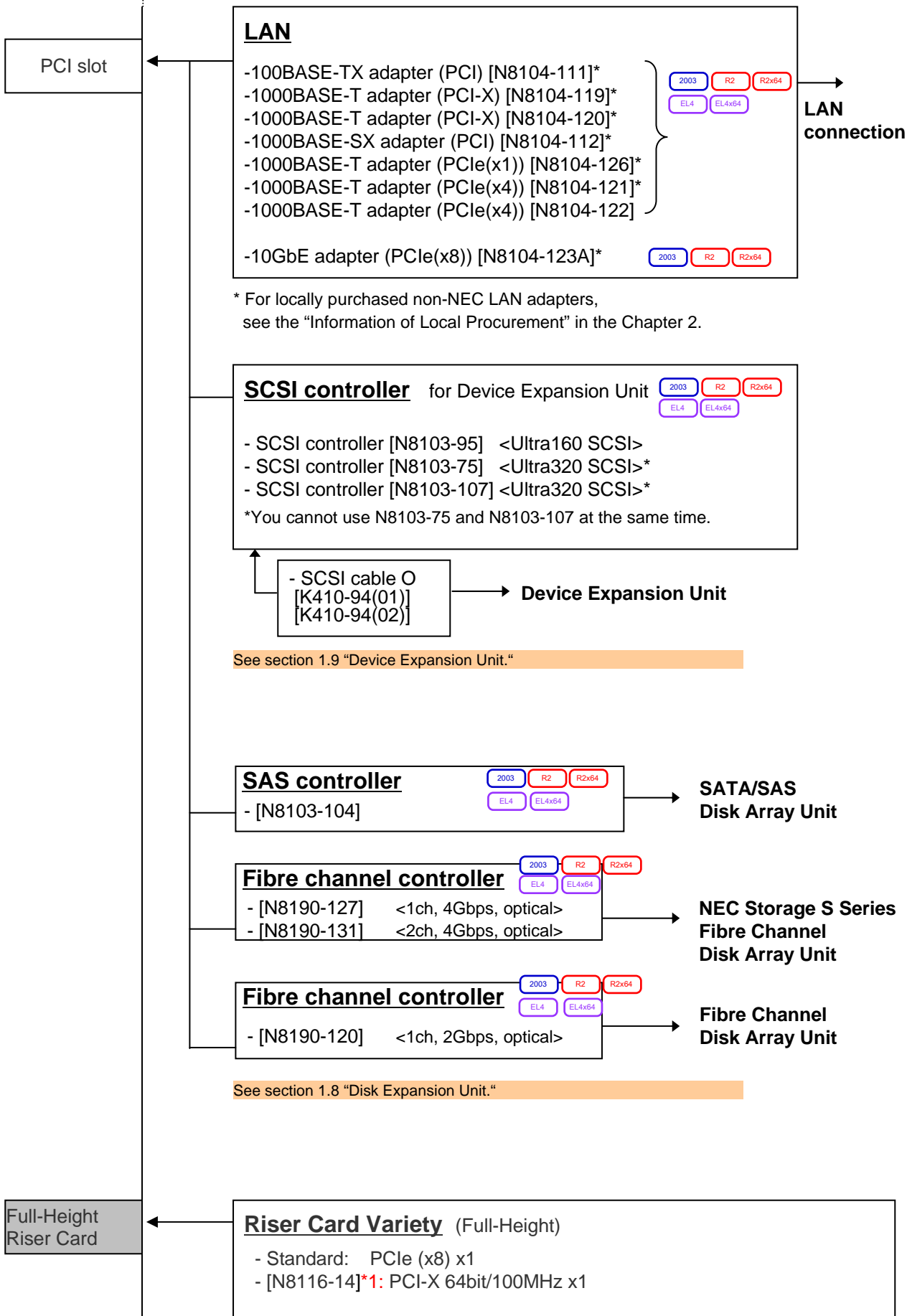


• **Allows up to three HDDs**

RAID controller
 - [N8103-117] <PCIe(x8), RAID 0/1/5, 128MB cache>

Insert into
PCIe slot

Additional DAC battery
 - RAID Battery Backup Unit [N8103-120]



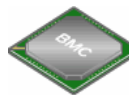
*1: The 2.5-inch hard disk drive models do not support the riser card [N8116-14].

Server Management (EXPRESSSCOPE Engine 2)

On-board
RAS chip

The 120Rh-1 features the *EXPRESSSCOPE Engine 2* remote management controller as standard. The optional Remote KVM and Media License [N8115-03] allows for advanced server management.

Standard



EXPRESSSCOPE Engine 2

- Features a dedicated LAN port (100BASE-TX/10BASE-T) for remote sever management
- No PCI slot is required.

SystemGlobe DianaScope 1 license (or equivalent of [UL1198-001])

- For additional licenses:
SystemGlobe DianaScope 1 license [UL1198-001]
SystemGlobe DianaScope 10 licenses [UL1198-011]

Option

Remote KVM and Media License [N8115-03]

The Remote KVM and Media License enables remote console and remote media features as the extended functionality of EXPRESSSCOPE Engine 2.

Remote console

Displays a graphics console on the web browser of remote terminals (PC/servers)
Controls remote terminals' keyboard and mouse via the web browser

Remote media

Provides access to the CD/DVD/FD on the remote terminals (PCs/servers) as if the user were accessing the drives locally.

120Rh-1 server management functions

		EXPRESSSCOPE Engine 2	EXPRESSSCOPE Engine 2 + DianaScope	EXPRESSSCOPE Engine 2 with Remote KVM and Media License [N8115-03]	EXPRESSSCOPE Engine 2 with Remote KVM and Media License [N8115-03] + DianaScope
Monitoring server	Monitor temperature /voltage /FAN /degeneration (CPU/memory)	X	X	X	X
	Collecting hardware event log	X	X	X	X
Stole monitoring /Automatic reboot	Monitor booting, BIOS/POST stall, OS stall, shutdown	X	X	X	X
Alerting	HW err, Boot err and OS panic (by SNMP, E-Mail) (via LAN)	X	X	X	X
	HW err, boot err, and OS panic (via COM port (modem))	X	X	X	X
Remote console (via COM port/LAN)	POST/BIOS setup, DOS utility	-	X	X	X
	Panic screen, Boot screen	x*1	X	X	X
	CUI screen (OS console)	x*2	X	X	X
	GUI screen (OS console)	-	X	X	X
Remote controlling (via COM port/LAN)	Remote reset/power on-off/dump	X	X	X	X
	OS Shutdown	X	X	X	X
	Remote media (CD/DVD/FD) (via LAN)	-	-	X	X
	CLP (Command Line Protocol, DMTF compliant)	X	X	X	X
	Remote control via Web browser (not required dedicated AP)	X	X	X	X
	Remote batch	-	X	-	X
	Scheduling (not requiring UPS)	-	X	-	X
Maintenance	Remote boot (PXE boot), maintenance partition boot	X	X	X	X
Others	Automatic IP address setting via DNS/DHCP	X	X	X	X
Remote wakeup	Wake On LAN, Wake On Ring	X	X	X	X
Group management	Monitoring/controlling by the group	-	X	-	X
Industry standard	IPMI	2.0	2.0	2.0	2.0

Note: all features are independent of OS status.

*1 Boot screen only.

*2 Via COM port only.

Optional Boards and Adaptable Expansion Slots

3.5-inch hard disk drive models

[N8100-1394F/-1395F/-1396F/-1397F/-1439F/-1398F/-1401F/-1402F/-1405F]

N code	Product name	Standard	Standard *2	Option [N8116-14] *2	Note
		PCIe	PCIe	PCI-X	
		#1C	#1B	#1B	
		x8	x8	64bit/100MHz	
		Slot size (Full-height or LowProfile)	LowProfile	Full-height	
Supported board type	x8	x8	3.3V		
Installable board size *1	MD2	Long/Short	Long/Short		
N8103-95	SCSI controller (64bit/66MHz PCI)	-	-	O	Not for internal HDDs
N8103-75	SCSI controller (64bit/133MHz PCI-X)	-	-	O	Not for internal HDDs Do not use with N8103- 107.
N8103-107	SCSI controller (PCI EXPRESS (x1))	O	O	-	Not for internal HDDs Do not use with N8103-75.
N8103-104	SAS controller (PCI EXPRESS (x8))	O	O	-	Not for internal HDDs
N8103-116	RAID controller (RAID 0/1, 128MB) (PCI EXPRESS (x8))	-	O	-	
N8103-117	RAID controller (RAID 0/1/5/6, 128MB) (PCI EXPRESS (x8))	-	O	-	
N8190-120	Fibre channel controller (64bit/133MHz PCI-X)	-	-	O	
N8190-127	Fibre channel controller (1ch, 4GbFC, LP) (PCI Express (x4))	O	O	-	
N8190-131	Fibre channel controller (2ch, 4GbFC, LP) (PCI Express (x4))	O	O	-	
N8104-111	100BASE-TX adapter (32bit/33MHz PCI)	-	-	O	
N8104-119	1000BASE-T adapter (1port) (64bit/133MHz PCI-X)	-	-	O	
N8104-126	1000BASE-T adapter (PCIe) (PCI Express (x1))	O	O	-	Max. 1 *3, *4
N8104-120	1000BASE-T (2 port) (64bit/133MHz PCI-X)	-	-	O	
N8104-121	1000BASE-T adapter (2 port) (PCI Express(x4))	-	O	-	*3, *4
N8104-122	1000BASE-T adapter (2 port) (PCI-Express (x4))	O	-	-	*3, *4
N8104-112	1000BASE-SX adapter (64bit/133MHz PCI-X)	-	-	O	
N8104-123A	10GbE adapter (1 port) (PVI Express (x8))	O	O	-	Max. 1

*1 Maximum board length

Full Height short: up to 173.1mm long: up to 312mm

Low Profile MD1: up to 119.9mm MD2: up to 167.6mm

*2 By replacing the standard riser card with an optional Riser Card [N8116-14], the Full-Height PCI-Express x8 slot becomes a 64bit/100MHz PCI-X slot.

*3 You cannot configure AFT and ALB across two different LAN boards.

*4 10BASE-T is not supported.

Note:

You cannot create an AFT or ALB team across the standard LAN interface and optional LAN board.

Optional Boards and Adaptable Expansion Slots

2.5-inch hard disk drive models

[N8100-1388F/-1389F/-1390F/-1391F/-1438F/-1392F]

N code	Product name	Standard	Standard	Note
		PCIe	PCIe	
		#1C	#1B	
		x8	x8	
		Slot size (Full-height or LowProfile)	LowProfile	
Supported board type	x8	x8		
Installable board size *1	MD2	Long/Short		
-	RAID controller (RAID 0/1, 128MB) (PCI EXPRESS (x8))	-	O	Installed as standard
N8103-107	SCSI controller (PCI EXPRESS (x1))	O	-	Not for internal HDDs
N8103-104	SAS controller (PCI EXPRESS (x8))	O	-	Not for internal HDDs
N8190-127	Fibre channel controller (1ch, 4GbFC, LP) (PCI Express (x4))	O	-	
N8190-131	Fibre channel controller (2ch, 4GbFC, LP) (PCI Express (x4))	O	-	
N8104-126	1000BASE-T adapter (PCIe) (PCI Express (x1))	O	-	*2, *3
N8104-122	1000BASE-T adapter (2 port) (PCI-Express (x4))	O	-	*2, *3
N8104-123A	10GbE adapter (1 port) (PVI Express (x8))	O	-	

*1 Maximum board length

Full Height short: up to 173.1mm long: up to 312mm

Low Profile MD1: up to 119.9mm MD2: up to 167.6mm

*2 You cannot configure AFT and ALB across two different LAN boards.

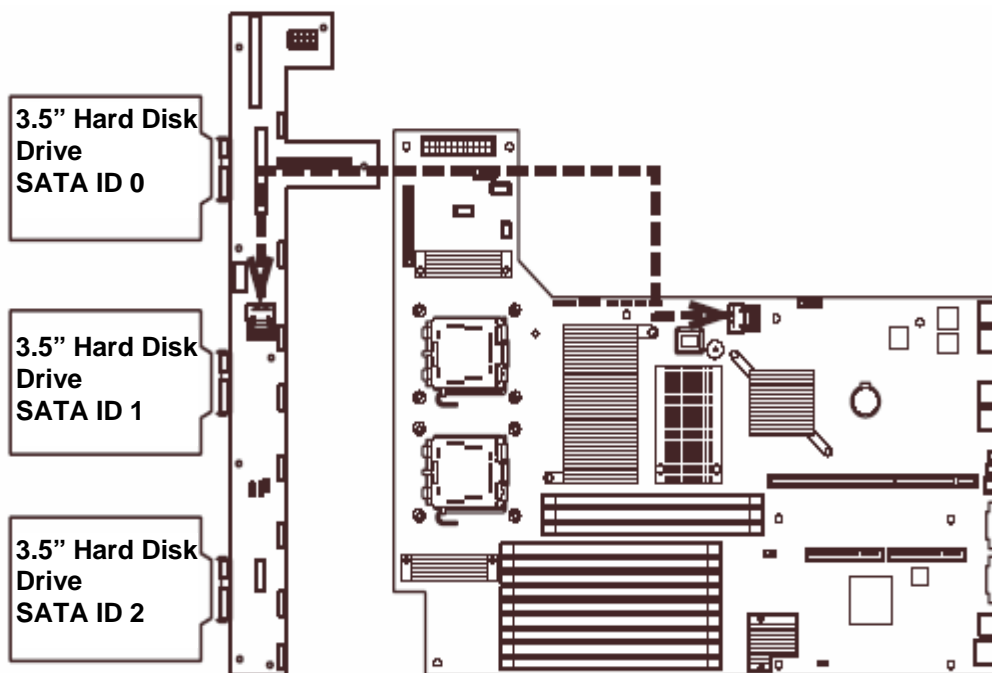
*3 10BASE-T is not supported.

Note:

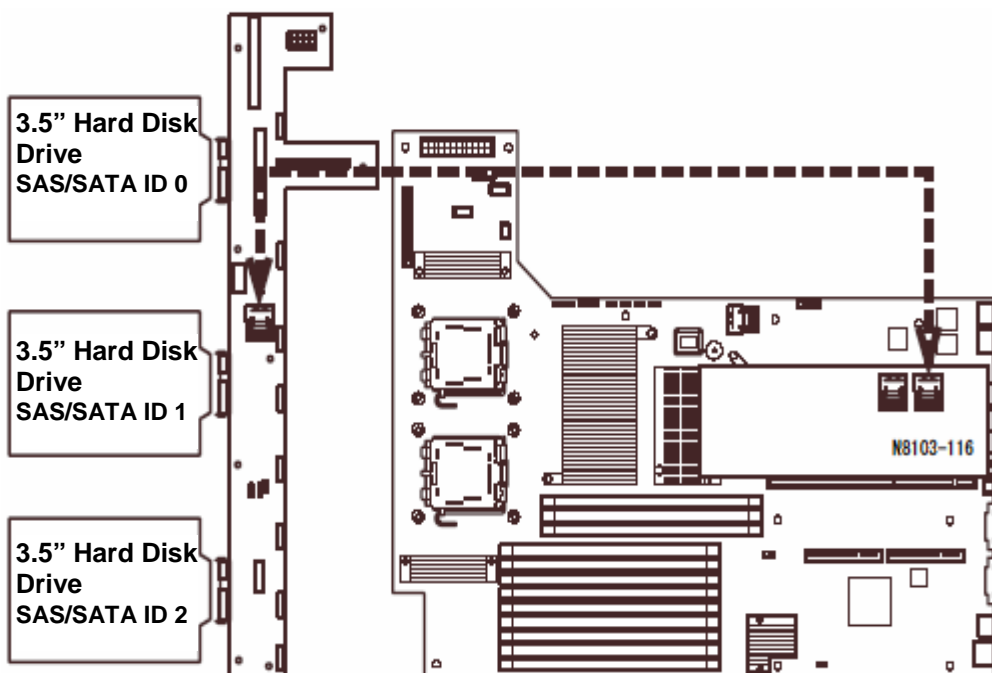
You cannot create an AFT or ALB team across the standard LAN interface and optional LAN board.

Adding File Devices

1. Standard Configuration of 3.5-inch hard disk drive models



2. 3.5-inch hard disk drive models with the optional RAID Controller [N8103-116]



3. Standard Configuration of the 2.5-inch Hard Disk Drive Models

