NEC

User's Guide

NEC Express Server
Express5800 Series

Express5800/D120h
EXP710, EXP711, EXP712

Chapter 1 General Description

Chapter 2 Preparations

Chapter 3 Setup

Chapter 4 Appendix

10.117.01-101.03
October 2019

Manuals

Attached as a book	
Safety Precautions and Regulatory Notices	Describes points of caution to ensure the safe use of this server. **Read these cautions before using this server.**
Getting Started	Describes how to use this server, from unpacking to operations. See this guide first and read the outline of this product.
Included into EXPRESSBUILDER as an electronic manual	
User's Guide	
Chapter 1: General Description	Overviews, names, and functions of the server's parts
Chapter 2: Preparations	Installation of additional options, connection of peripheral devices, and suitable location for this server
Chapter 3: Setup	System BIOS configurations and summary of EXPRESSBUILDER
Chapter 4: Appendix	Specifications and other information
Installation Guide (Windows)	
Chapter 1: Installing Windows	Installation of Windows and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, Universal RAID Utility, and other bundled software
Maintenance Guide	
Chapter 1: Maintenance	Server maintenance and troubleshooting
Chapter 2: Useful Features	The details of system BIOS settings, RAID Configuration Utility, and EXPRESSBUILDER
Chapter 3: Appendix	Error messages and Windows Event Logs
Other manuals	
The details of NEC ESMPRO, Universal RAID Utility, and the other features	

Contents

Manuals 2

Contents 3

Conventions Used in This Document 6
- Signs and symbols for safety 6
- Notations used in the text 7
- Hard disk drive 7
- Removable media 7
- Abbreviations of Operating Systems (Windows) 8
- Abbreviation of Power On Self-Test 8
- Abbreviation of Baseboard Management Controller 8
- Abbreviation of Chassis Management Controller 8

Trademarks 9

License Agreement Notice 10

Warnings and Additions to This Document 12
- Latest editions 12
- Safety notes 12
- Warning labels 13
- Handling precautions 14

Chapter 1 General Description 16

1. Introduction 17

2. Accessories 18

3. Features 19

4. Names and Functions of Parts 22
- **4.1** Front View 22
- **4.2** Rear View 23
- **4.3** External View 25
- **4.4** Internal View 26
- **4.5** Motherboard 28
- **4.6** Status Indicators 29
  - *4.6.1* POWER LED ( ) 29
  - *4.6.2* STATUS LED ( ), CMC STATUS LED ( ) 29
  - *4.6.3* UID LED 30
  - *4.6.4* LED on a hard disk drive 32
  - *4.6.5* LEDs for LAN connectors 33
  - *4.6.6* AC POWER LED on Power Unit 34

Chapter 2 Preparations 35

1. Installing Internal Optional Devices 36
- **1.1** Safety Precautions 36
- **1.2** Overview of Installation and Removal 37
- **1.3** Identifying Server (UID Switch) 38
- **1.4** Removing Server Module 39
- **1.5** Processor (CPU) 40
  - *1.5.1* Maximum number of processor cores supported by this server 40
  - *1.5.2* Installation 40
  - *1.5.3* Replacement / Removal 43

1.6 DIMM 44
1.6.1 Maximum supported memory size 44
1.6.2 Memory Clock 45
1.6.3 DIMM installation order 46
1.6.4 Installation 49
1.6.5 Removal / Replacement 49
1.7 LAN Mezzanine (N8104-168/N8104-170) 50
1.7.1 Installing LAN Mezzanine 50
1.7.2 Removing LAN Mezzanine 51
1.8 PCI Card 52
1.8.1 Precautions for PCI card 52
1.8.2 Supported cards and available slots 52
1.8.3 Installation 57
1.9 Use of Internal Hard Disk Drives in the RAID System 73
1.9.1 Connecting cables 74
1.9.2 Notes on Building RAID System 75
1.10 Hard Disk Drive 76
1.10.1 Installation 77
1.10.2 Removal 78
1.10.3 Replacing a hard disk drive in the RAID System (Auto Rebuild) 79
1.11 VMware ESXi Base Kit (N8106-012) 80
1.11.1 Installation 80
1.11.2 OS installation 82
1.11.3 Removal 82
1.12 Power Supply Unit 83
1.12.1 Cold Redundant Feature 83
1.12.2 Replacing a failing power supply unit 83
1.13 TPM kit (N8115-31) 85
1.13.1 Installation 85
1.14 Additional RS-232C connector (N8117-01A) 86
1.14.1 Installation 86

2. Installation and Connection 87
2.1 Installation 87
2.1.1 Installing Rack 87
2.1.2 Installing the server to the rack or removing it from the rack 89
2.1.3 Installation/Removal of server module 94
2.1.4 Installation of blank module (N8141-85F) 96
2.2 Connection 97
2.2.1 Connecting to Uninterruptible Power Supply (UPS) 99

Chapter 3 Setup 100

1. Turning on the Server 101
1.1 POST 103
1.1.1 POST sequence 103
1.1.2 POST error messages 104

2. BIOS Setup Utility (SETUP) 105
2.1 Overview 105
2.2 Starting SETUP Utility 105
2.3 Usage of SETUP 106
2.4 Cases That Require Configuration 108

3. BMC/CMC 110
3.1 Overview 110
3.2 BMC/CMC Network Configuration 111

4. EXPRESSBUILDER 114
4.1 Features of EXPRESSBUILDER 114
4.2 Usage of EXPRESSBUILDER 114

5. Installing Software Components 115

6. Turning Off the Server 116

Chapter 4 Appendix 117

1. Specifications 118
   1.1 Server Module 118
   1.2 Module Enclosure 121

2. Glossary 122

3. Revision Record 123

Conventions Used in This Document

Signs and symbols for safety

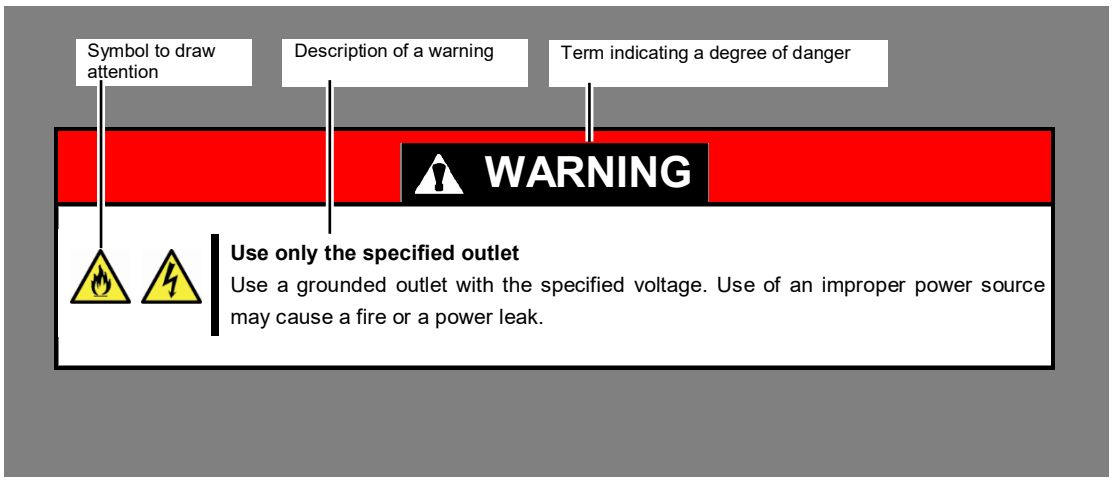
WARNING and **CAUTION** are used in this guide as following meaning.

⚠ WARNING	Indicates there is a risk of death or serious personal injury
⚠ CAUTION	Indicates there is a risk of burns, other personal injury, or property damage

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	**Attention**	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type.	(Example)  (Electric shock risk)
	**Prohibited Action**	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action.	(Example)  (Do not disassemble)
	**Mandatory Action**	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard.	(Example)  (Disconnect a plug)

(Example in this guide)



Notations used in the text

In addition to safety-related symbols urging caution, three other types of notations are used in this document. These notations have the following meanings.

Important	Indicates critical items that must be followed when handling hardware or operating software. If the procedures described are not followed, **server failure, data loss, and other serious malfunctions could occur**.
Note	Indicates items that must be confirmed when handling hardware or operating software.
Tips	Indicates information that is helpful to keep in mind when using this server.

Hard disk drive

Unless otherwise stated, *hard disk drive* described in this document refer to both of the following.

- **Hard disk drive (HDD)**
- **Solid state drive (SSD)**

Removable media

Unless otherwise stated, *removable media* described in this document refer to both of the following.

- **USB flash drive**
- **Flash FDD**

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

See *Chapter 1* (*1.2 Supported Windows OS)* in *Installation Guide (Windows)* for detailed information.

Notations in this document	Official names of Windows
Windows Server 2016	Windows Server 2016 Standard
	Windows Server 2016 Datacenter
Windows Server 2012 R2	Widnows Server 2012 R2 Standard
	Widnows Server 2012 R2 Datacenter

Abbreviation of Power On Self-Test

“POST” means the following feature in this manual.

- Power On Self-Test

Abbreviation of Baseboard Management Controller

“BMC” means the following feature in this manual.

- Baseboard Management Controller

Abbreviation of Chassis Management Controller

“CMC” means the following feature in this manual.

- Chassis Management Controller

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UEFI NETWORK STACK 2

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The most recent version of User's Guide, as well as other related documents, is also available for download from the following website.

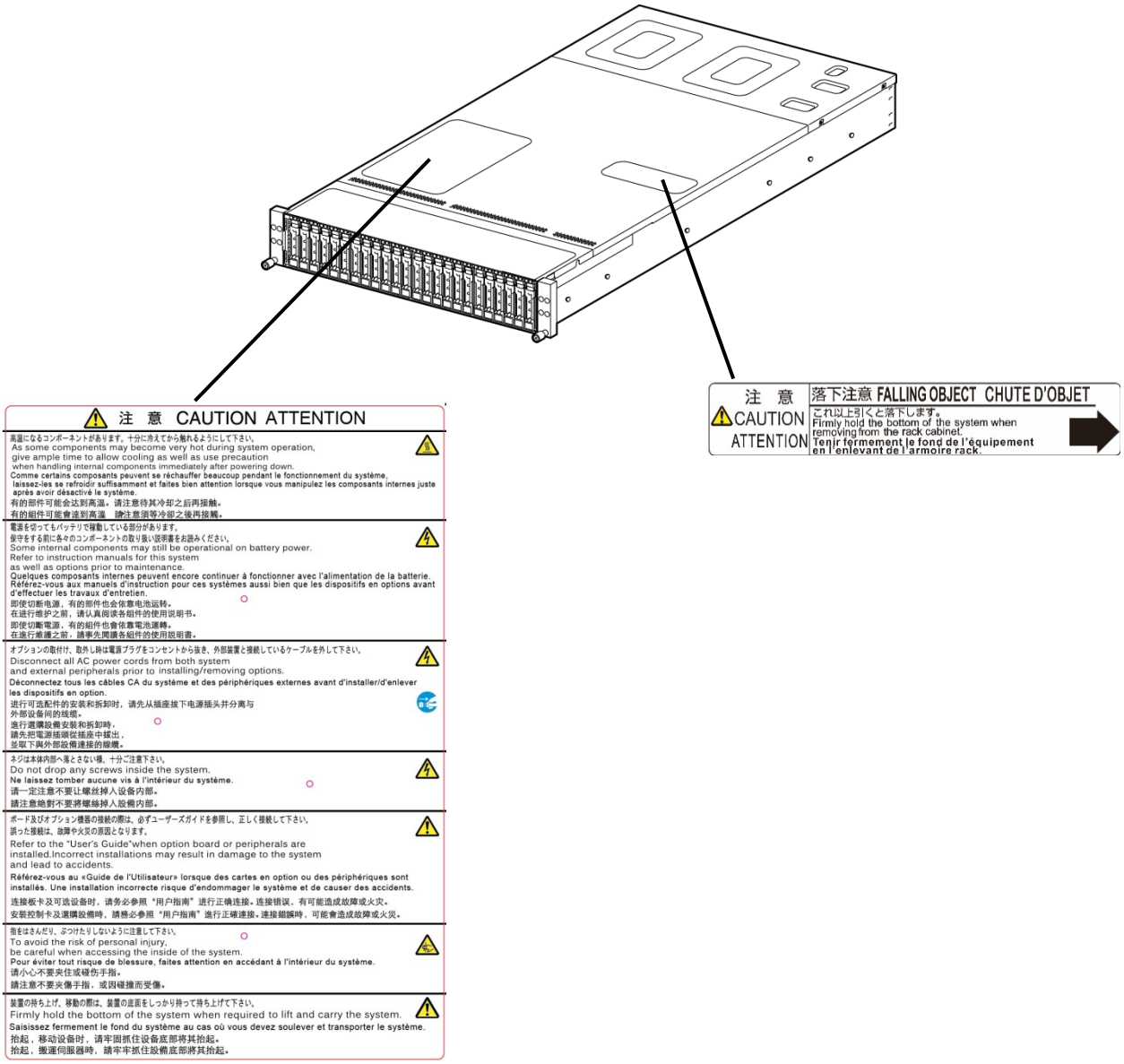
http://www.nec.com/

Safety notes

To use this server safely, read thoroughly "*Safety Precautions and Regulatory Notices*" that comes with your server.

Warning labels

Warning labels are attached on or near the components with potential hazards. This label is either attached or printed on the component. Do not remove or black out this label and keep it clean. If no label is attached or printed on the server, or if there is a label coming off or stained, contact your sales representative.



Handling precautions

Be sure to observe the following precautions for the proper functioning of the server. Ignoring the precautions may cause server malfunction or failure.

- **Do not use any cellphones and switch off them near the server. Electric waves from such devices can cause server to malfunction.**
- **Install the server in an appropriate place. For details, see *Chapter 2 Preparations (2. Installation and Connection)*.**
- **Before connecting/removing cables to/from peripheral devices, make sure that the server is off and unplug the power cord, if they are not plug-and-play devices.**
- **Connect the provided power cord to a 100/200 VAC outlet.**
- **Do not press the POWER switch until the UID LED (lighting in blue) goes out after connecting the power cord of this machine to an outlet or mounting the server module.**
- **Make sure that the access LED on the server is off before turning off the power or ejecting an optical disk.**
- **Wait for at least 30 seconds before connecting power cord to power outlet after disconnecting it.**
- **Wait for at least 20 seconds before inserting a server module after removing it.**
- **If any Uninterruptible Power Supply (UPS) unit is connected, set it to wait for at least 30 seconds before turning on the server after power off.**
- **Wait for at least 30 seconds before turning on the server after turning off the server.**
- **Turn off the server and unplug the power cord before moving it.**
- **Regularly clean the server to prevent various types of failure. For details, see *Chapter 1 Maintenance (2. Daily Maintenance)* in "*Maintenance Guide*".**
- **Momentary voltage drop may occur due to lightning strike. To prevent this, use of UPS is recommended.**
- **We do not support that any copy-protected CD that does not conform to standards will play on the server's optical disk drive.**
- **In the following cases, check and adjust the system clock before operation.**
  - After transportation
  - After storage
- **Observe the storage conditions (Temperature: –10°C to 55°C, Humidity: 20% to 80%, No condensation of moisture) to store the server.**
- **Do not power off or reset the server, nor disconnect the power cord before POST completes.**
- **If this server, internal optional devices, and media set for the backup devices (tape cartridges) are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and failures when these are used in such state. To protect important stored data and property, make sure to wait for a sufficient period to use the server and components in the operating environment.**

  Reference: Time effective at avoiding condensation in winter (more than 10°C differences between the room temperature and atmospheric temperature)

  Disk devices: Approximately 2 to 3 hours Tape media: Approximately 1 day
- **This server does not support hibernation and standby mode.**
- **For optional devices, we recommend you use our NEC products. Even if they are successfully installed or connected, installation of unsupported devices can cause the server to malfunction or even failure. You will be charged to repair failure or damage caused by use of such products even within warranty period.**

Tips for your health and safety

Using a computer extensively may affect different parts of your body. Here are tips you should follow while working on a computer to minimize strain on your body.

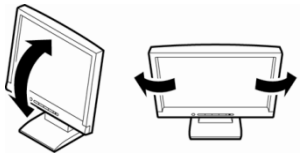
Keep proper posture

The basic body position for using a computer is sitting straight with your hands on the keyboard parallel with the floor, and your eyes directed slightly downward toward the monitor. With the proper posture described above, no unnecessary strain is applied on any part of your body, in other words when your muscles are most relaxed.

Working on the computer with bad posture such as hunching over or being too close to the monitor could cause fatigue or deteriorated eyesight.

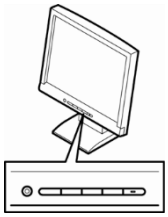
Adjust the angle of your display

Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. Working without adjusting the display to a comfortable angle makes it difficult for you to maintain a proper posture and you will get tired easily. Adjust the viewing angle before use.



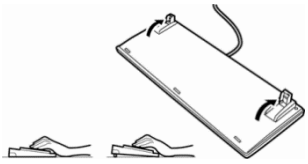
Adjust the brightness and contrast of the display

Display screens have functions to control brightness and contrast. The most suitable brightness/contrast depends on age, individuals, and environment, so adjust it to suit your preferences. A too bright or too dark display is bad for your eyes.



Adjust the angle of keyboard

Some keyboards are ergonomically designed, which allow the angle to be adjusted. Adjusting the angle of the keyboard is effective to reduce tension on your shoulders, arms, and fingers.



Clean your equipment

Keeping your equipment clean is important not only for the appearance but also for functional and safety reasons. A dusty monitor makes it difficult to see the display contents, so clean it regularly.

Take rest breaks

When you feel tired, take a break. Light exercise is also recommended.

NEC Express5800 Series
Express5800/D120h

1

General Description

This chapter introduces the features of this server and the name of each part.

1. **Introduction**

2. **Accessories**
   Describes the accessories of the server.

3. **Features**
   Describes the features of the server and server management.

4. **Names and Functions of Parts**
   Describes the name of each part contained in this server.

1. Introduction

Thank you for purchasing this NEC Express5800 Series product.

This high performance server is powered by the latest microprocessor "Intel Xeon processor".

NEC's latest technology and architectures realize high-power and high-speed operation that cannot be matched by existing servers.

The server is designed with consideration of not only reliability but also expandability, which enables you to use it as a network server.

Read this document before using the server thoroughly to fully understand handling of Express5800 Series Server and appreciate its functions to the maximum extent.

2. Accessories

The carton box contains various accessories which are required for setup or maintenance. **Make sure you have them all** for future use.

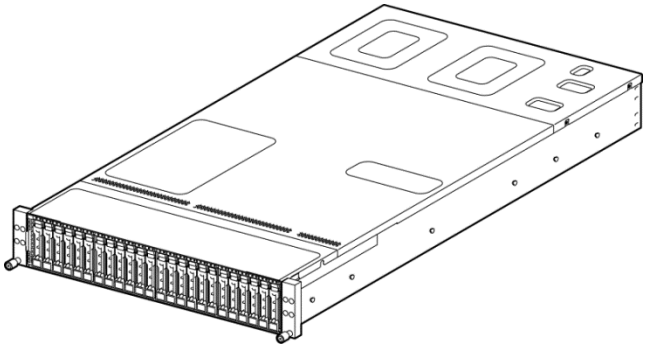
- **Safety Precautions and Regulatory Notices**
- **Getting Started**

Make sure you have all accessories and inspect them. If an accessory is missing or damaged, contact your sales representative.

Important **The chassis serial number plate and maintenance label is located on the server. If the serial number does not match the number on the warranty, you may not be guaranteed against failure even within the warranty period. Contact your sales representative if they do not match.**

3. Features

The server has the following features:



High density, space-saving server

- 2U chassis can contain four server modules to achieve installation density twice higher than the typical rack-mount server mounted in 1U chassis.
- 2U chassis can contain four server modules. GPGPU with which 1U server modules are not compatible can be secured.
- Allows access from rear of the chassis to insert or remove the server module. Replacement of server module can be performed easily.

High performance

- Intel Xeon processor
  -N8101-1092 : Intel Xeon processor Bronze 3104 (1.70GHz 6Core)
  -N8101-1093 : Intel Xeon processor Bronze 3106 (1.70GHz 8Core)
  -N8101-1094 : Intel Xeon processor Silver 4108 processor (1.80GHz 8Core)
  -N8101-1095 : Intel Xeon processor Silver 4110 processor (2.10GHz 8Core)
  -N8101-1096 : Intel Xeon processor Silver 4114 processor (2.20GHz 10Core)
  -N8101-1097 : Intel Xeon processor Silver 4116 processor (2.10GHz 12Core)
  -N8101-1098 : Intel Xeon processor Gold 5118 processor (2.30GHz 12Core)
  -N8101-1367 : Intel Xeon processor Gold 5120 processor (2.20GHz 14Core)
  -N8101-1368 : Intel Xeon processor Gold 5122 processor (3.60GHz 4Core)
  -N8101-1069 : Intel Xeon processor Gold 6130 processor (2.10GHz 16Core)
  -N8101-1370 : Intel Xeon processor Gold 6132 processor (2.60GHz 14Core)
  -N8101-1371 : Intel Xeon processor Gold 6134 processor (3.20GHz 8Core)
  -N8101-1372 : Intel Xeon processor Gold 6132 processor (2.00GHz 20Core)
  -N8101-1373 : Intel Xeon processor Gold 6140 processor (2.30GHz 18Core)
  -N8101-1374 : Intel Xeon processor Gold 6142 processor (2.60GHz 16Core)
  -N8101-1375 : Intel Xeon processor Gold 6152 processor (2.10GHz 22Core)
  -N8101-1376 : Intel Xeon processor Platinum 8160 processor (2.10GHz 24Core)
  -N8101-1377 : Intel Xeon processor Platinum 8164 processor (2.00GHz 26Core)
  -N8101-1378 : Intel Xeon processor Platinum 8160M processor (2.10GHz 24Core)

- Turbo Boost Technology feature *1
- Hyper Threading Technology feature *1
- High-speed memory access (DDR4-2666 supported) *2
- Number of memory channels (Six channels of DDR4/CPU)
- High-speed disk access (SATA 6Gbps / SAS 12GB/s supported)

- High-speed 10GBASE-T/1000BASE-T/100BASE-TX/10BASE-T interface (10Gbps/1Gbps/100Mbps/10Mbps supported)
- Select High-speed 10GBASE-SFP+ (2 ports)/1000BASE-T/100BASE-TX /10BASE-T (4 ports) interface (10Gbps/1Gbps/100Mbps/10Mbps supported) to enables installation.

High reliability

- Processor throttle-ring feature
- Intel Ultra Path Interconnect function (UPI)
- Intel Volume RAID on Chip (VMD) technology
- Memory monitoring feature (error correction/error detection)
- Memory degeneracy feature (logical isolation of a failed device)
- Memory x4 SDDC feature
- Memory throttle-ring feature
- Bus parity error detection
- Temperature detection
- Error detection
- Internal fan monitoring feature
- Redundant cooling fan
- Internal voltage monitoring feature
- Power redundant feature (hot swapping supported)
- Power supply throttle-ring feature
- RAID (Disk Array) (optional disk array controller is required)
- Auto rebuild feature (hot swapping supported)
- BIOS password feature
- HDD (hot swapping supported)

Management Utilities

- NEC ESMPRO
- System BIOS and firmware management feature (ExpressUpdate)
- Remote controlling feature (BMC/CMC)
- RAID System management utility (Universal RAID Utility)
- Hard disk drive monitoring
- Power supply monitoring

Power saving and noiseless design

- Optimal power supply unit can be selected according to environment, workloads and system configuration
- Power consumption monitoring feature
- Power control feature
- 80 PLUS Platinum certified high efficiency power supply *4
- Fan control appropriate to environment, work load, and configuration
- Silent sound design
- Enhanced Intel SpeedStep Technology supported
- Cold redundant feature

Expandability (per 1 server module)

- Option slots
  Slot#1 PCI Express 3.0 (x16 lanes): 1 slot (Low profile)
  Slot#2 PCI Express 3.0 (x8 lanes): 1 slot (Low profile)
  Slot#3 PCI Express 3.0 (x16 lanes): 1 slot (Slot only for LAN mezzanine)
  Slot#4 PCI Express 3.0 (x16 lanes): 1 slot (Slot only for GPGPU), Only for 2U server modules

- Large capacity memory of up to 2TB *3
- Can upgrade to multi-processor system with up to two processors
- Expansion Bay (for hard disk drives): 6 slots/12 slots (12 slots are only for 2U server modules.)
- USB3.0 interface (Rear: 2 ports)
- Data LAN ports (2 ports) , Management LAN port (1 port), and LAN only for module enclosure management (1 port)
- With optional LAN card, 8 ports can be added.

Ready to use

- No cable connection is required to install a hard disk drive and additional power supply unit (hot swap supported).
- Slide rails for each installation

Many built-in Features

- Redundant power supply system supported
- El Torito Bootable CD-ROM (no emulation mode) format supported
- Software power-off
- Remote power-on feature
- AC-Link feature
- Remote console feature
- Baseboard Management Controller (BMC) conforming to IPMI v2.0
- Chassis Management Controller (CMC) conforming to IPMI v2.0

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D) utility

Easy setup

- BIOS Setup utility (SETUP)
- EXPRESSBUILDER (setup utility)

Maintenance features

- Allows access from rear of the chassis to insert or remove the server module. Replacement of server module can be performed easily.
- Feature to back up and restore BMC settings

*1: Unsupported on Xeon processor Bronze 3104/Bronze 3106.

*2: Processor core speed depends on processor type installed.

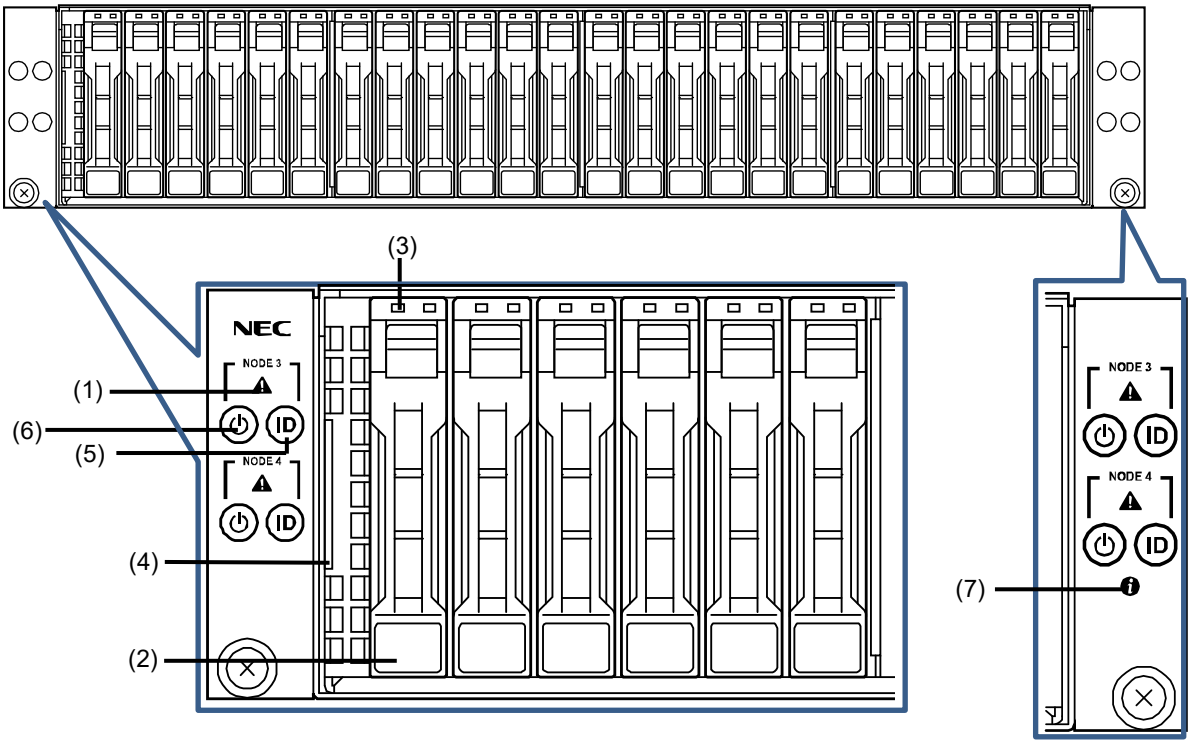
*3: In 2-CPU configuration. Up to 1 TB in 1-CPU configuration.

*4: N8181-154/155 power supply unit aquired 80 PLUS®Platinum certification.

4. Names and Functions of Parts

This section describes the names of the server parts.

4.1 Front View



(1) STATUS LED for the server module

This LED indicates the target server module status.

(2) 2.5-inch Hard Disk Drive Bay

Bays for installing HDDs. All bays include dummy trays.

(3) DISK LED

LEDs for showing the status of hard disk drives.

(4) Pull-out Tag

A tag for showing the model number and serial number of the server.

(5) Unit ID (UID) Switch/LED

A switch for turning on/off UID LED.

Pressing the switch once turns on UID LED and pressing again turns off the LED.

Commands from the software also cause it to turn on or blink.

(6) POWER Switch/LED

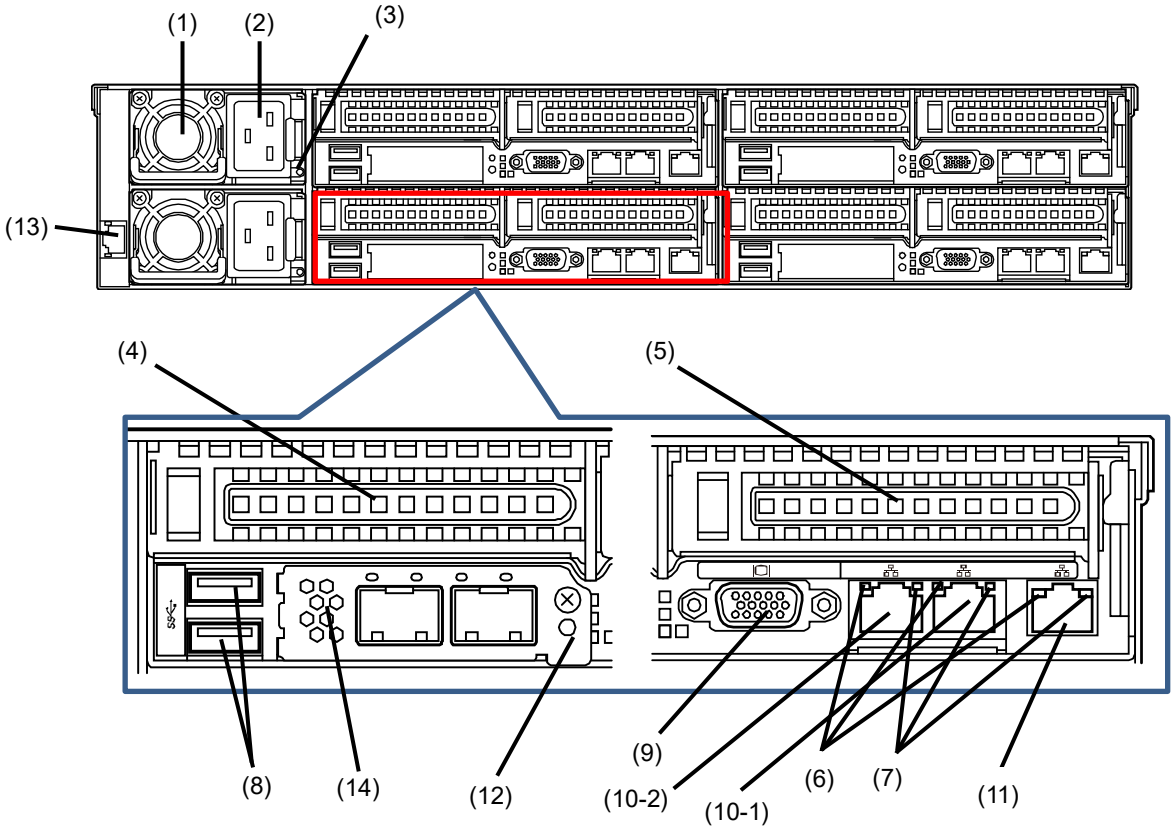
A switch for turning on/off the server. Press once to turn on the server. POWER LED lights when it is on. Press it again to turn off the server. Hold down the switch for four seconds or longer to forcibly turn off the server.

(7) STATUS LED for enclosure

This LED indicates the module enclosure status.

4.2 Rear View

<1U Server module>



(1) Power Unit

A power supply for supplying the DC power to the server.

(2) AC Inlet

A socket for connecting the power cord.

(3) AC POWER LED

An LED for showing the power supply status. (→4.6.6)

(4) Slot #1 for Low-profile PCI Card

A slot for installing a low-profile PCI card.

(5) Slot #2 for Low-profile PCI Card

A slot for installing a low-profile PCI card.

(6) SPEED LED

LEDs for showing the transfer speed of LAN ports.

(7) LINK/ACT LED

LEDs for showing the access status of LAN.

(8) USB connectors

Connectors for connecting USB interface devices.

(9) Display Connector

A connector for connecting a display.

(10) LAN Connectors

This connector is compatible with 10GBASE-T/ 1000BASE-T/100BASE-TX/10BASE-T and connected with the network system on LAN. “1” after the bracketed number indicates the LAN connector 1, while “2” indicates the LAN connector 2.

When “Shared BMC LAN feature” is enabled by the BIOS setting, the LAN connector 1 can be shared as the LAN only for the management. However, this feature is not recommended considering the performance and security since the data for both connectors may be sent or received.

(11) Management LAN Connector

A LAN connector which supports 1000BASE-T/100BASE-TX/10BASE-T.

This port cannot be used as a data transmission port.

This port is used for connecting to BMC.

(12) UID (Unit ID) LED

Push the UID button in the front panel, the UID LED will turn ON in the rear of the server. Push this button again, UID LED will turn off. This LED also can be controlled by software to ON, OFF or Blink.

(13) CMC Management LAN Connector

A LAN connector which supports 1000BASE-T/100BASE-TX/10BASE-T.

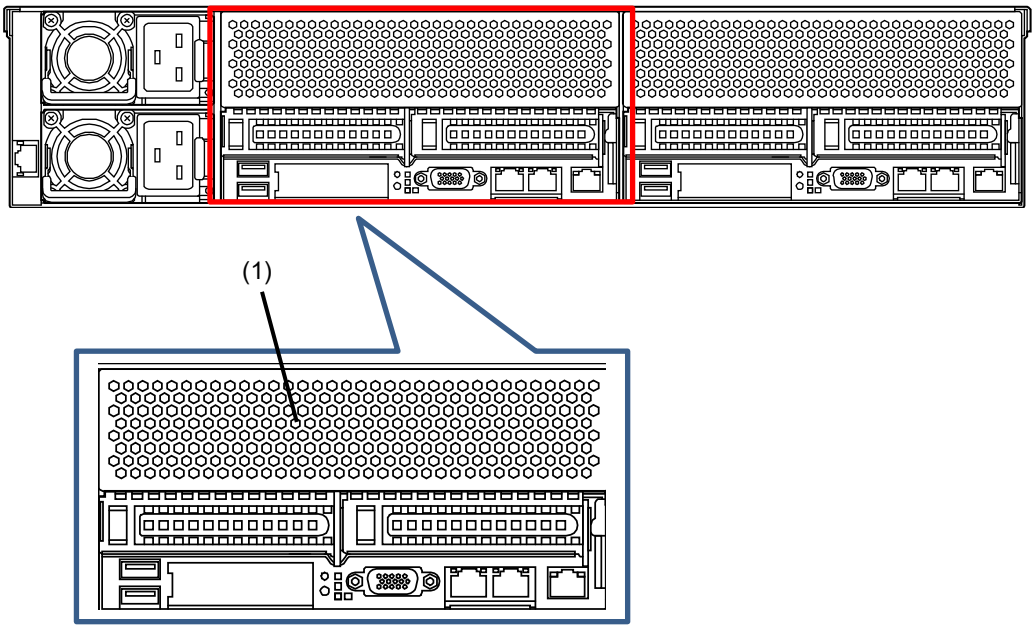
This port cannot be used as a data transmission port.

This port is used for connecting to CMC.

(14) Slot 3 for OCP Mezzanine

A slot for installing OCP Mezzanine.

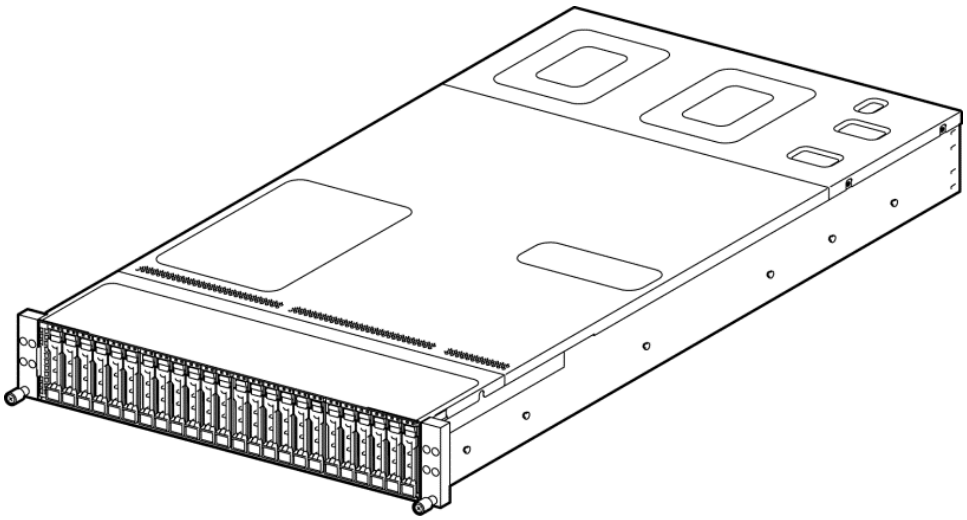
<2U Server module>



(1) Slot 4 for GPGPU

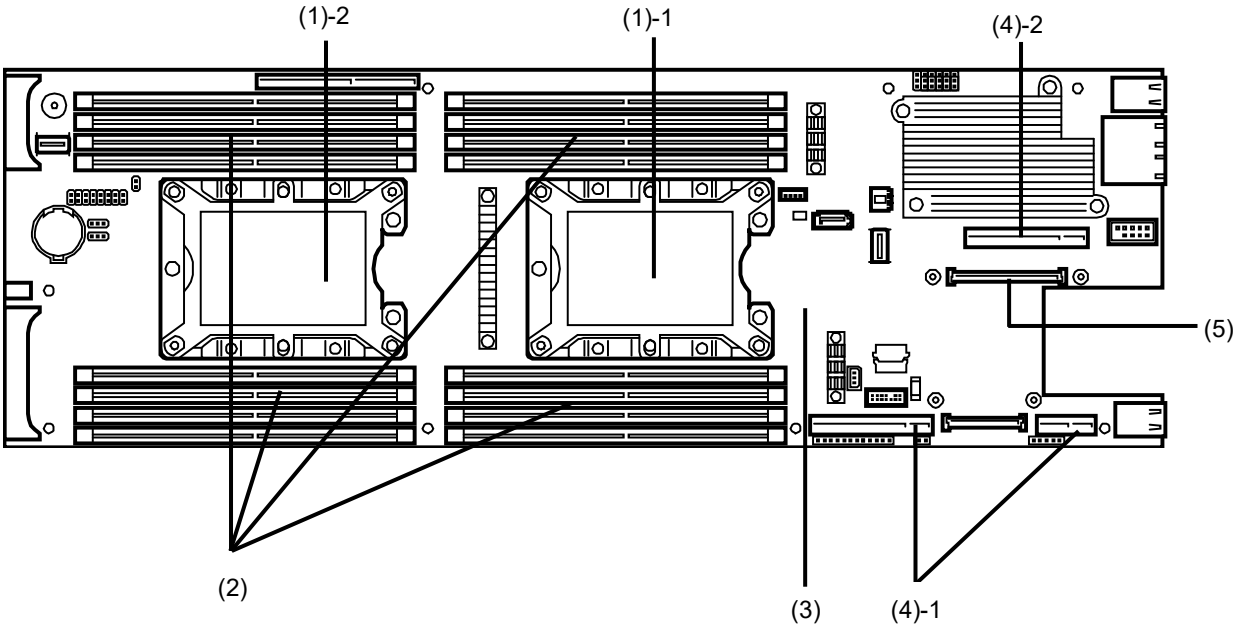
A slot for installing GPGPU.

4.3 External View



4.4 Internal View

1U Server Module



(1) Processor (CPU)

(1)-1 CPU-0

(1)-2 CPU-1

(2) DIMM (Option)

(3) Motherboard

(4) Riser Card

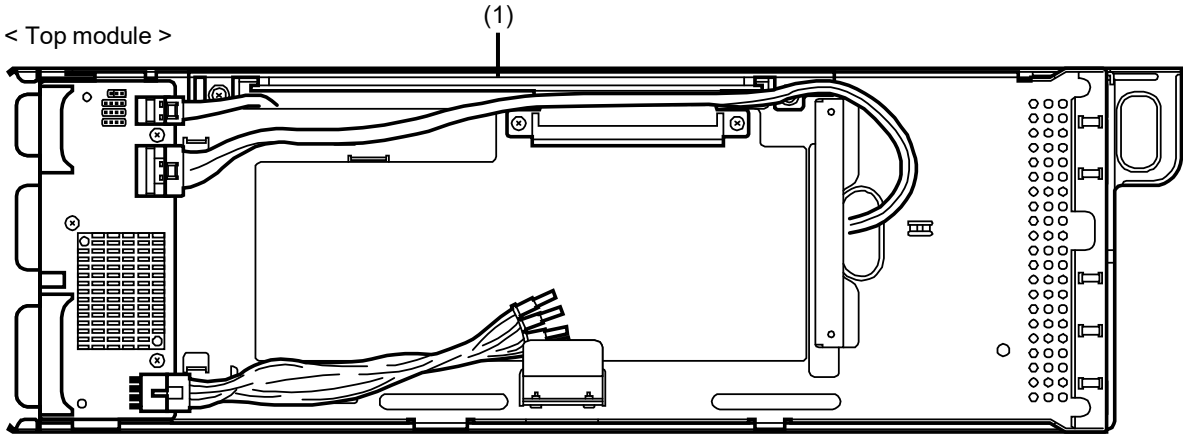
(4)-1 Riser card Slot 1

(4)-2 Riser card Slot 2

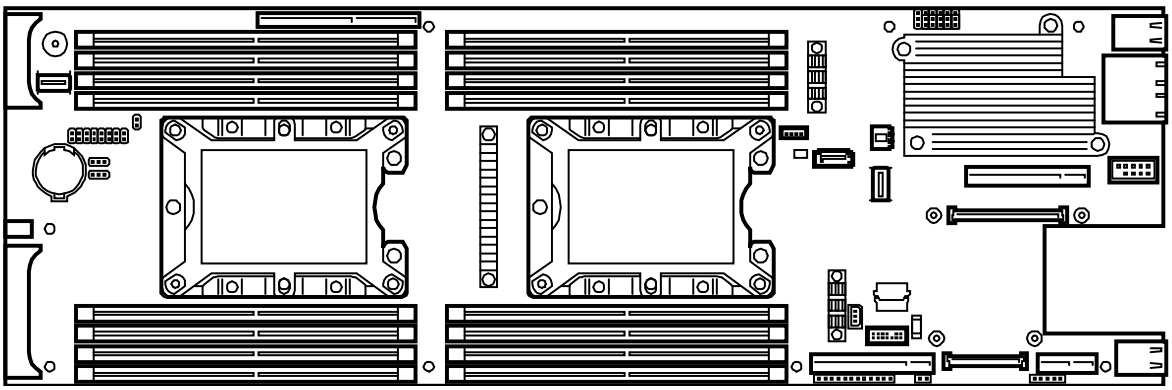
(5) Slot 3 only for Connection card (Slot only for the LAN mezzanine)

2U Server Module

< Top module >

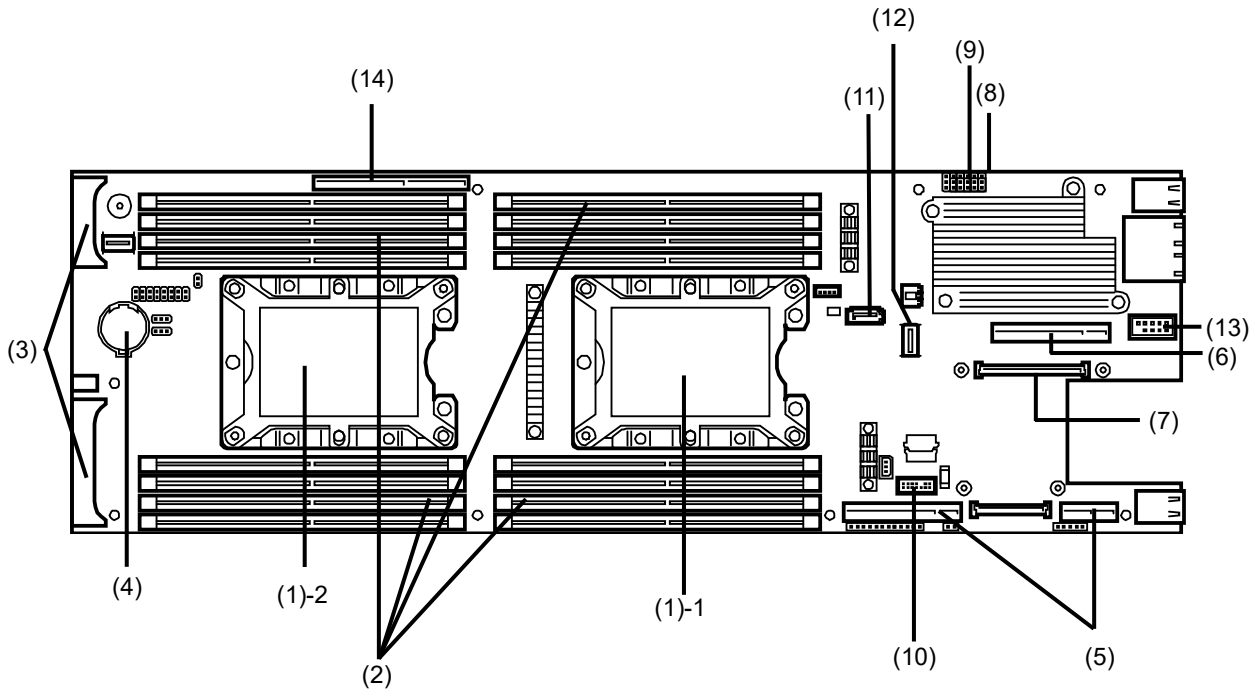


< Bottom module: The same module as 1U server module as shown on the previous page >



(1) Riser Card Slot 4 (Slot only for GPGPU)

4.5 Motherboard



(1) Processor (CPU) Socket

(1)-1: Processor #0 (CPU #0)
(1)-2: Processor #1 (CPU #1)

(2) DIMM Slot

See *Chapter 2 (1.6 DIMM)* for details on how to install a DIMM

(3) DC Power Connector

(4) Lithium Battery

(5) PCI Riser Card Connector 1(for low-profile card : Slot #1)

(6) PCI Riser Card Connector 2(for low-profile card : Slot #2)

(7) Connection card Connector #3(only for the LAN mezzanine: Slot #3)

(8) Clear NVRAM Jumper Switch

(9) Clear Password Jumper Switch

(10) Connector for TPM kits

(11) Connector for ESXi base kits

(12) SATA Connector

(13) Connector for the optional COM (only when using N8117-01A)

(14) Connector for GPGPU (Slot #4 only for GPGPU)

4.6 Status Indicators

4.6.1 POWER LED ( )

POWER LED indicates power ON/OFF status of the server.

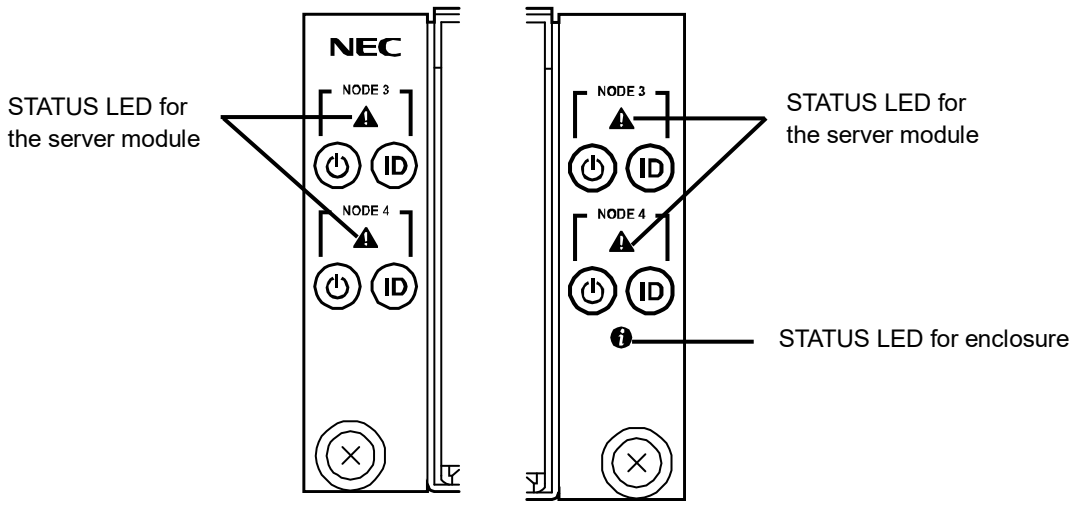
POWER LED pattern	Description
On (green)	The server is normally powered on.
Blinking (green)	The server is in sleep status.
Off	The server is off-powered. The server is in halt status.

4.6.2 STATUS LED (⚠), CMC STATUS LED (ⓘ)

While hardware is operating normally, STATUS LED for the server module/STATUS LED for enclosure light green.

If neither the STATUS LED nor STATUS LED for the server module/STATUS LED for enclosure is ON in green or OFF, this indicates an abnormality in this product.

Tips If you have installed NEC ESMPRO, you can view error logs to check the causes of failures.



If the LED indication does not change even if the action below is performed, contact your sales representative.

STATUS LED pattern	Description	Action
On (green)	The server is working normally.	–
Blinking (green)	Memory is in a degraded state, or a correctable memory error has often occurred.	Identify the device in degraded state by using BIOS Setup Utility (SETUP), and replace it as soon as possible.
Off	The power is off.	Turn on the server.
	Memory dump is being requested. Note: It remains green if the dump is caused by software.	Wait until the memory dump is completed.
	POST detects an error.	If POST displays any error message, take notes of the message, and contact your sales representative.
On (amber)	A temperature alarm was detected.	Check the internal fan for dusts. Also check if the fan unit is properly connected.
	A CPU error occurred.	Turn the power off and then turn it on. If POST displays any error message, take notes of the message, and contact your sales representative.
	Abnormal CPU temperature is detected.	
	A PCI system error has occurred.	
	A PCI parity error has occurred.	
	A PCI bus error has occurred.	
	A voltage alarm was detected.	Contact your sales representative.
	A Memory error occurred.	
	Time-out of a watch dock timer has occurred.	
	Event log status: almost Full (100%)	Check the system event log and it is not abnormal if the number of registrations is maximum. It is recommended to clear the log by saving the log once.
Blinking (amber)	A temperature warning was detected.	Check the internal fan for dusts. Also check if the fan unit is properly connected.
	A voltage warning was detected.	Contact your sales representative.
	A memory error was detected.	
	Event log status: 75%	Check the system event log and it is not abnormal if the number of registrations is 75%. It is recommended to clear the log by saving the log once.

CMC STATUS LED pattern	Description	Action
On (green)	The server is working normally.	–
Off	The power of all server module is off.	Turn on the server.
On (amber)	A temperature alarm was detected.	Check the internal fan for dusts. Also check if the fan unit is properly connected.
	A voltage alarm was detected.	Contact your sales representative.
	A FAN alarm was detected.	
	One or more hard disk drives are failed.	
	Power Supply Unit is failed.	
	PUS Predictive Failure	
	Event log status: almost Full (100%)	Check the system event log and it is not abnormal if the number of registrations is maximum. It is recommended to clear the log by saving the log once.
Blinking (amber)	A temperature warning was detected.	Check the internal fan for dusts. Also check if the fan unit is properly connected.
	A FAN warning was detected.	Contact your sales representative.
	Event log status: 75%	Check the system event log and it is not abnormal if the number of registrations is 75%. It is
	PSU Input lost	Confirm whether power cable isn't missing, and if it isn't missing, please inform a maintenance service firm.

4.6.3 UID LED

UID LED is provided one each at the front and rear of the server. The LED is integrated with the switch. If this switch is pressed, both LEDs turn ON. If it is pressed again, they turn OFF. This LED is used to identify the target server for maintaining among several servers installed in a rack. Especially, if this LED remains ON, you can perform the maintenance work from the rear side of the rack without missing the target device.

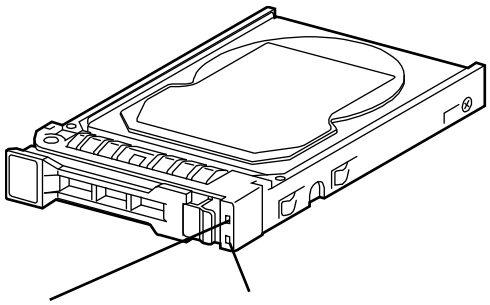
UID LED pattern	Description
On (blue)	The UID switch is pressed.
Off	The UID switch is not pressed.

Tips

UID LED can turn on and off by remote management software.
The UID switch is provided on the front side (note that only the LED is provided on the rear side but there is no switch).

4.6.4 LED on a hard disk drive

Each hard disk drive is equipped with DISK LED.



DISK LED 1 (green/amber) DISK LED 2 (green)

<For the on-board configuration>

DISK LED pattern		Description	Action
DISK LED 1	DISK LED 2		
Blinking (green)	On (green)	Hard disk drive is being accessed.	–
Off	On (green)	The hard disk is implemented. Note: The DISK LED 2 lights up in green when the power cord is connected even if the power of the server module is turned off.	–
Off	On (green)	Hard disk drive is failing. Or, it is at a stop. (System stop)	If the hard disk drive is failing, contact your sales representative.

<For the RAID controller configuration>

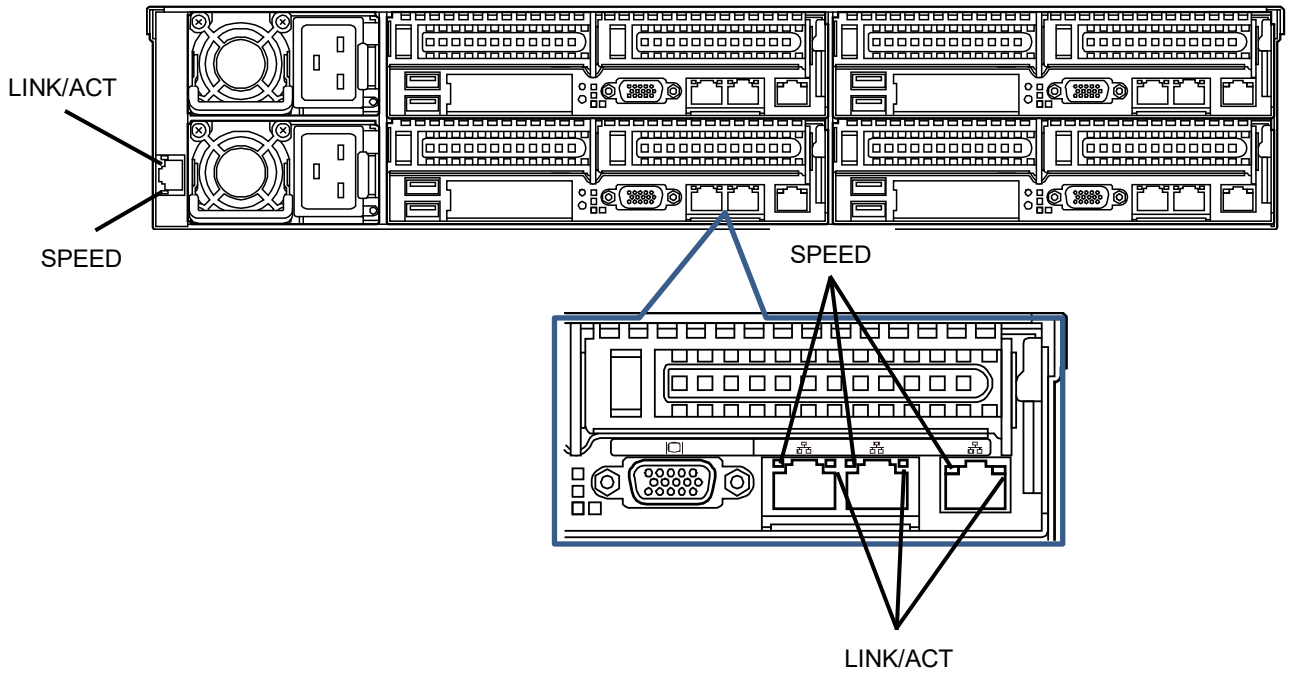
DISK LED pattern		Description	Action
DISK LED 1	DISK LED 2		
Blinking (green)	On (green)	Hard disk drive is being accessed.	–
Blinking (amber) (RAID system only)	On (green)	Hard disk drive is failing.	Contact your sales representative.
Blinking in green and umber alternately (RAID system only)	On (green)	Rebuilding is in progress. When the failed hard disk drive is replaced, rebuilding process starts automatically (auto rebuilding feature).	–
Off	On (green)	It is at a stop. (System stop)	–
Off	On (green)	The hard disk is implemented. Note: The DISK LED 2 lights up in green when the power cord is connected even if the power of the server module is turned off.	–

Important **Follow the precautions below when using the auto rebuilding feature.**

- **Do not turn off or reboot the server while a HDD is being rebuilt.**
- **Wait at least 90 seconds before installing a HDD after removing it.**
- **Do not replace a HDD while another HDD is being rebuilt.**

4.6.5 LEDs for LAN connectors

Three LAN connectors on the rear of the server have LINK/ACT LED and SPEED LED.



- **LINK/ACT LED (M, CMC, 1, 2)**

  This LED indicates the status of the LAN port.

LINK/ACT LED pattern	Description
On (green)	The server is connected with network normally.
Blinking (green)	The server is accessing network.
Off	The server is disconnected from network.

- **SPEED LED (M, CMC, 1, 2)**

  This LED indicates which network interface is used.

  – LAN ports support 10GBASE-T, 1000BASE-T, 100BASE-TX, and 10BASE-T.
  * Management LAN port supports 1000BASE-T, 100BASE-TX, and 10BASE-T.

M、CMC

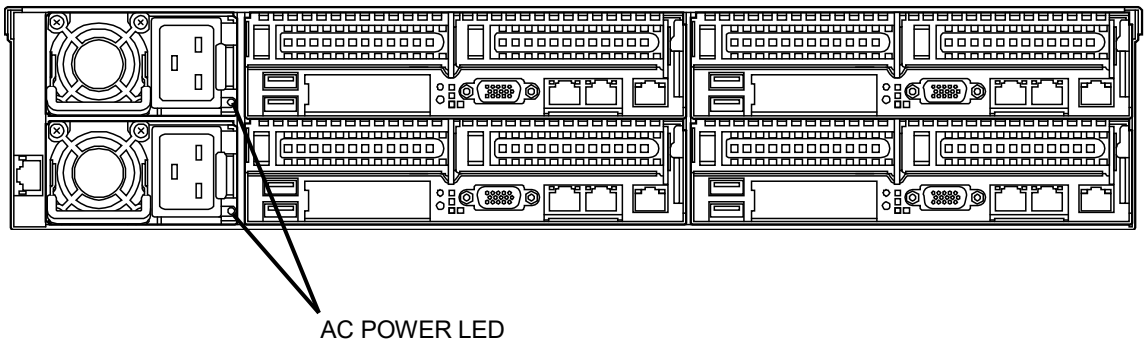
SPEED LED pattern	Description
On (amber)	The port is operating with 10GBASE-T interface.
On (green)	The port is operating with 1000BASE-T interface.
Off	The port is operating with 100BASE-TX or 10BASE-T interface.

1、2

SPEED LED pattern	Description
On (green)	The port is operating with 10GBASE-T interface.
On (amber)	The port is operating with 5G/2.5G/1GBASE-T interface.
Off	The port is operating with 100BASE-TX or 10BASE-T interface.

4.6.6 AC POWER LED on Power Unit

The power unit is equipped with AC POWER LED.



AC POWER LED pattern	Description	Action
On (green)	The server is powered on.	–
Blinking (green)	The power cable is connected and AC power is supplied.	–
	Cold Redundant feature is enabled.	–
On (amber)	The power cord is not connected in redundant power configuration.	Connect the power cord.
	Power unit is failing.	Contact your sales representative.
Blinking (amber)	Warning condition of a power unit is being indicated.	Contact your sales representative.
Off	The power is not supplied to the server.	Connect the power cable.

NEC Express5800 Series
Express5800/D120h

2 Preparations

This chapter describes preparations for using this server.

1. **Installing Internal Optional Devices**

   You can skip this section if you did not purchase any optional devices.

2. **Installation and Connection**

   Place the server in a suitable location and connect cables following this section.

1. Installing Internal Optional Devices

This section describes the instructions for installing supported optional devices and precautions.

Important **Use only the devices and cables specified by NEC. You will be charged to repair damages, malfunctions, and failures caused by the use of any devices or cables not specified for use with this server even within the warranty period.**

1.1 Safety Precautions

Be sure to observe the following precautions to install and remove optional devices properly and safely.

⚠ WARNING

Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not disassemble, repair, or modify the server.**
- **Do not remove the lithium battery, NiMH battery, or Li-ion battery.**
- **Disconnect the power plug when installing and removing devices.**

⚠ CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not drop**
- **Do not leave the server being pulled out.**
- **Make sure to complete installation.**
- **Do not install with the cover removed.**
- **Do not get your fingers caught.**
- **High temperature**
- **Electrical shock**

1.2 Overview of Installation and Removal

Install/remove components by using the following procedure.

⚠ CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not drop the server**
- **Do not leave the server pulled out of the rack**
- **Replace the cover after installing components**
- **Beware of high temperatures**
- **Do not get your fingers caught when installing components**

1. If the server is mounted on a rack, use the UID switch to identify the target server.
   See *Chapter 2 (1.3 Identifying Server (UID Switch))*.
2. Turn off the server.
   See *Chapter 3 (6. Turning Off the Server)*.
3. When adding hard disk drives only, go to step 6. When adding power supply unit only, go to step 7.
   When installing or removing other internal optional devices, remove the server module from the module enclosure, and put it on a flat rigid desk.
   See *Chapter 2 (2.1 Installation)*.
   – If you remove the server module from module enclosure, wait at least 30 seconds before insert it again into enclosure.
4. Depending on the components to be installed or removed, follow the procedure in order.
   See *Chapter 2 (1.4 Removing Server Module)* to *(1.9 Use of Internal Hard Disk Drives in the RAID System)*.
5. Install the server module in module enclosure.
   See *Chapter 2 (2.1 Installation)*.
6. Install hard disk drives.
   See *Chapter 2 (1.10 Hard Disk Drive)*.
7. Install power supply units
   See *Chapter 2 (1.12 Power Supply Unit)*.

Installation and removal for internal optional devices are now complete.

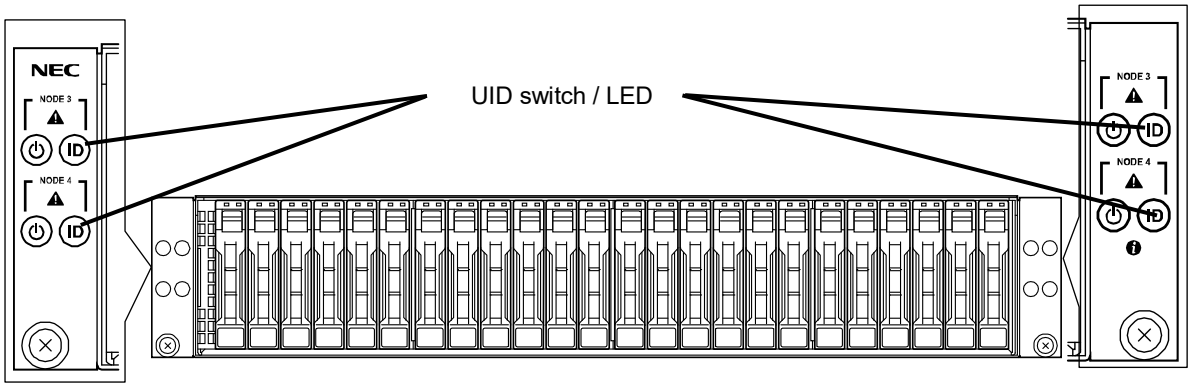
Continue the setup with reference to *Chapter 2 (2.2 Connection)*.

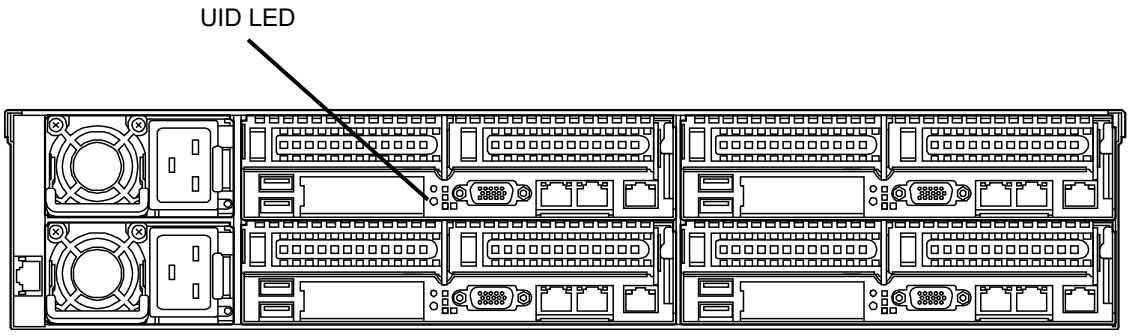
1.3 Identifying Server (UID Switch)

Using UID (Unit ID) Switch helps you to identify the target server.

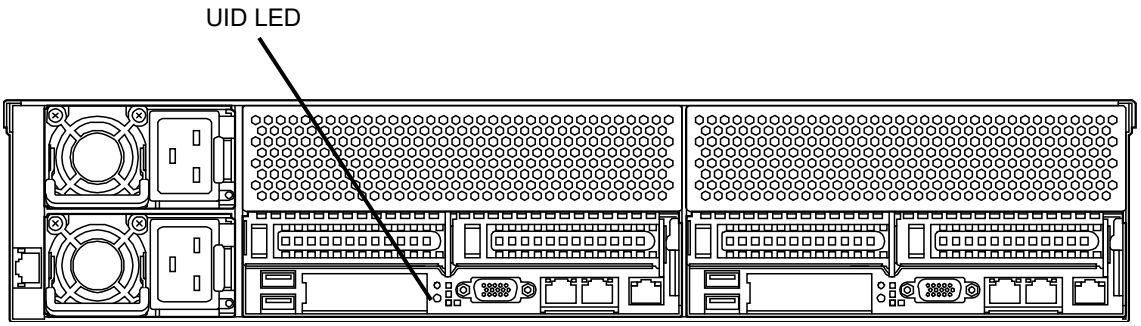
When the server is working, **be sure to identify the target server by using UID Switch first** before you turn off the server or disconnect a cable from the server. The front and the rear UID LEDs work together.

To turn UID LED on, press UID Switch. When it is pressed again, the LED will be off.





<When the 1U server module is installed>



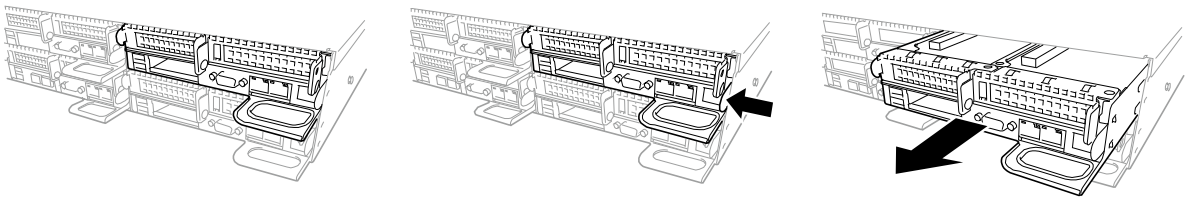
<When the 2U server module is installed>

1.4 Removing Server Module

Remove the server module when installing or removing the following component or changing cable connection:

DIMM (Memory)	Processor (CPU)	Processor heat sink (CPU H/S)
PCI card	LAN mezzanine card	RAID controller
SATA-DOM(VMware ESXi base kit)		TPM kit

1. See steps 1 to 3 in *Chapter 2 (1.2 Overview of Installation and Removal)* for preparations.
2. Pull out the handle toward you while rotating the locking mechanism counterclockwise. Hold the handle, and pull out the server module horizontally.



Important **If you remove the server module from the enclosure, wait at least 30 seconds before insert it again into the enclosure.**

1.5 Processor (CPU)

You can configure the multi-processor system by adding an optional processor.

Important

- **To avoid static electricity, see *Chapter 1 (1.8 Anti-static Measures)* in *Safety Precautions and Regulatory Notices.***
- **Make sure to use the CPU authorized by NEC. Installing a third-party CPU may cause a failure of the CPU as well as this server. Repair of the server due to failures or damage resulted from installing such a CPU will be charged.**

Tips

After adding the processor, Windows may record the event log to System category of Event Viewer, but it is no problem for operation.

1.5.1 Maximum number of processor cores supported by this server

The maximum number of processor cores (logical processors) available on the server depends on the architecture (x86 architecture) and OS specs.

Maximum number of processor cores

OS	The maximum number of logical processors supported by OS	The maximum number of logical processors supported by this server
Microsoft Windows Server 2012 R2 Standard Microsoft Windows Server 2012 R2 Datacenter	640 *1	104
Microsoft Windows Server 2016 Standard Microsoft Windows Server 2016 Datacenter	512 *1	104
VMware ESXi 6.0	480	104

*1 : When Hyper-V is used, the maximum number of logical processors is as shown below:

- Windows Server 2012 R2: 320
- Windows Server 2016: 240

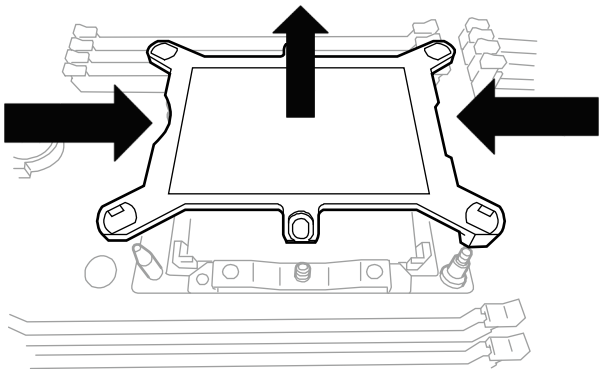
1.5.2 Installation

Follow the steps below to install the CPU.

1. See steps 1 and 2 in *Chapter 2 (1.4 Removing Server Module)* for preparation.
2. Locate the CPU socket to which you are going to install a CPU.

3. Remove the protective cover from the CPU socket.

Important **Pick up the protective cover and remove it in this direction.**

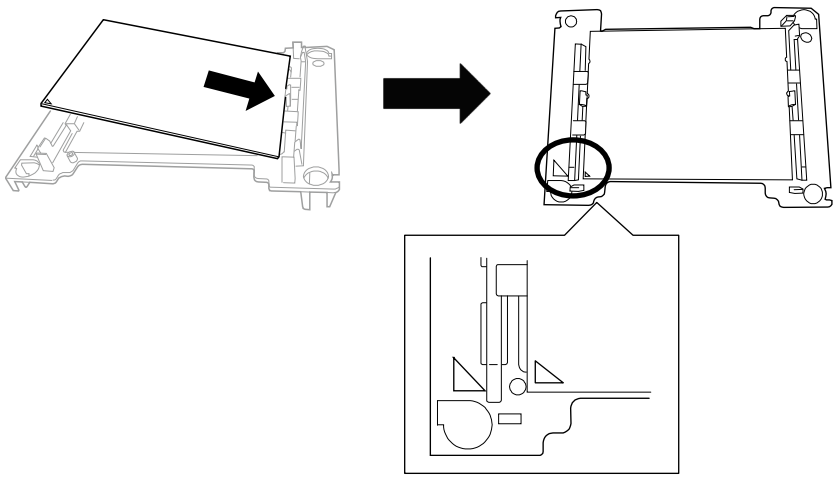


Note Keep the removed protective cover for future use.

Important **Do not touch the socket contacts.**

Install the CPU to be added obliquely to the CPU clip (plastic package), and fix it gently and carefully.

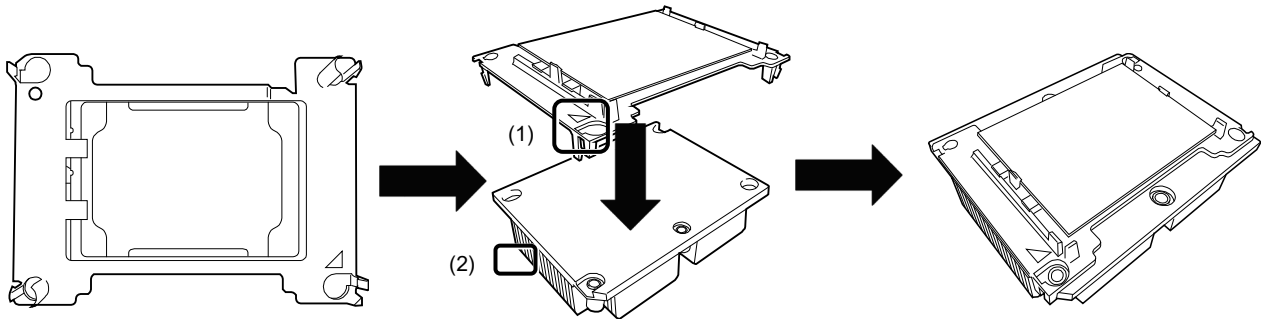
Note Align the triangular marks.



Important
- **Be sure to hold the CPU only at the edges.**
- **Pay attention not to touch the bottom of the CPU.**

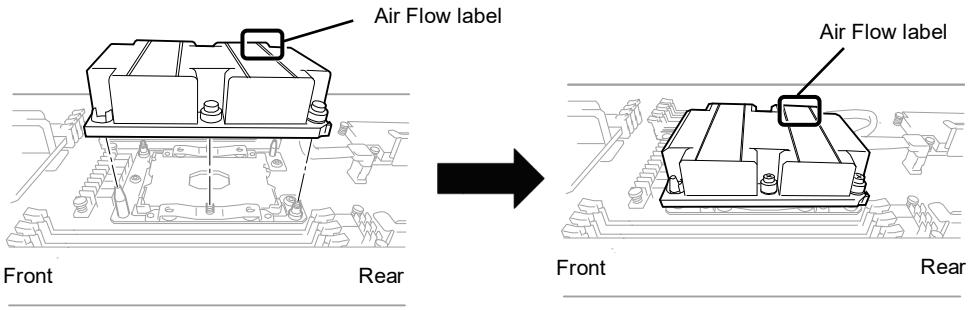
Note
- Insert the CPU while aligning the notch on the CPU with the key on the CPU socket.
- Bring down the CPU straight without tilting or sliding it in the socket.

4. Install the CPU to be added obliquely to the CPU clip (plastic package), fix it gently and carefully, and then install it to the heat sink.



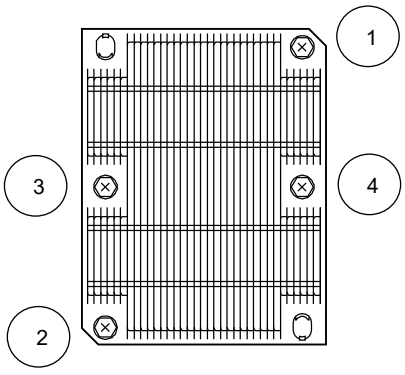
Important **Before the heat sink installation, please make sure the triangle mark is shown as (1), and the "Air Flow" label on the Heat sink, can be seen as position (2).**

5. Install CPU H/S with COU installed to MB.



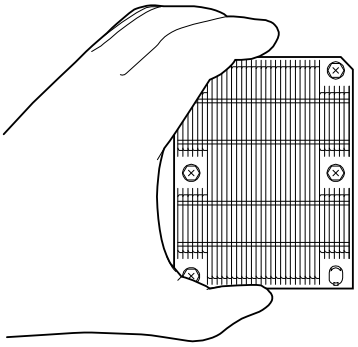
Important **Before install heat sink onto MB, please make sure to take the following steps: Step 1, server front panel is on your left, and rear is on your right. Step 2, adjust the heat sink position to make "Air Flow" label can be seen on the top-right corner, which is shown in the instruction figure.**

Tighten the screws in the following order.

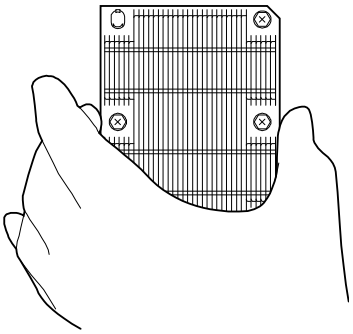


Important • **When removing the screws, follow the order from 4, 3, 2, to 1.**

- **When handling CPU H/S, hold the top and bottom. Otherwise, the fin may be damaged.**



<Correctly holding>



<Incorrectly holding>

6. Continue to install or remove internal optional devices, mount and connect the server, and turn it on.
7. Run BIOS Setup Utility (SETUP) to confirm the following settings. See *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".
   Chipset → Processor Configuration
   [Processor ID]
   [L2 Cache RAM]
   [L3 Cache RAM]
8. After checking, perform rebooting with **Save Changes and Reset**.

1.5.3 Replacement / Removal

To remove CPU, reverse the installation procedure.
After removal, mount the protective cover to CPU socket.

Important **Do not remove any CPU unless it is failed.**

1.6 DIMM

Install a Dual Inline Memory Module (DIMM) to a DIMM slot on the motherboard in the server. The motherboard provides 16 sokets to install DIMMs.

Important

- **To avoid static electricity, see *Chapter 1 (1.8 Anti-static Measures) in .Safety Precautions and Regulatory Notices.***
- **Use only the specified DIMMs. Installing a DIMM from a third party may damage not only the DIMM but the motherboard. You will be charged to repair failures or damages caused by the use of such products even within the warranty period.**

Tips

In 2-CPU configuration, up to 2 TB (128 GB x 16) can be installed on each server module.

In 1-CPU configuration, up to 1 TB (128 GB x 8) can be installed on each server module.

1.6.1 Maximum supported memory size

The maximum available memory size on the server depends on the OS architecture and specifications.

Maximum memory sizes

OS	The maximum memory size supported on each OS	The maximum memory size supported on the server*3
Microsoft Windows Server 2012 R2 Standard *1 Microsoft Windows Server 2012 R2 Datacenter *1	4TB	2TB
Microsoft Windows Server 2016 Standard Microsoft Windows Server 2016 Datacenter	24TB	2TB
VMware ESXi 6.0 *2	12TB	2TB

*1: When Hyper-V is used, the maximum memory size is as shown below:
- Windows Server 2012 R2: 4TB
- Windows Server 2016: 24TB

*2: Up to 4TB on virtual machine.

*3: When two units of Platinum 8160M are installed

1.6.2 Memory Clock

This server supports DDR4-2666MHz RDIMM. However, the frequency of the memory clock to be operated varies according to the CPU configuration and DIMM configuration.

Bronze 3104/Bronze 3106 embedded model

Model number and product name	Memory clock speed	
Memory Voltage	1.2 V	
Number of memory boards per memory channel	1	2
N8102-703F 8GB additional memory board (1x8GB/R)	2133MHz	
N8102-704F 16GB additional memory board (1x16GB/R)		
N8102-705F 32GB additional memory board (1x32GB/R)		
N8102-706F 64GB additional memory board (1x64GB/TSV-R)		
N8102-707F 128GB additional memory board (1x128GB/ TSV-R)		

Silver 4108/Silver 4110/Silver 4114/Silver 4116/Gold 5118/Gold 5120 embedded model

Model number and product name	Memory clock speed	
Memory Voltage	1.2 V	
Number of memory boards per memory channel	1	2
N8102-703F 8GB additional memory board (1x8GB/R)	2400MHz	
N8102-704F 16GB additional memory board (1x16GB/R)		
N8102-705F 32GB additional memory board (1x32GB/R)		
N8102-706F 64GB additional memory board (1x64GB/TSV-R)		
N8102-707F 128GB additional memory board (1x128GB/ TSV-R)		

Gold 5122/Gold 6134/GOLD 6132/Gold 6142/Gold 6130/Gold 6140/Gold 6138/Gold 6152 Platinum 8160/Platinum 8164/Platinum 8160M embedded model

Model number and product name	Memory clock speed	
Memory Voltage	1.2 V	
Number of memory boards per memory channel	1	2
N8102-703F 8GB additional memory board (1x8GB/R)	2666MHz	
N8102-704F 16GB additional memory board (1x16GB/R)		
N8102-705F 32GB additional memory board (1x32GB/R)		
N8102-706F 64GB additional memory board (1x64GB/TSV-R)		
N8102-707F 128GB additional memory board (1x128GB/ TSV-R)		

1.6.3 DIMM installation order

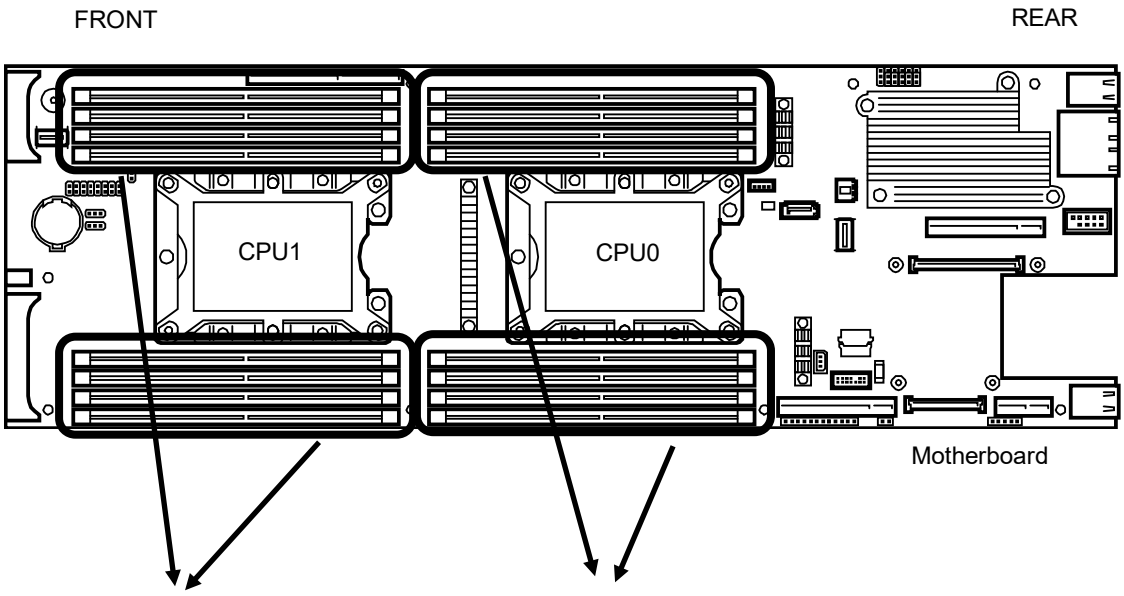
In 1-CPU configuration, install DIMMs starting from the smallest slot number. If CPU1 is not installed, CPU2_DIMM1 to CPU2_DIMM8 are not available.

In 2-CPU configuration, alternately install two DIMMs starting from the smallest slot number of each CPU.

Installation order depends on combination of DIMMs to be installed. See the table below to find allowable combination of DIMMs, and install DIMMs starting from the largest capacity and from the smallest slot number.
Mixed combination of the DIMM that can be installed is not enabled.
Before adding DIMM, refer to the combination list below to check whether the mixed combination is allowed or not.

Model number	N8102-				
	703	704	705	706	707
N8102-703 8GB(1x8GB/R)	✓	✓	✓	-	-
N8102-704 16GB(1x16GB/R)	✓	✓	✓	-	-
N8102-705 32GB(1x32GB/R)	✓	✓	✓	-	-
N8102-706 64GB(1x64GB/TSV-R)	-	-	-	✓	-
N8102-707 128GB(1x128GB/TSV-R)	-	-	-	-	✓

✓: Allowed to be installed together.
-: Not allowed to be installed together.
Caution: Any combinations other than those listed above are disabled.



DIMM slot number (from top)

DIMM_P1_L0
DIMM_P1_K0
DIMM_P1_J0
DIMM_P1_J1

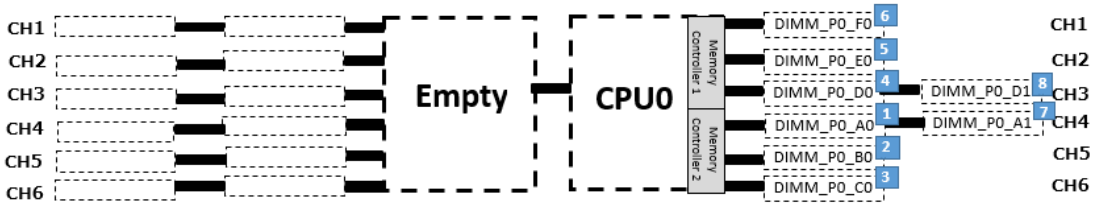
DIMM_P1_G1
DIMM_P1_G0
DIMM_P1_H0
DIMM_P1_I0

DIMM slot number (from top)

DIMM_P0_F0
DIMM_P0_E0
DIMM_P0_D0
DIMM_P0_D1

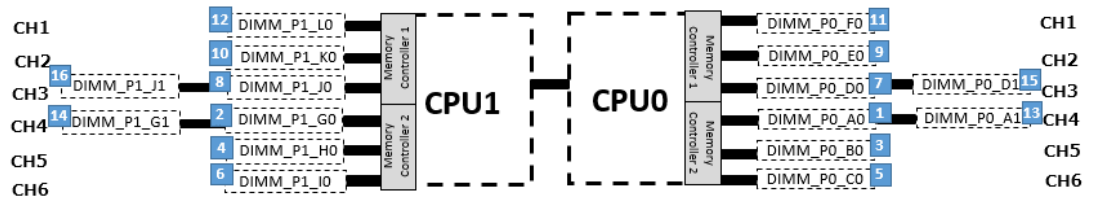
DIMM_P0_A1
DIMM_P0_A0
DIMM_P0_B0
DIMM_P0_C0

1 CPU configuration (up to 8 pcs can be installed)

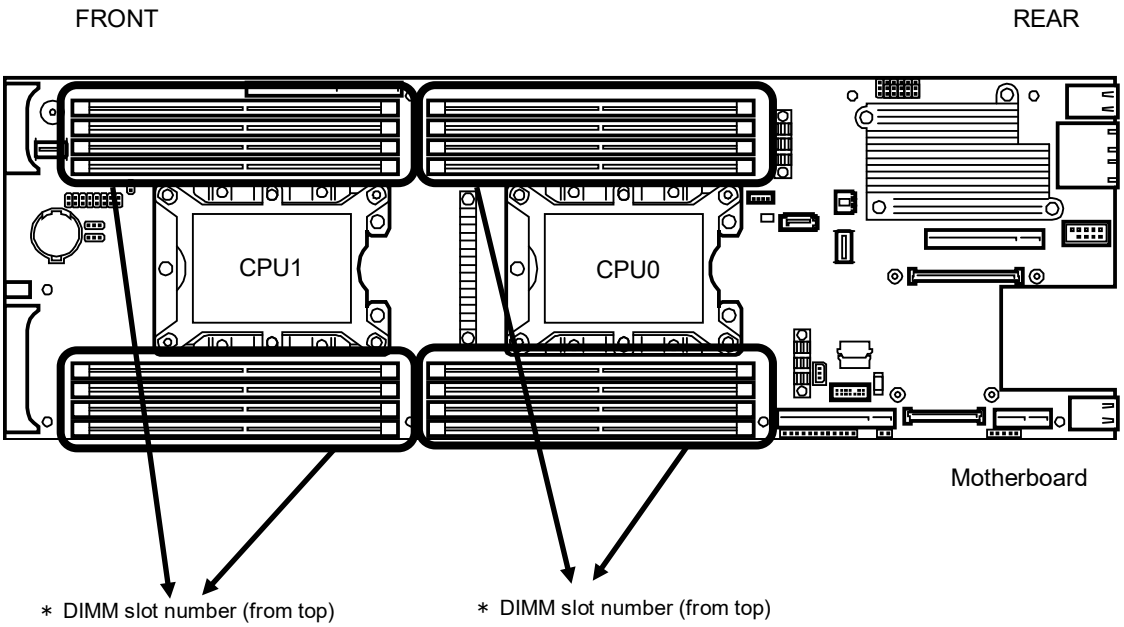


2 CPU configuration (up to 16 cards can be installed)

The memory mounting order differs from the 1 CPU configuration.



To mount four pieces of DIMM per CPU, mount them in the following order.



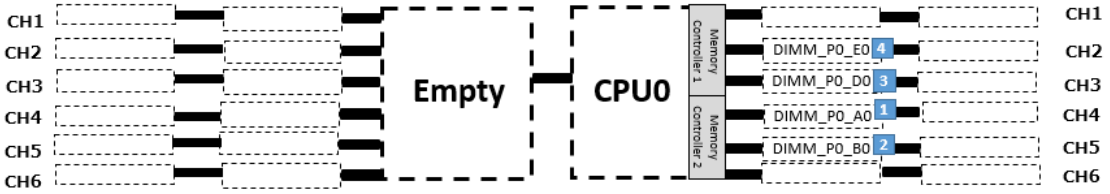
* DIMM slot number (from top)
DIMM_P1_L0
DIMM_P1_K0
DIMM_P1_J0
DIMM_P1_J1

DIMM_P1_G1
DIMM_P1_G0
DIMM_P1_H0
DIMM_P1_I0

* DIMM slot number (from top)
DIMM_P0_F0
DIMM_P0_E0
DIMM_P0_D0
DIMM_P0_D1

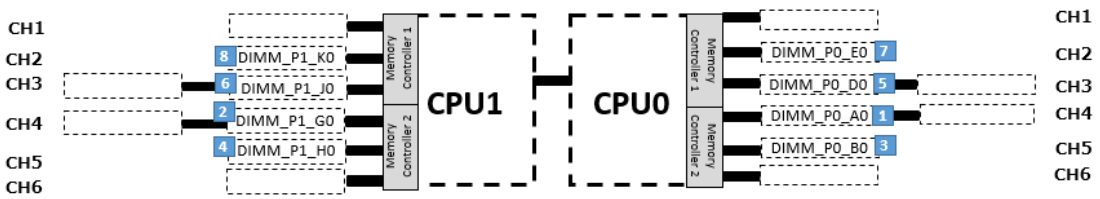
DIMM_P0_A1
DIMM_P0_A0
DIMM_P0_B0
DIMM_P0_C0

1 CPU configuration (when 4 cards are installed per CPU)



2 CPU configuration (when 4 cards are installed per CPU)

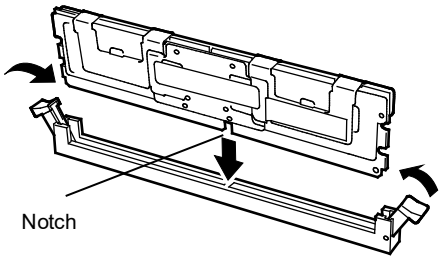
The memory mounting order differs from the 1 CPU configuration.



1.6.4 Installation

Follow the steps below to install a DIMM.

1. See steps 1 and 2 in *Chapter 2 (1.4 Removing Server Module)* for preparation.
2. Open levers on left and right sides of DIMM slot.
   Push the DIMM straight into the slot.
   When the DIMM is inserted into the slot, the lever automatically closes.



Important

- **Make sure the orientation of the DIMM. The DIMM has a notch, preventing being incorrectly inserted.**
- **Do not apply too much pressure when you push a DIMM into the slot. Doing so can damage the socket or terminal part.**

3. Continue to install or remove internal optional devices, mount and connect the server, and turn it on.
4. Confirm that no error messages are displayed in POST screen.
   If any error messages are displayed, see *Chapter 3 (1. POST Error Message)* in "*Maintenance Guide*".
5. Run BIOS Setup Utility, and select **Chipset** → **Memory Configuration** → **Memory Topology** .

   Make sure the capacity of added DIMM is displayed properly.
   See *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".
6. Select **Chipset** → **Runtime Error Logging** → **Memory Error Enabling** → **Clear Error Memory Even log on SMB**, and set **Enable**. After changing, perform rebooting with **Save Changes and Reset**.

1.6.5 Removal / Replacement

To remove DIMM, reverse the installation procedure.

Note

When removing a defective DIMM, check error messages displayed at POST or NEC ESMPRO and check the DIMM slot where the defective DIMM is installed.

Follow the steps below after replacing or removing DIMMs.

1. Confirm that no error messages are displayed on POST. If any error message is displayed, see *Chapter 3 (1. Post Error Message)* in "*Maintenance Guide*".
2. Run BIOS Setup Utility, and select **Chipset** → **Memory Configuration** → **Memory Topology** .
   Make sure the capacity of added DIMM is displayed properly.
   See *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".
3. Select **Chipset** → **Runtime Error Logging** → **Memory Error Enabling** → **Clear Error Memory Even log on SMB**, and set **Enable**. After changing, perform rebooting with **Save Changes and Reset**.

1.7 LAN Mezzanine (N8104-168/N8104-170)

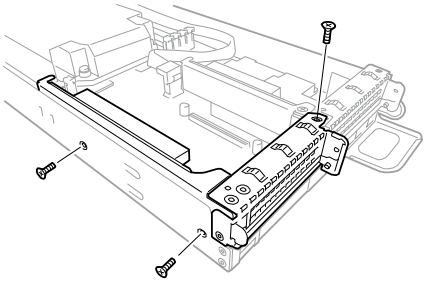
This server supports the LAN mezzanine known as the additional on-board network adapter that can be replaced with PCI Slot3. Insert the LAN mezzanine to the slot only for the LAN mezzanine provided on the mother board. One slot into which the LAN mezzanine is inserted is secured on the mother board.

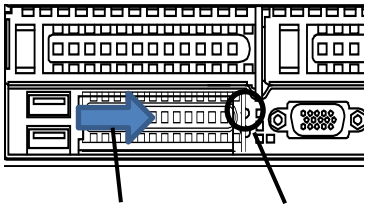
1.7.1 Installing LAN Mezzanine

Follow the steps below to install a LAN mezzanine.

Important **To avoid static electricity, see *Chapter 1 (1.8 Anti-static Measures) in .Safety Precautions and Regulatory Notices.***

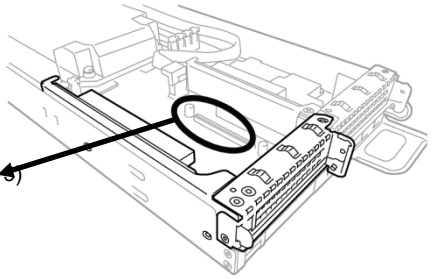
1. See steps 1 and 2 in *Chapter 2 (1.4 Removing Server Module)* for preparations.
2. Remove the bracket on server module by removing three screws.





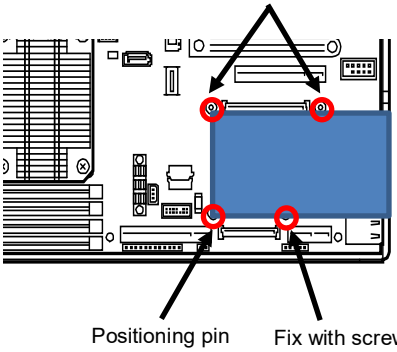
(2) Remove the bracket. (1) Remove the screw.

3. Align the LAN mezzanine pins with the LOM-dedicated slot, and fix it with three screws securely.

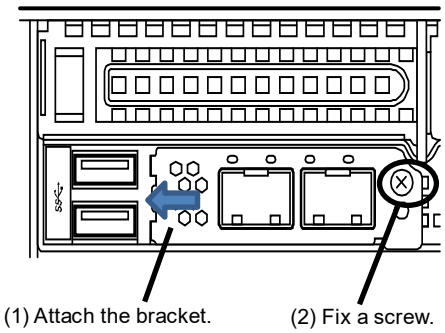


Slot only for the LAN mezzanine (Slot 3)

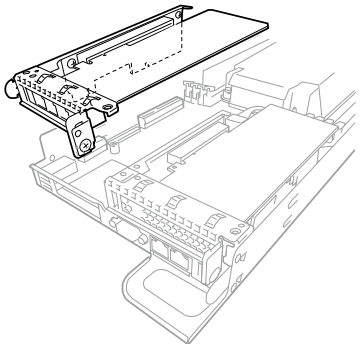
Fix with screws.



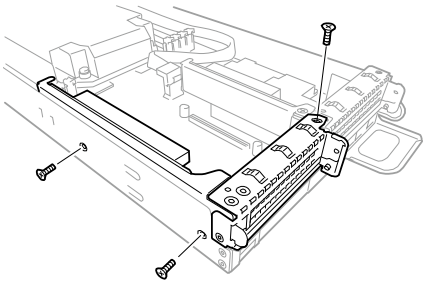
Positioning pin Fix with screws.



4. Align the pins of the additional riser card with the slots on the mother board, and securely insert it.



5. Fix it with three screws that were removed in step 2.



6. Insert the server module to the original position in the enclosure.

1.7.2 Removing LAN Mezzanine

For removing the LAN mezzanine, reverse the installation procedure.

1.8 PCI Card

This server is equipped with two “PCI riser cards” to which the PCI board can be installed. One low profile PCI board can be installed to PCI #1 and PCI#2 riser cards respectively.

Important **To avoid static electricity, see *Chapter 1 (1.8 Anti-static Measures) in Safety Precautions and Regulatory Notices*.**

1.8.1 Precautions for PCI card

Read the following precautions when installing or removing a PCI card.

- Do not touch the terminals of the riser cards and the leads of electronic components with your bare hand.
- Make sure the card type before connecting it to riser card.
- This server is not equipped with the LED connector to indicate the disk access that may be provided by the RAID controller or others.
- The PCI device (including on-board PCI device) of the same type may differently recognize due to OS or RAID configuration utility.
- If the LAN adapter is added, use a flat-blade screwdriver, etc. when pulling the cable out of the LAN connector. At this time, take extreme care not to allow a flat-blade screwdriver to damage the LAN connector or other boards.
- When a boot device is a hard disk drive of a RAID controller follower of an option, ("SCSI Hard Drive, Partition x") PCI RAID Adapter will be a boot device (The numerical value of x changes with the PCI slot into which a RAID board is loaded.)
- If a hard disk drive that contain OS is not connected with RAID controller, LAN card (network boot), or Fibre Channel controller, set the option ROM for that slot to **Disabled**. See *Chapter 2 (1. System BIOS)* in "*Maintenance Guide*".

1.8.2 Supported cards and available slots

The following table lists supported cards and slots available for them. For details of the features of each card, refer to the manual supplied with it.

Tips If the different cards are mounted on the same bus, or if the operation performance of PCI card differs from that of PCI slot, the PCI card operates at lower frequency.

<1U server module> (1/2)

Model number	Slot number	PCI #1	PCI #2	PCI #3	Remarks
	PCI standard	PCIe 3.0			
	PCI slot performance *1	x16 **lane**	x8 **lane**	x16 **lane**	
	PCI card type *2	x16 socket	x8 socket	x16 socket	
	Transfer bandwidth (per lane) *1	8Gb/s			
	Slot size	Low Profile		Only for the LAN mezzanine	
	Available card size	167.6mm max. (MD2 or shorter)			
	Product name				
N8103-199	SAS Controller (Card performance: PCI Express 3.0)	-	<1>	-	Dedicated to connect with internal hard disk drive.
N8103-188	RAID Controller (RAID 0/1) (Card performance: PCI Express 3.0(x8))	-	<1>	-	Dedicated to connect with internal hard disk drive.
N8103-176	RAID Controller (1GB, RAID 0/1) (Card performance:PCI Express 3.0(x8))	-	<1>	-	Dedicated to connect with internal hard disk drive.
N8103-177	RAID Controller (1GB, RAID 0/1/5/6) (Card performance:PCI Express 3.0(x8))	-	<1>	-	Dedicated to connect with internal hard disk drive.
N8103-178	RAID Controller (2 GB, RAID 0/1/5/6) (Card performance:PCI Express 3.0(x8))	-	<1>	-	Dedicated to connect with internal hard disk drive.
N8103-184	SAS Controller (Card performance:PCI Express 3.0(x8))	<1>	<2>	-	For connecting with external devices.
N8190-157A	Fibre Channel Controller (16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	For connecting with external Fibre Channel devices
N8190-158A	Fibre Channel Controller (2ch)(16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	For connecting with external Fibre Channel devices
N8190-161	Fibre Channel Controller (16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	For connecting with external Fibre Channel devices
N8190-162	Fibre Channel Controller (2ch)(16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	For connecting with external Fibre Channel devices
N8104-165	ExpEther Adapter (40G) (Card performance:PCI Express 3.0(x8))	<1>	<2>	-	For connecting with ExpEther
N8104-150	1000BASE-T Adapter (Card performance:PCI Express2.0(x1))	<1>	<2>	-	For additional LAN The card shape is PCI Express 2.0(x4)
N8104-151	1000BASE-T Adapter (2ch) (Card performance:PCI Express2.0(x1))	<1>	<2>	-	For additional LAN The card shape is PCI Express 2.0(x4)
N8104-152	1000BASE-T Adapter (4ch) (Card performance:PCI Express2.0(x2))	<1>	<2>	-	For additional LAN Use of the LAN cable with a boot is prohibited.

<1U server module> (2/2)

Model number		Slot number	PCI #1	PCI #2	PCI #3	Remarks
		PCI standard	PCIe 3.0			
		PCI slot performance *1	x16 **lane**	x8 **lane**	x16 **lane**	
		PCI card type *2	x16 socket	x8 socket	x16 socket	
		Transfer bandwidth (per lane) *1	8Gb/s			
		Slot size	Low Profile		Only for the LAN mezzanine	
		Available card size	167.6mm max. (MD2 or shorter)			
	Product name					
N8104-149	10GBASE Adapter (SFP+/2ch) (Card performance:PCI Express2.0 (x8))		<1>	<2>	-	For additional LAN port. Prepare SFP+module N8104-129 if needed.
N8104-158	10GBASE Adapter (SFP+/2ch) (Card performance:PCI Express2.0 (x8))		<1>	<2>	-	For additional LAN port. Prepare SFP+module N8104-129 if needed.
N8104-159	10GBASE Adapter (QSFP+/4ch) (Card performance:PCI Express2.0 (x8))		<1>	<2>	-	For additional LAN port. Prepare QFP+module N8104-161 if needed.
N8104-157	10GBASE-T Adapter (2ch) (Card performance:PCI Express3.0(x4))		<1>	<2>	-	For additional LAN port. The card shape is PCI Express 3.0(x4)
N8104-168	1000BASE-T Adapter (4ch) (Card performance:PCI Express3.0)		-	-	<1>	For additional LAN port.
N8104-170	10GBASE Adapter (SFP+/2ch) (Card performance:PCI Express3.0)		-	-	<1>	For additional LAN port. Prepare SFP+module N8104-129 if needed.
N8117-01A	Expansion RS-232C connector kit *3		<1>	-	-	For additional serial port (RS-232C).

- : Cannot be installed

*1: Data transfer rate of PCI slot = Transfer bandwidth x Number of lanes
<Example> x8 lane = 64 Gbps (uni-directional)
*2: Indicates connector size. A card up to the number of sockets can be connected.
<Example> x4 socket can connect with x1 and x4 cards, but not x8 card.
*3: Use the cable “RS-232C (A): 804-063264-020”.

How to read the table
The cards are installed in the descending order and on a priority basis.
The number put in < > indicates the priority order of installation to the slot.
“-” indicates that installation is prohibited.
For example, check the installation order from the top of the table before installing the N8103-176 RAID controller (1 GB, RAID 0/1) and N8104-149 10GBASE connection basic board (SFP+/2ch). According to the table, the RAID controller (1GB, RAID 0/1) is #1 (Installation order <1>), while 10GBASE connection basic board (SFP+/2ch) is #2 (Installation order <2> since #1 of Installation order <1> has been already embedded).

- Refer to the technical guide for details of the function of each card.
- The card performance described in the parentheses after the Product name indicates the maximum operation performance of the card.
- If the performance of the PCI slot operation is different from that of the PCI board operation, select the operation with the lower performance.

<2U server module> (1/2)

Model number	Slot number	PCI #1	PCI #2	PCI#3	PCI#4 (2CPU Indispensable)	Remarks
	PCI standard	PCIe 3.0				
	PCI slot performance *1	x16 lane	x8 lane	x16 lane	x16 lane	
	PCI card type *2	x16 socket	X8 socket	x16 socket	x16 socket	
	Transfer bandwidth (per lane) *1	8Gb/s				
	Slot size	Low Profile		Only for the LAN mezzanine	Only for GPGPU	
	Available card size	167.6mm max. (MD2 or shorter)				
	Product name					
N8103-199	SAS Controller (Card performance: PCI Express 3.0)	-	<1>	-	-	Dedicated to connect with internal hard disk drive.
N8103-188	RAID Controller (RAID 0/1) (Card performance: PCI Express 3.0(x8))	-	<1>	-	-	Dedicated to connect with internal hard disk drive.
N8103-176	RAID Controller (1GB, RAID 0/1) (Card performance:PCI Express 3.0(x8))	-	<1>	-	-	Dedicated to connect with internal hard disk drive.
N8103-177	RAID Controller (1GB, RAID 0/1/5/6) (Card performance:PCI Express 3.0(x8))	-	<1>	-	-	Dedicated to connect with internal hard disk drive.
N8103-178	RAID Controller (2 GB, RAID 0/1/5/6) (Card performance:PCI Express 3.0(x8))	-	<1>	-	-	Dedicated to connect with internal hard disk drive.
N8103-184	SAS Controller (Card performance:PCI Express 3.0(x8))	<1>	<2>	-	-	For connecting with external devices.
N8190-157A	Fibre Channel Controller (16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	-	For connecting with external Fibre Channel devices
N8190-158A	Fibre Channel Controller (2ch)(16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	-	For connecting with external Fibre Channel devices
N8190-161	Fibre Channel Controller (16Gbps/Optical) (カード性能：PCI Express3.0(x8))	<1>	<2>	-	-	For connecting with external Fibre Channel devices
N8190-162	Fibre Channel Controller (2ch)(16Gbps/Optical) (Card performance:PCI Express3.0(x8))	<1>	<2>	-	-	For connecting with external Fibre Channel devices
N8104-165	ExpEther Adapter (40G) (Card performance:PCI Express 3.0(x8))	<1>	<2>	-	-	For connecting with ExpEther
N8104-150	1000BASE-T Adapter (Card performance:PCI Express2.0(x1))	<1>	<2>	-	-	For additional LAN The card shape is PCI Express 2.0(x4)
N8104-151	1000BASE-T Adapter (2ch) (Card performance:PCI Express2.0(x1))	<1>	<2>	-	-	For additional LAN The card shape is PCI Express 2.0(x4)
N8104-152	1000BASE-T Adapter (4ch) (Card performance:PCI Express2.0(x2))	<1>	<2>	-	-	For additional LAN Use of the LAN cable with a boot is prohibited.
N8104-149	10GBASE Adapter (SFP+/2ch) (Card performance:PCI Express2.0 (x8))	<1>	<2>	-	-	For additional LAN port. Prepare SFP+module N8104-129 if needed.
N8104-158	10GBASE Adapter (SFP+/2ch) (Card performance:PCI Express2.0 (x8))	<1>	<2>	-	-	For additional LAN port. Prepare SFP+module N8104-129 if needed.

<2U server module> (2/2)

Model number	Product name	Slot number	PCI #1	PCI #2	PCI#3	PCI#4 (2CPU Indispensable)	Remarks
		PCI standard	PCIe 3.0				
		PCI slot performance *1	x16 lane	x8 lane	x16 lane	x16 lane	
		PCI card type *2	x16 socket	X8 socket	x16 socket	x16 socket	
		Transfer bandwidth (per lane) *1	8Gb/s				
		Slot size	Low Profile		Only for the LAN mezzanine	Only for GPGPU	
		Available card size	167.6mm max. (MD2 or shorter)				
N8104-159	10GBASE Adapter (QSFP+/4ch) (Card performance:PCI Express2.0 (x8))		<1>	<2>	-	-	For additional LAN port. Prepare QFP+module N8104-161 if needed.
N8104-157	10GBASE-T Adapter (2ch) (Card performance:PCI Express3.0(x4))		<1>	<2>	-	-	For additional LAN port. The card shape is PCI Express 3.0(x4)
N8104-168	1000BASE-T Adapter (4ch) (Card performance:PCI Express3.0)		-	-	<1>	-	For additional LAN port.
N8104-170	10GBASE Adapter (SFP+/2ch) (Card performance:PCI Express3.0)		-	-	<1>	-	For additional LAN port. Prepare SFP+module N8104-129 if needed.
N8117-01A	Expansion RS-232C connector kit *3		<1>	-	-	-	For additional serial port (RS-232C).
GPGPU	GPGPU (Card performance:PCI Express 3.0(x16))		-	-	-	<1>	Graphics Card

- : Cannot be installed

*1: Data transfer rate of PCI slot = Transfer bandwidth x Number of lanes
<Example> x8 lane = 64 Gbps (uni-directional)
*2: Indicates connector size. A card up to the number of sockets can be connected.
<Example> x4 socket can connect with x1 and x4 cards, but not x8 card.
*3: Use the cable “RS-232C (A): 804-063264-020”.
*4: Contact your service representative.

How to read the table
The cards are installed in the descending order and on a priority basis.
The number put in < > indicates the priority order of installation to the slot.
“-” indicates that installation is prohibited.
For example, check the installation order from the top of the table before installing the N8103-176 RAID controller (1 GB, RAID 0/1) and N8104-149 10GBASE connection basic board (SFP+/2ch). According to the table, the RAID controller (1GB, RAID 0/1) is #1 (Installation order <1>), while 10GBASE connection basic board (SFP+/2ch) is #2 (Installation order <2> since #1 of Installation order <1> has been already embedded).

- Refer to the technical guide for details of the function of each card.
- The card performance described in the parentheses after the Product name indicates the maximum operation performance of the card.
- If the performance of the PCI slot operation is different from that of the PCI board operation, select the operation with the lower performance

1.8.3 Installation

(1) RAID controller (N8103-176/177/178/188), and internal SAS/SATA cable (K410-356/K410-357)

Install a RAID controller to the PCI riser card in the following procedure.

Important

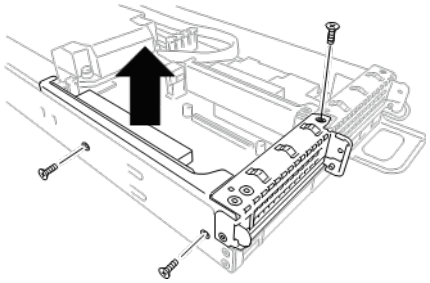
- **To avoid static electricity, see *Chapter 1 (1.8 Anti-static Measures)* in Safety Precautions and Regulatory Notices.**
- **When installing a PCI card, make sure the connector of the card fits the connector of the slot.**

Note

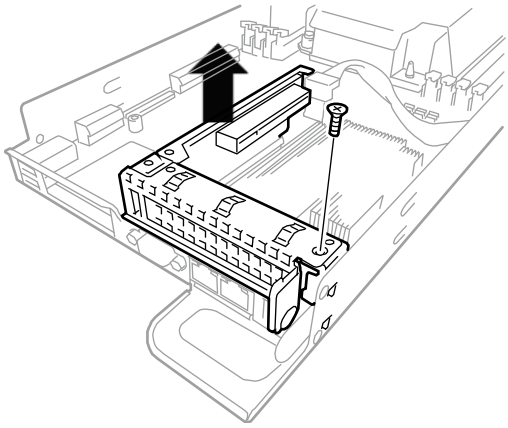
- See the "Boot" described in *Chapter 3 (2.4 Cases That Require Configuration)*, to select a boot mode to fit your environment.
- Check the following BIOS settings when you have the RAID controller implemented.
  Advanced → PCI Subsystem Settings → PCI Express Slot x#2 → Enable
- To connect a RAID controller, optional SAS/SATA cable (K410-356 or K410-357) is required.

<1U server module>
- The built-in SAS/SATA cable (K410-356) is required.

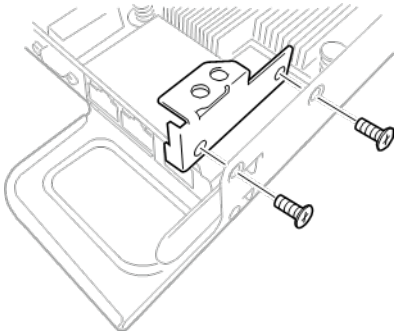
1. See steps 1 and 2 in *Chapter 2 (1.4 Removing Server Module)* for preparation.
2. Remove the three screws securing the PCI #1 riser card. Hold the both ends of the riser card and lift it straight to remove it.



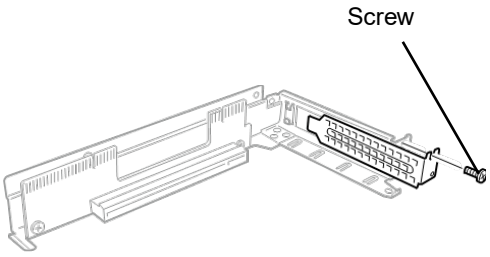
3. Remove the one screw securing the PCI #2 riser card. Hold the both ends of the PCI riser card and lift it straight to remove it.



4. Remove the two screws, and remove the bracket.

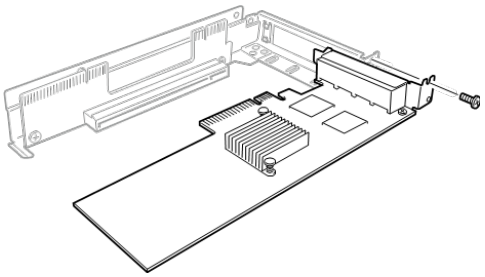


5. Remove the PCI bracket.

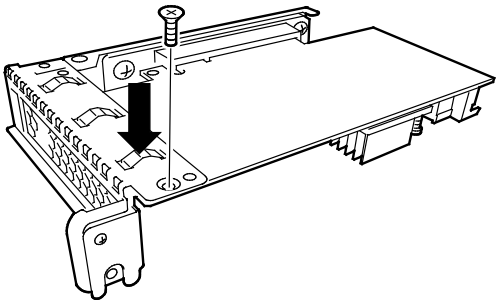


6. To confirm the slot to install a card, see the table on *Chapter 2* (*1.8.2 Supported cards and available slots)*.

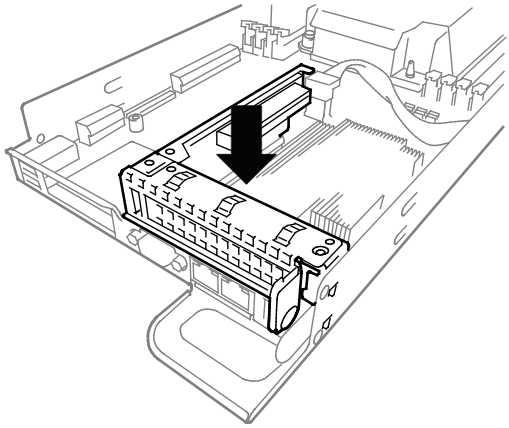
7. Mount a PCI card (RAID controller) to the PCI #1 riser card.



8. Insert the PCI card (RAID controller) to PCI #2 riser card while aligning the terminal of the PCI card with the PCI #2 riser card slot. At this time, secure the bracket that was removed in step 4 with the screws that were removed in step 3.



9. Align the pins of the PCI riser card with the slots on the mother board, and securely insert it.



Important

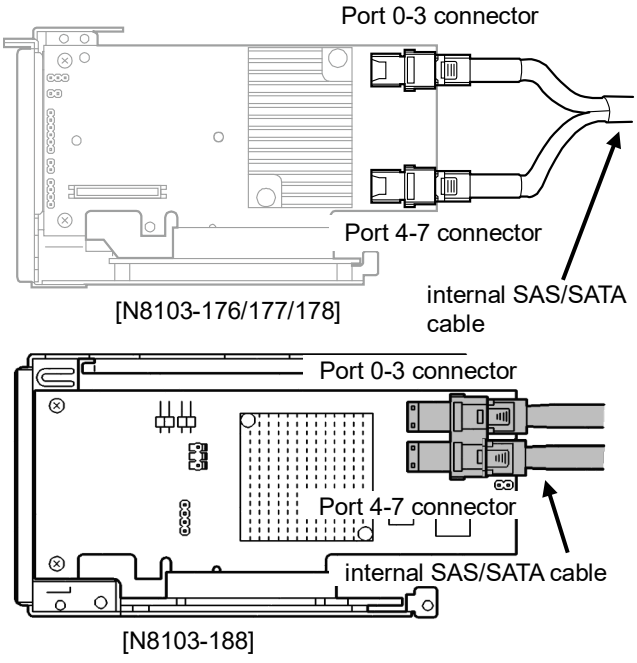
Do not touch the terminal part of riser cards or PCI cards and the signal pins of electric parts installed on the board. Installing boards with dirt or oil can cause malfunction.

Note

- Make sure that the head of a PCI card bracket is seated into the fixed slot of PCI riser card.
- Depending on type of PCI cards, the terminal part of the PCI card may be too large to fit in the connector.
- If you have trouble installing the board, remove the board once and try again. If you apply excessive pressure on the board, a PCI card or riser card might break.

10. Connect the internal SAS/SATA cable (K410-356) to PORT 0-3 connector and PORT 4-7 connector on RAID controller.

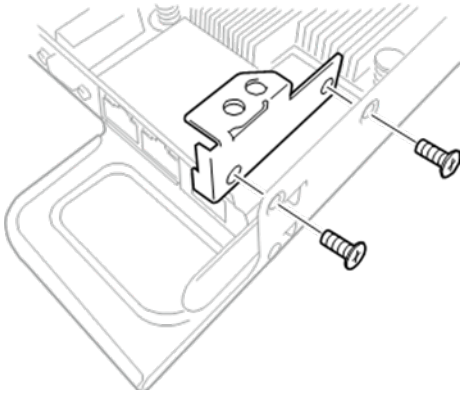
Caution:
Align the label of the cable with the connector as described below.
PORT 0-3: P1 label
PORT 4-7: P2 label



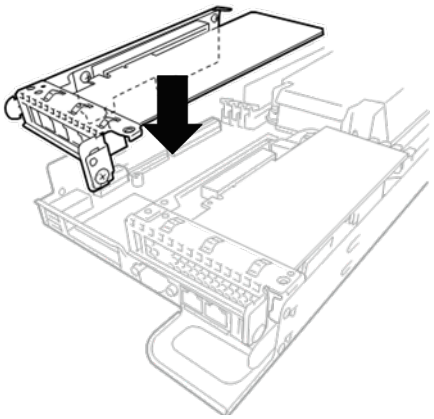
Tips

To connect a PCI card to the connector on motherboard with cable, connect a cable to PCI card before installing PCI riser card.

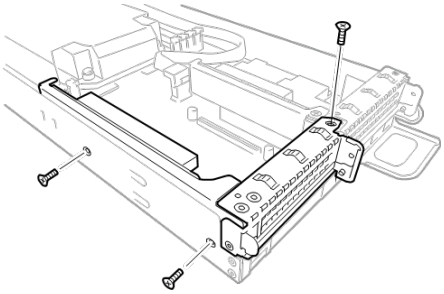
11. Fix the bracket with two screws removed in step 4.



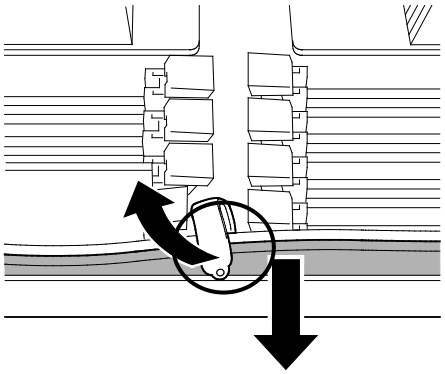
12. Mount the PCI#1 riser card removed in step 2.



13. Fix the riser card with three screws removed in step 2.



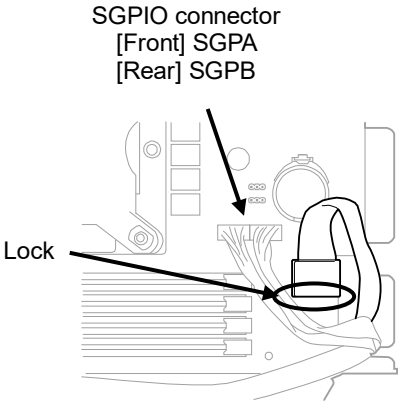
14. Raise up the banding band that fixes the original built-in SAS/SATA cable, and then pull out the cable. Return the banding band, and fix it.



15.

Pull out the cable, and remove it while pressing the lock of the original built-in SAS/SATA cable. Then, the original built-in SAS/SATA cable can be removed. Please keep the removed cable at your hand.
Connect the built-in SAS/SATA cable (K410-356) to this connector.

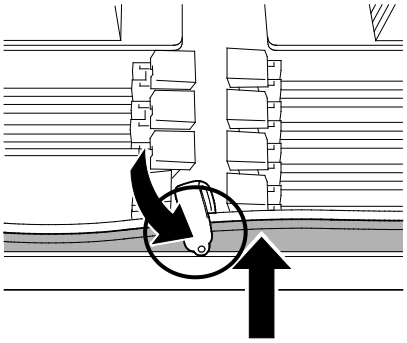
Connect the cable also to the SGPIO connector adjacent to this connector in the same manner.



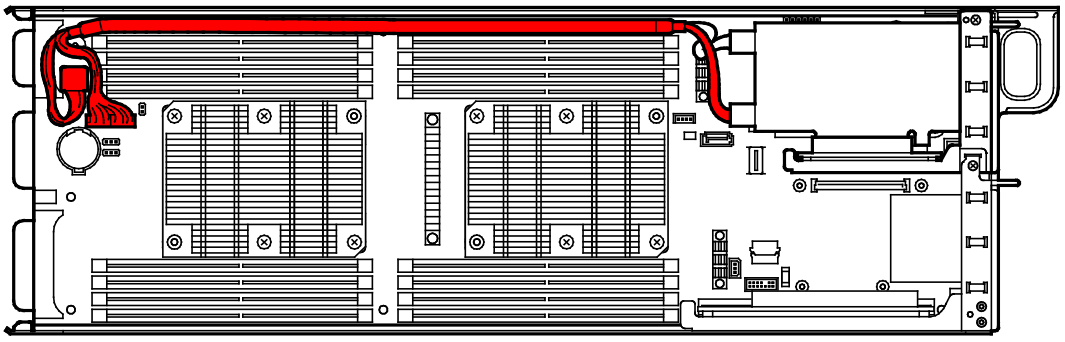
SGPIO connector: cable label
[Front] SGPA: SGPA

[Rear] SGPB: SGPB

16. Pass the built-in SAS/SATA cable (K410-356) under the banding band, and fix it.



17. For route of the built-in SAS/SATA cable (K410-356), refer to the following figure.
Although the following figure shows installation of N8103-176/177/178, the cable route when N8103-188 is installed is the same as this figure.

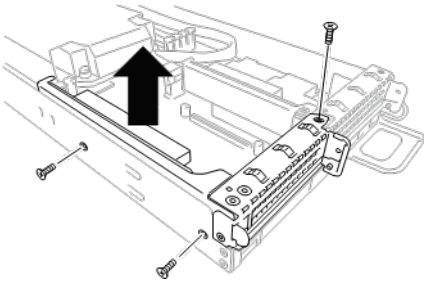


18. Continue to install or remove internal optional devices, mount and connect the server, and turn it on. Make sure that no error messages are displayed on POST screen. For details on POST error messages, see Chapter 3 (1. POST Error Message) in "Maintenance Guide".
19. Run the configuration utility of the installed card to set up the board. For details, refer to the manual that comes with the card.

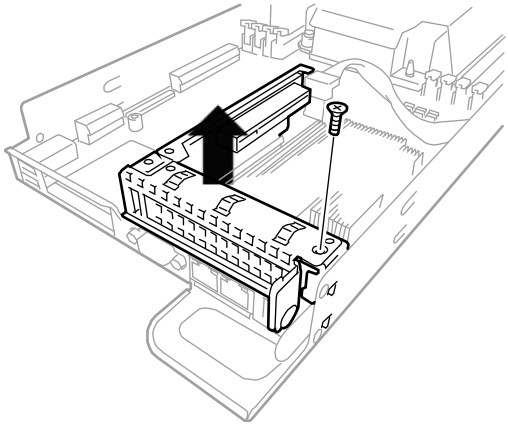
<2U server module>

- Built-inSAS/SATA cable (K410-356) are required.
- Built-in SAS/SATA cable (K410-357) for 2Userver module have 2 types of cables in different length.
- To remove the top and bottom of the modules, see “How to remove and install the top and bottom of the 2U server module” on this document.

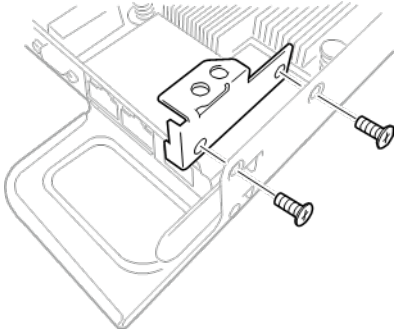
1. See steps 1 and 2 in *Chapter 2 (1.4 Removing Server Module)* for preparation.
2. Remove the three screws securing the PCI #1 riser card. Hold the both ends of the riser card and lift it straight to remove it.



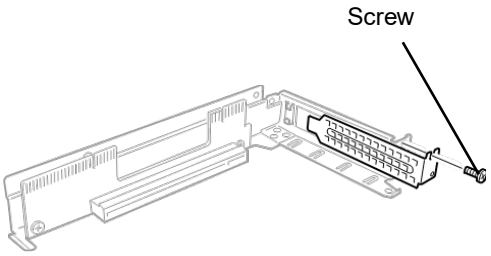
3. Remove the one screw securing the PCI #2 riser card. Hold the both ends of the PCI riser card and lift it straight to remove it.



4. Remove the two screws, and remove the bracket.

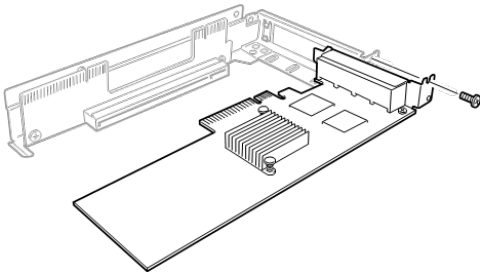


5. Remove the PCI bracket.

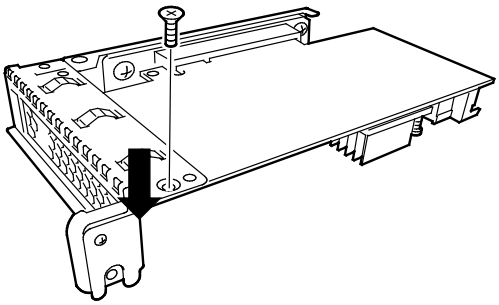


6. To confirm the slot to install a card, see the table on *Chapter 2* (*1.8.2 Supported cards and available slots)*.

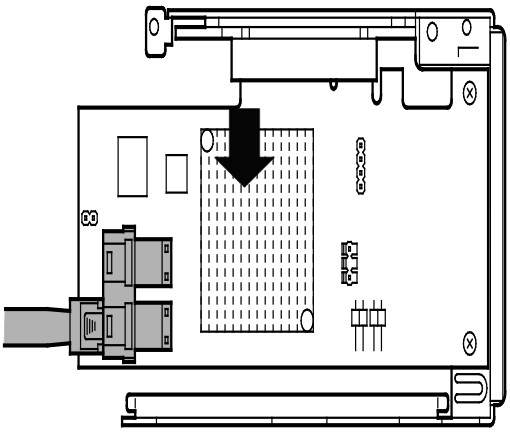
7. Mount a PCI card (RAID controller) to the PCI #1 riser card.



8. Insert the PCI card (RAID controller) to PCI #2 riser card while aligning the terminal of the PCI card with the PCI #2 riser card slot. At this time, secure the bracket that was removed in step 4 with the screws that were removed in step 3.



9. Align the pins of the PCI riser card with the slots on the mother board, and securely insert it.



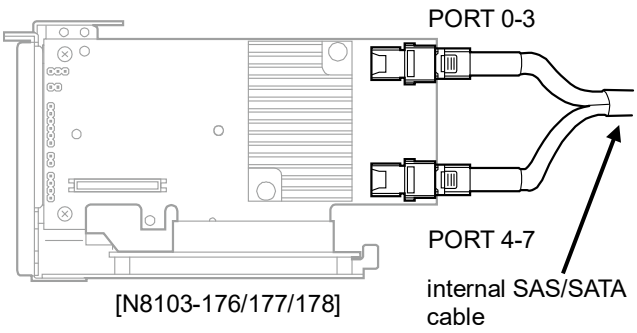
Important **Do not touch the terminal part of riser cards or PCI cards and the signal pins of electric parts installed on the board. Installing boards with dirt or oil can cause malfunction.**

Note

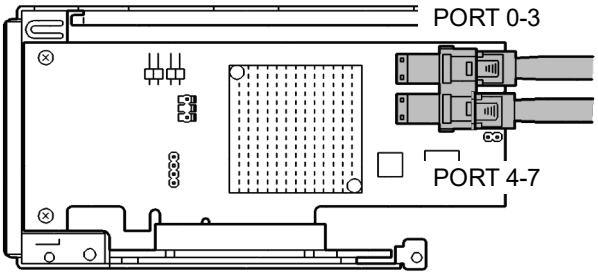
- Make sure that the head of a PCI card bracket is seated into the fixed slot of PCI riser card.
- Depending on type of PCI cards, the terminal part of the PCI card may be too large to fit in the connector.
- If you have trouble installing the board, remove the board once and try again. If you apply excessive pressure on the board, a PCI card or riser card might break.

10. Connect the internal SAS/SATA cable (K410-356) to PORT 0-3 connector and PORT 4-7 connector on RAID controller.

    Caution:
    Align the label of the cable with the connector as described below.
    PORT 0-3: P1 label
    PORT 4-7: P2 label

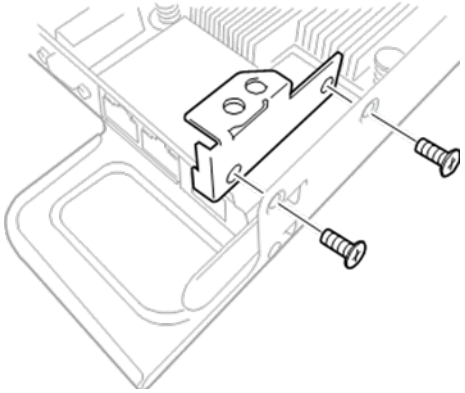


[N8103-176/177/178]

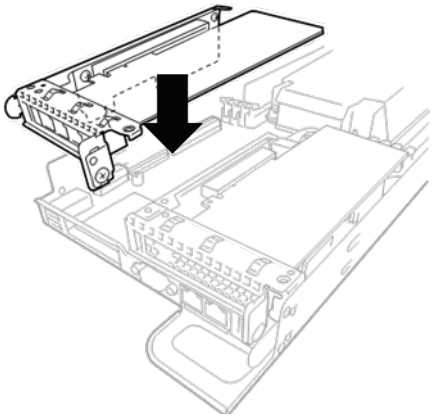


[N8103-188]

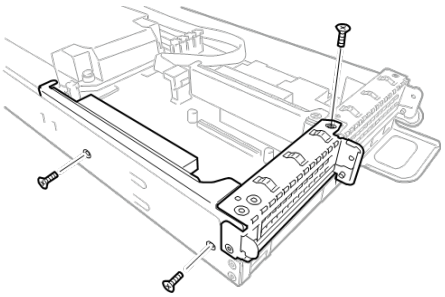
11. Fix the bracket with two screws removed in step 4.



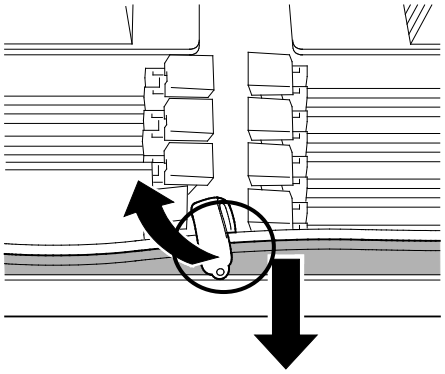
12. Mount the PCI#1 riser card removed in step 2.



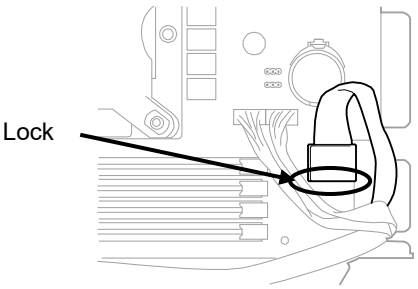
13. Fix the riser card with three screws removed in step 2.



14. Raise up the banding band that fixes the original built-in SAS/SATA cable, and then pull out the cable. Return the banding band, and fix it.

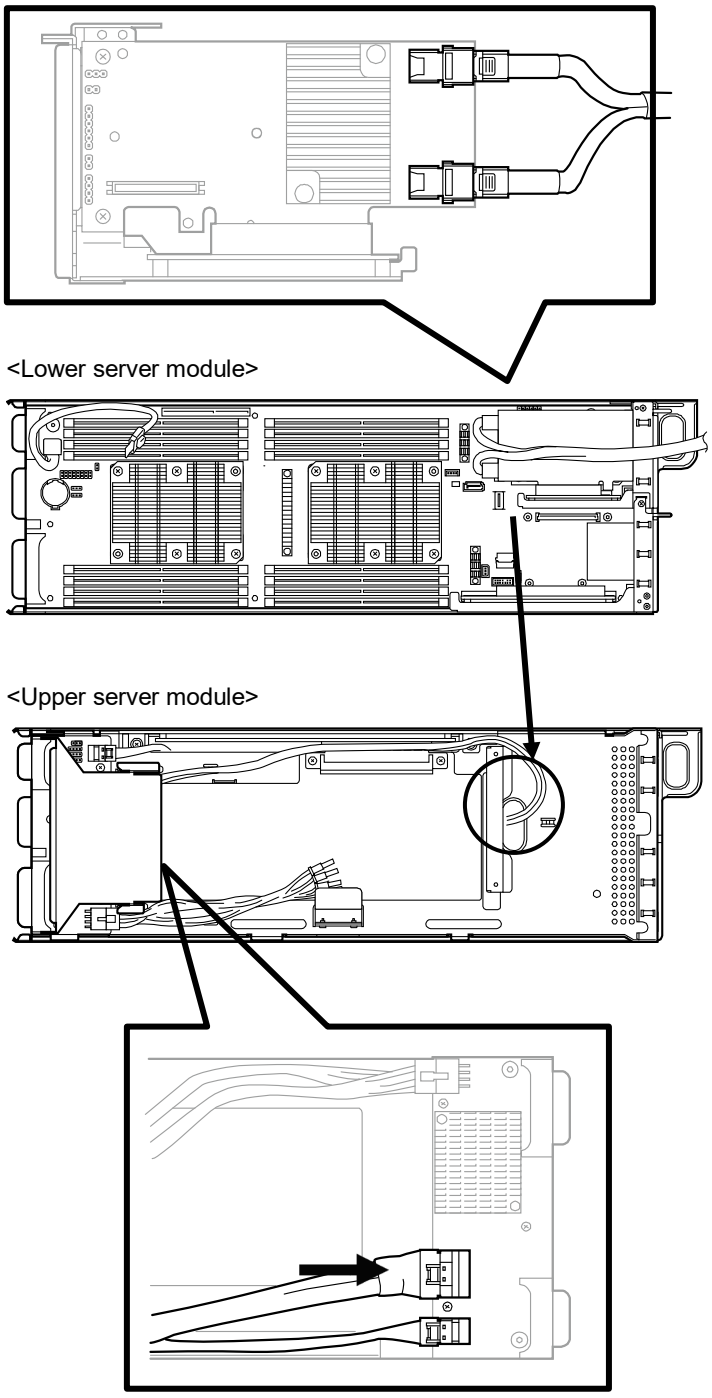


15. Pull out the cable, and remove it while pressing the lock of the original built-in SAS/SATA cable. Then, the original built-in SAS/SATA cable can be removed. Please keep the removed cable at your hand.



16. Connect the built-in SAS/SATA cable that was connected in step 10 to the expansion board via the upper server module.

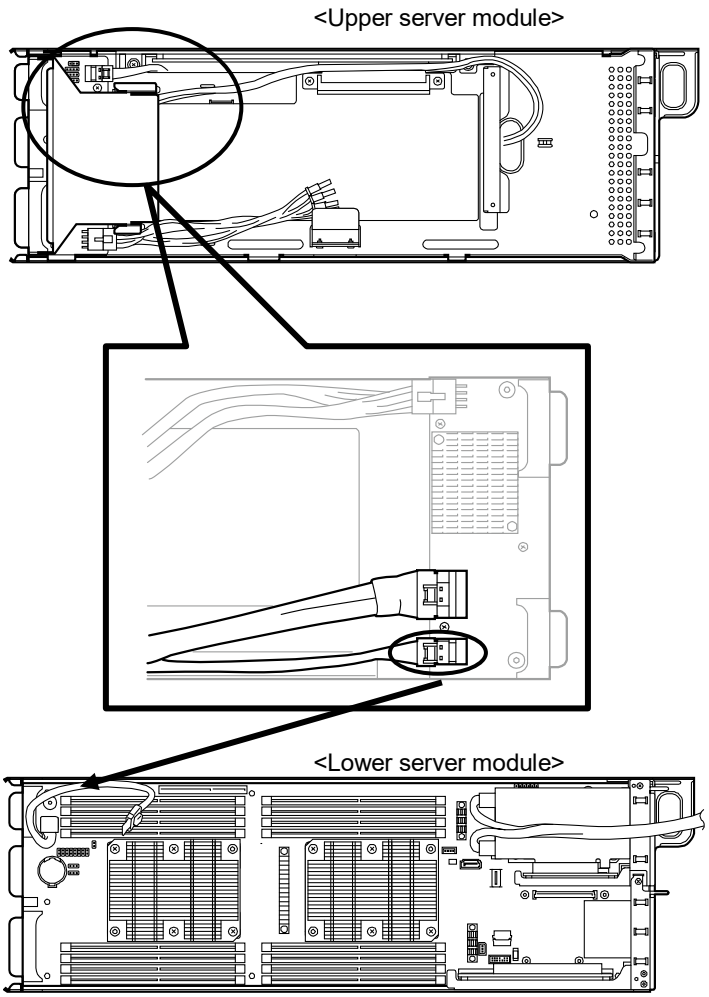
    In this case, use the longer cable of the built-in SAS/SATA cable (K410-367).



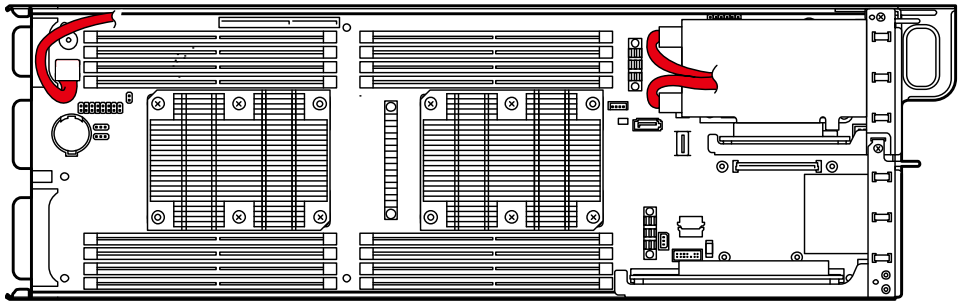
17. Connect another built-in SAS/SATA cable (K410-367) from the expansion board inside the upper server module to the mother board.

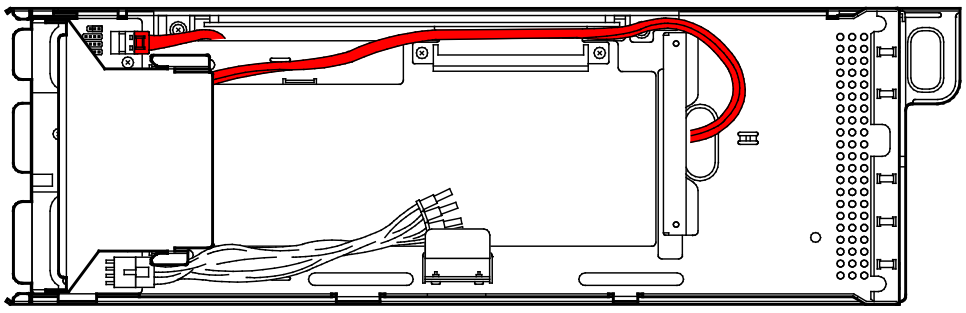
    In this case, use the shorter cable of the built-in SAS/SATA cable (K410-367).

    Caution:
    When connecting the cable, it may touch the riser board. Refer to the caution on the cable route in this section.



18. For route of the built-in SAS/SATA cable (K410-357), refer to the following figure.
    Although the following figure shows installation of N8103-176/177/178, the cable route when N8103-188 is installed is the same as this figure.

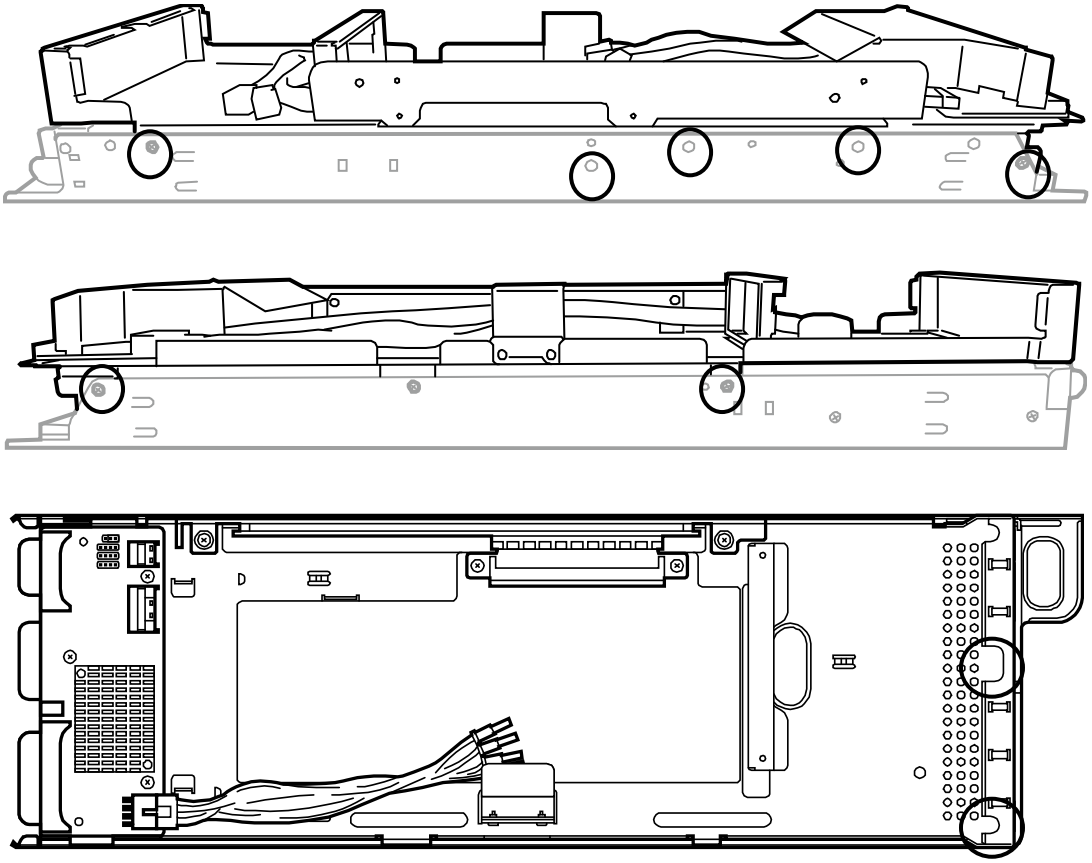




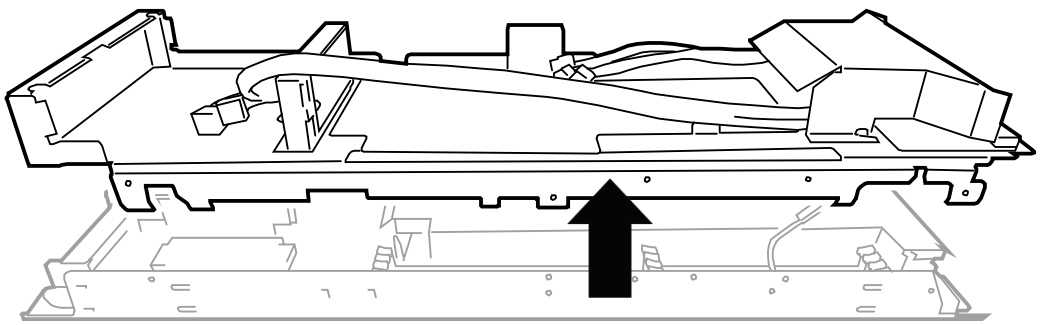
19. Continue to install or remove internal optional devices, mount and connect the server, and turn it on. Make sure that no error messages are displayed on POST screen. For details on POST error messages, see *Chapter 3 (1. POST Error Message)* in "*Maintenance Guide*".
20. Run the configuration utility of the installed card to set up the board.
For details, refer to the manual that comes with the card.

(a) How to remove and install the top and bottom of the 2U server module

1. Remove the screws from nine locations shown below.



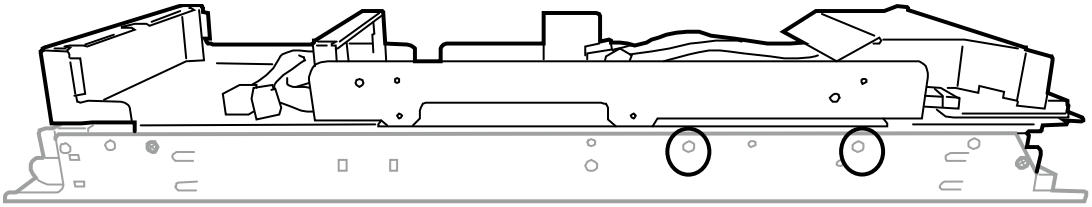
2. Raise the top or bottom straight to remove it.

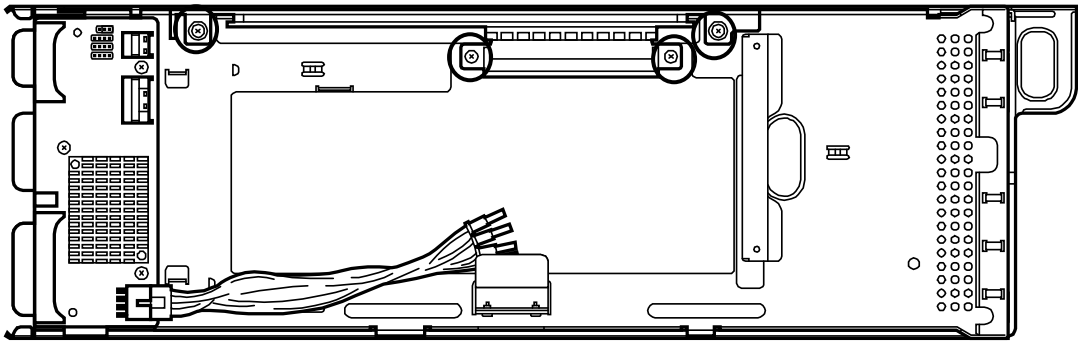


3. To install the top or bottom, follow the reverse order of removal.

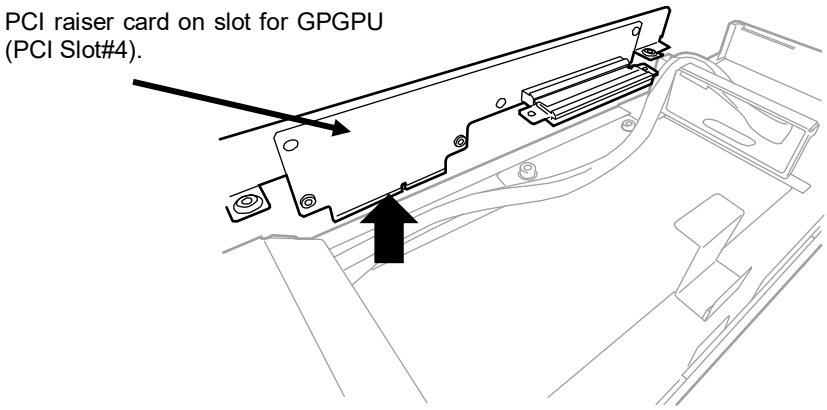
(b) Cautions of cable route

1. To remove the PCI riser card of the slot (PCI Slot #4) only for GPGPU, remove the screws from six locations shown below.

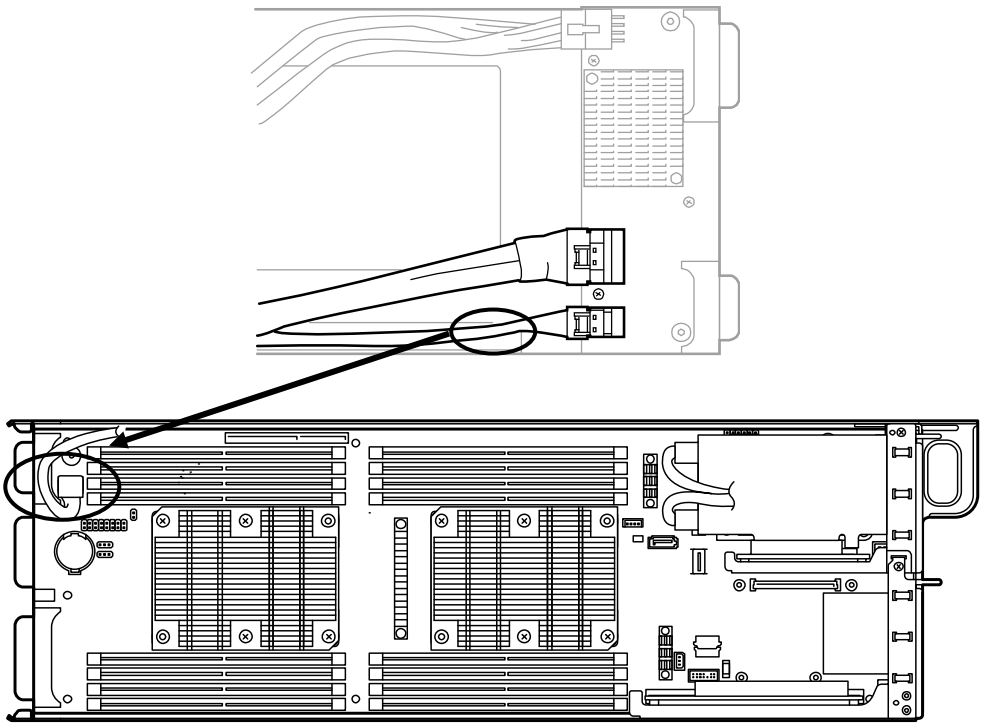




2. Remove PCI raiser card on the slot for GPGPU (PCI Slot#4).



3. Pass the cable through the free space.



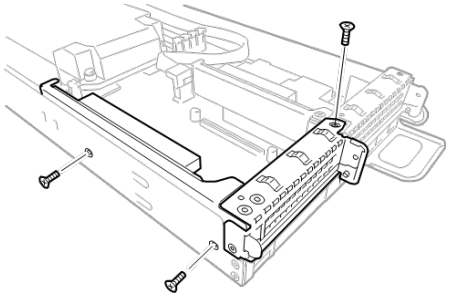
(2) Optional PCI card

Install a PCI card to the PCI riser card in the following procedure.

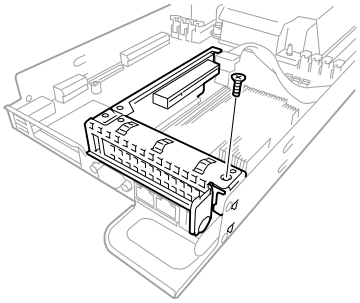
Important **When installing a PCI card, make sure the connector of the card fits the connector of the PCI riser card.**

Note Check the type of the card (low profile) supported by the PCI riser card and the type of the PCI card to be installed.

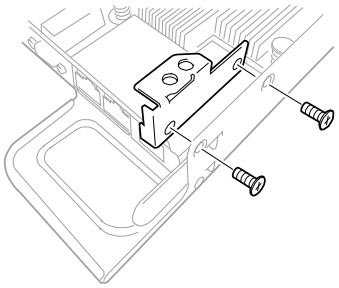
1. See steps 1 and 2 in *Chapter 2 (1.4 Removing Server Module)* for preparation.
2. To install the PCI board to PCI#1, remove the three screws securing the PCI #1 riser card. Hold the both ends of the riser card and lift it straight to remove it.



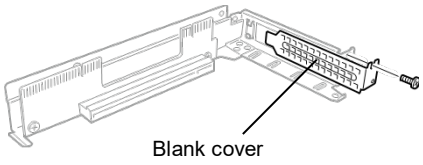
To install the PCI board to PCI#2, remove the one screw securing the PCI #2 riser card. Hold the both ends of the riser card and lift it straight to remove it.



Then, remove screws from two locations, and remove the bracket.



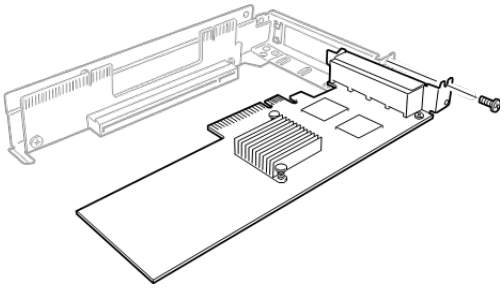
3. See the table on *Chapter2 (1.8.2 Supported cards and available slots)* and confirm the slot to install a card.
4. Remove one screw from the PCI riser card and remove the blank cover.



Note Keep the removed blank cover for future use.

5. Insert the PCI card to the PCI riser card while aligning the terminal of the PCI card with the PCI riser card slot.

   To install the PCI board to PCI#2, follow the same order as steps 8 and 9 in preceding "(1) RAID controller (N8103-176/177/178/188), and internal SAS/SATA cable (K410-356/K410-357)".



Important **Do not touch the terminal part of riser cards or PCI cards and the signal pins of electric parts installed on the board. Installing boards with dirt or oil can cause malfunction.**

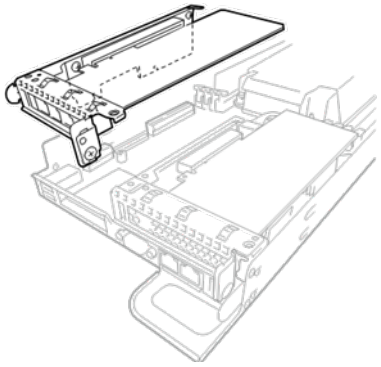
Note

- Make sure that the head of a PCI card bracket is seated into the fixed slot of PCI riser card.
- Depending on type of PCI cards, the terminal part of the PCI card may be too large to fit in the connector.
- If you have trouble installing the board, remove the board once and try again. If you apply excessive pressure on the card, a PCI card or riser card might break.

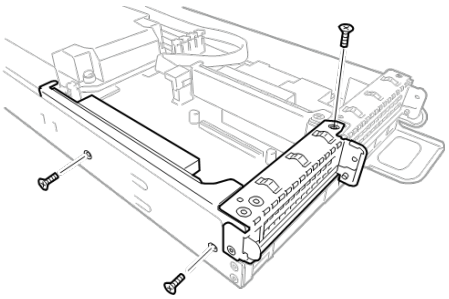
6. Fix the PCI card with the screw removed in step 4.

Tips To connect a PCI card to the connector on motherboard with cable, connect a cable to PCI card before installing PCI riser card.

7. Align the terminal of the PCI riser card with the slot on the motherboard and insert it securely.



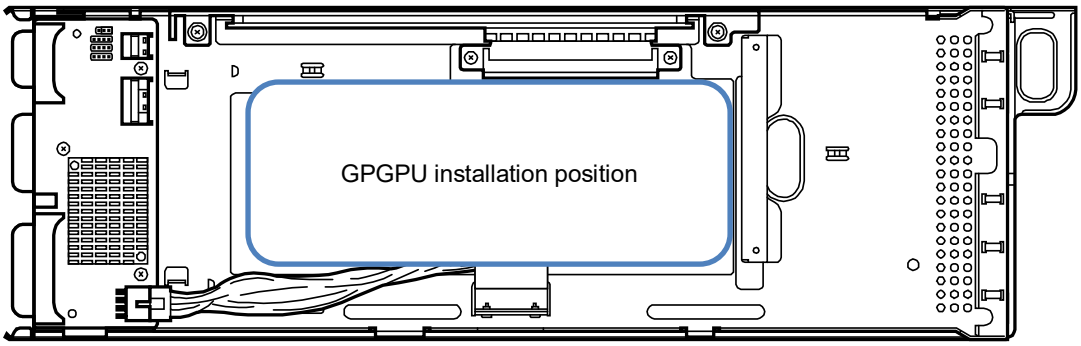
8. Fix the PCI riser card with three screws removed in step 2.



9. Continue to install or remove internal optional devices, mount and connect the server, and turn it on. Make sure that no error messages are displayed on POST screen.
For details on POST error messages, see *Chapter 3 (1. POST Error Message)* in "*Maintenance Guide*".

10. Run the configuration utility of the installed card to set up the board as needed.
For details, refer to the manual that comes with the card.

Caution: Install GPGPU to the location shown in the following figure as required.



1. Remove two screws fixing the GPGPU holder (sponge).
2. Remove the GPGPU holder.
3. Mount GPGPU.
4. Fix the GPGPU bracket.
5. Mount the GPGPU holder.
6. Fix the GPGPU holder with two screws.

1.9 Use of Internal Hard Disk Drives in the RAID System

This section describes how to use the internal hard disk drives in the RAID system.

Important **If you use hard disk drives in the RAID system or change the RAID level, hard disk drives are initialized. Be sure to back up the hard disk drive before installing the RAID controller and configuring the RAID system.**

Note In the RAID system, use hard disk drives that have the same specifications (capacity, rotational speed, and standard) for each disk array.

Tips Logical drives can be created even with only one physical device.

If using internal hard disk drives in RAID system with an optional RAID controller (N8103-176/177/178/188) installed in the server, the SAS/SATA cable needs to be rewired.

Tips When using SAS hard disk drives, RAID controller is mandatory.

Installation

For installation of the optional RAID controller, see "*Chapter 2 (1.8 上の PCI Card)*".

Removal

For removal of the optional RAID controller, reverse the installation steps.

When operating with the board being removed, attach the blank cover that has been attached to the riser card and fix it with screws.

1.9.1 Connecting cables

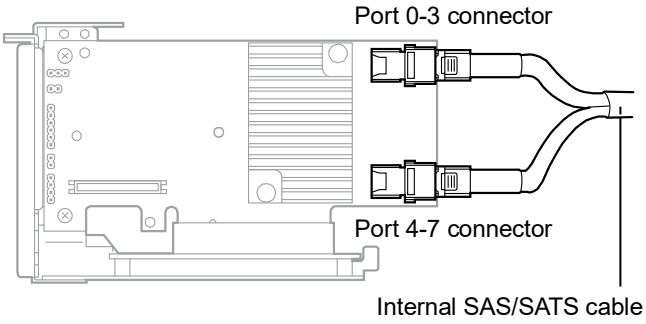
(a) Using the optional RAID controller

The optional internal SAS/SATA cable (K410-356/K410-367) is used for connection.

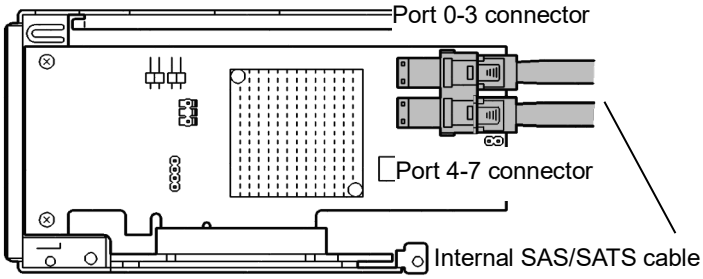
For RAID controller (N8103-176/177/178/188) side, see the figure below for connection.

For details, see "*Chapter 2 (1.8.3(1) RAID controller (N8103-176/177/178/188), and internal SAS/SATA cable (K410-356/K410-357))*".

N8103-176/177/178



N8103-188



1.9.2 Notes on Building RAID System

- The number of hard disk drives required varies in each RAID level.
- If an optional RAID controller N8103-176/188 is used, the RAID system cannot be built in RAID5/RAID6.

RAID level	The minimum number of hard disk drives	
	N8103-176/188	N8103-177/178
RAID 0	1	1
RAID 1	2	2
RAID 5		3
RAID 6		3
RAID 10	4	4

- When you configure the RAID system, all the hard disk drives (SAS/SATA) or SSD must have the same capacity, type and rotational speed in the same group (pack)
- EXPRESSBUILDER helps you to configure RAID arrays and install Windows.
- If you install the OS manually, use RAID System Configuration utility (Off-line Utility). For details, see *Chapter 2 (5. RAID System Configuration)* in "*Maintenance Guide*" or the manual supplied with the optional RAID Controller (N8103-176/177/178/188).

Important **Build a disk array in the RAID system using hard disk drives that have the same specifications (capacity, rotational speed, and standard).**

1.10 Hard Disk Drive

Bays for installing hard disk drives are provided at the front of the server.

A hard disk drive mounted in a dedicated drive tray can be purchased. Install the hard disk drive on the server with it mounted in the drive tray.

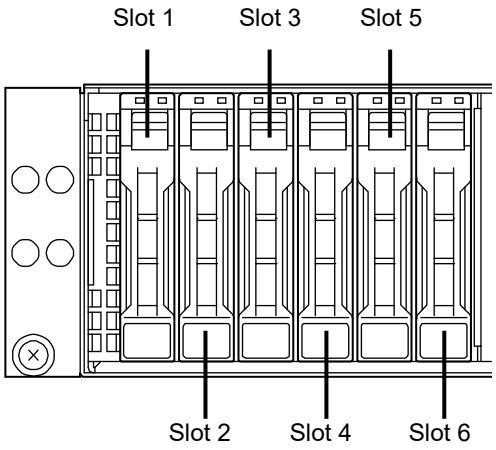
Important **Use hard disk drives specified by NEC. Installing a third-party hard disk drive might cause a failure of the server as well as the hard disk drive.**

Note the following precautions to install hard disk drives.

- Hard disk drives having different capacities, types, or rotational speeds cannot be installed together.
- In the RAID System, all the hard disk drives in a group (pack) must have the same capacity, interface type, and rotational speed.
- If using hard disk drives in a RAID System, jumper settings or a change of cables may be required.

The expansion bay of the 1U server module has six slots so that up to six hard disk drives can be installed to it.

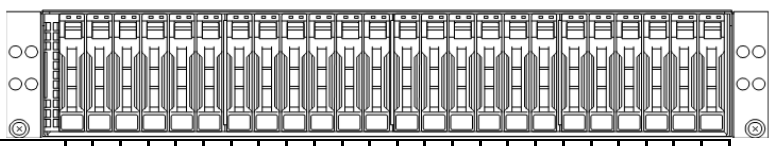
Unique slot numbers have been assigned to each slot.



The expansion bay of the 2U server module has twelve slots so that up to twelve hard disk drives can be installed to it. Unique slot numbers have been assigned to each slot.

Note Hard disk drive number depends on your OS.

The correspondence between the position of the expansion bay and the slot to implement the server module is shown below.
Mount the hard disk drive from the left (from the smaller slot number) in the expansion bay corresponding to each server module.



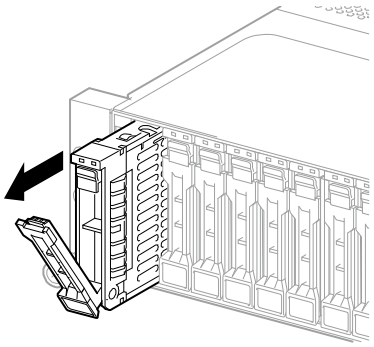
Expansion Bay Slot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1U server module	Slot 1						Slot 2						Slot 3						Slot 4					
2U server module	Slot 2												Slot 4											

1.10.1 Installation

Install a hard disk drive by using the following procedure.

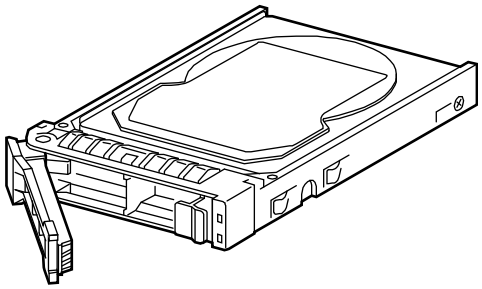
Note In the RAID System, use hard disk drives that have the same specifications (capacity, rotational speed, and standard).

1. See *Chapter 2 (1.2 Overview of Installation and Removal)* for preparations.
2. Locate the slot where you install the hard disk drive.
   The server has 6 slots. Install hard disk drives in ascending slot number order.
3. Remove the dummy tray.

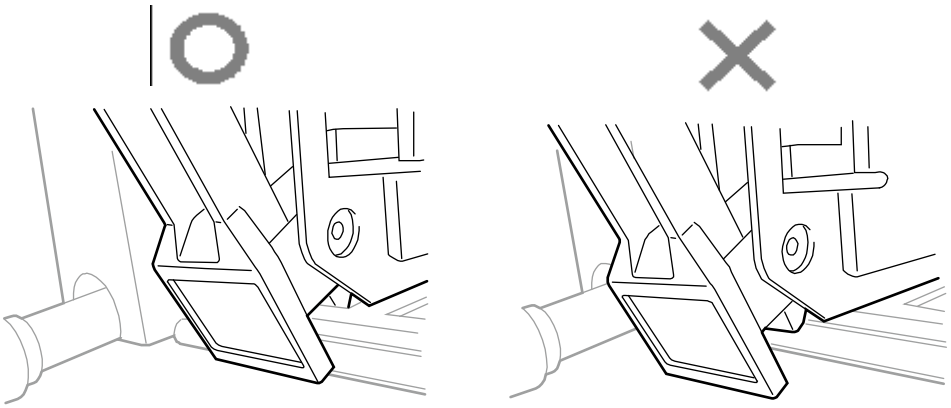


Note Keep the removed dummy trays for future use.

4. Unlock the handle of the tray.



5. Hold the tray firmly and insert it into the slot.



Note

- Push it all the way until the handle's hook touches the frame.
- Hold the tray firmly with both hands.

6. Slowly close the handle.
   The tray is locked making a clicking sound.

Note

When you push the drive into the slot, confirm the handle got hooked on the frame.

7. Run BIOS Setup Utility, and then specify the boot order from **Boot** menu.
   For details, see *Chapter 3 (2* BIOS Setup Utility (SETUP).

1.10.2 Removal

To remove hard disk drive, reverse the installation procedure.

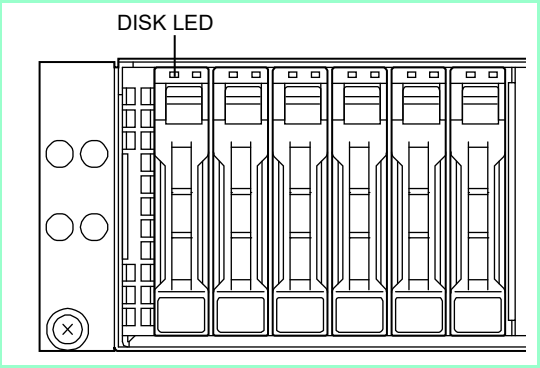
If you transfer or dispose of the removed hard disk drive, see *Chapter 1 (1.5 Transfer, Relocation, and Disposal) in Safety Precautions and Regulatory Notices* to erase data.

Important

NEC assumes no liability for data leakage should the product be transferred to a third party without erasing the data.

Note

- If you remove a hard disk drive due to a failure, check the slot with its DISK LED lit in amber.



- Do not hold handle to pull the drive out. Doing so may damage the handle.

Run the BIOS Setup Utility, and then specify the boot order from **Boot** menu.
For details, see *Chapter 3 (2* BIOS Setup Utility (SETUP).

1.10.3 Replacing a hard disk drive in the RAID System (Auto Rebuild)

In the RAID System, you can use the auto rebuild feature to restore data back to the state before a failure occurred.

The auto rebuild feature is enabled in logical drives set to RAID 1, RAID 5, RAID 6, and RAID 10.

The disk array is automatically rebuilt when hot swapping (replacing a hard disk drive while the power on) a failed hard disk drive.

During the auto rebuild, DISK LED on the hard disk drive blinks green and amber alternately to indicate that the auto rebuild is being performed.

Observe the following precautions when executing the auto rebuild

- Do not turn off the server until the auto build completes after a hard disk drive fails.
- Leave an interval of at least 90 seconds between a hard disk drive removal and a hard disk drive installation.
- Do not replace a disk during the auto rebuilding of another hard disk drive (during an auto rebuild, DISK LED on the hard disk drive blinks green and amber alternately).

1.11 VMware ESXi Base Kit (N8106-012)

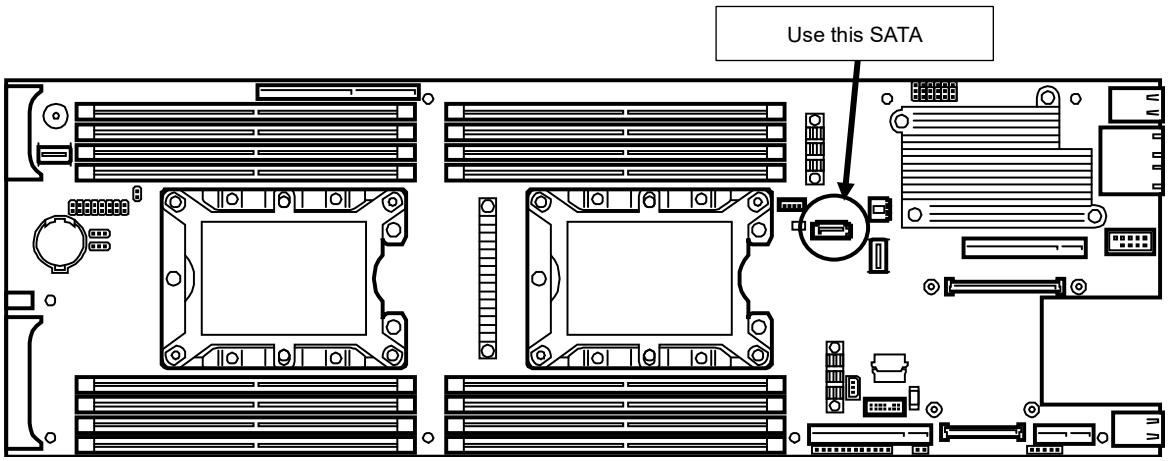
This server is equipped with an internal SATA connector where VMware ESXi Base Kit can be installed. This section describes installation of VMware ESXi Base Kit and OS installation.

Important

- **You must avoid static electricity to work with the procedure below. For details, see *Chapter 1 (1.8 Anti-static Measures) in .Safety Precautions and Regulatory Notices.***
- **Take care not to touch the terminal part of the board and lead wires of electronic parts directly.**
  If you touch, oil and stain of your hands are left on their surface and may cause connection failures and malfunction due to breakage of lead wires.

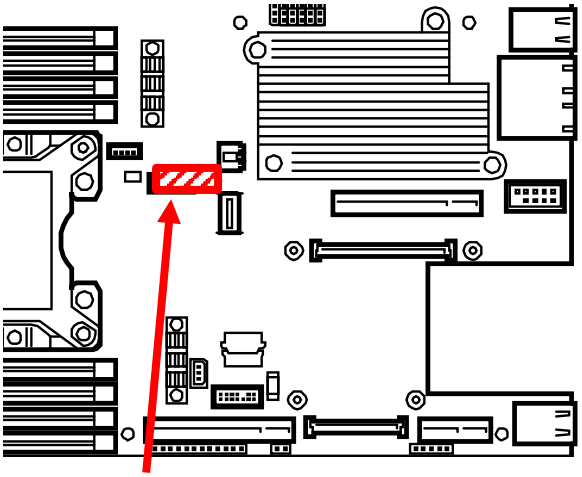
1.11.1 Installation

(1) VMware ESXi Base Kit mounting position



(2) VMware ESXi Base Kit Installation Procedure

Install SATA-DOM to the SATA connector vertically.



SATA-DOM holder mounting position

1.11.2 OS installation

Notes

- The license of ESXi is not included in this product. Prepare the edition of license you use separately.
- Do not mix it with a bootable hard disk drive.

1. Set the installation media (NEC Custom Image), and turn the power ON.
   When the installer automatically starts up, the Storage Device selection screen appears.
2. Select the local SATA device, and then proceed with the installation procedure according to the instructions on the screen.
3. After OS installation, make settings as follows from the BIOS setup utility:

Item	Setting value
[Boot] - [UEFI Hard Disk Drive BBS Priorities] - [Boot Option #1]	ServerDOM-L 3S

4. After installation, set a scratch partition following the supplementary notes attached to the license of ESXi.

1.11.3 Removal

Perform removal of VMware ESXi Base Kit by reversing the installation steps.

1.12 Power Supply Unit

This server can contain two power supply units. The server provides a redundant power configuration that ensures continued operation of the system in the unlikely event one of the power supply units fails.

1.12.1 Cold Redundant Feature

The server supports the feature to optimize power efficiency as described below:

- Cold redundant feature can run the system with optimum power efficiency by raising operating efficiency of primary power supply unit and lowering that of redundant power supply unit in redundant power configuration.
- If power efficiency of power units is not optimized due to system configuration, this feature is disabled automatically.

Cold redundant feature can be used under the following conditions:

- Two power supply units must be installed for redundant configuration.

1.12.2 Replacing a failing power supply unit

Replace only when the power supply unit fails.

⚠ CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

- **Pay attention to electric hazard.**

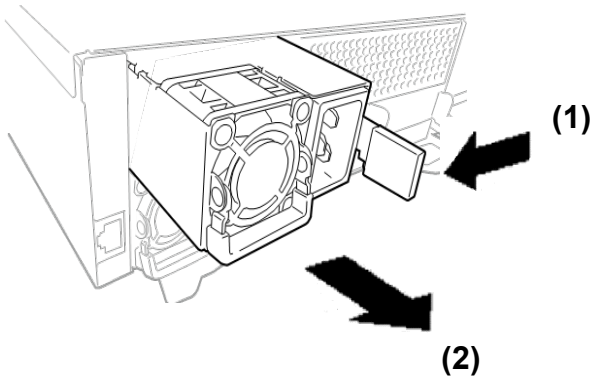
Important **Do not remove a power supply unit operating normally.**

Tips In the redundant power configuration (with two power supply units) and if either one of power supply units fails, the failing power supply unit can be replaced with the system power on.

Remove the power supply unit in the following procedure.

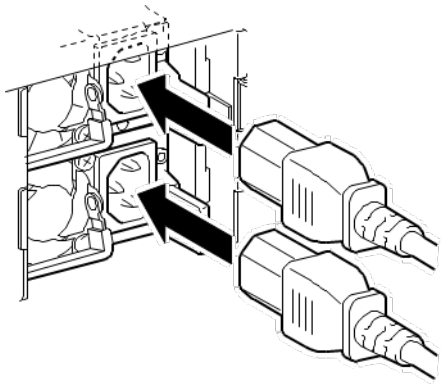
1. See steps 1 and 2 in *Chapter 2 (1.2 Overview of Installation and Removal)* for preparations.
2. Disconnect the AC power cord from the failed power supply unit.

3. Push the lever of the failed power supply unit toward inside, and pull the power supply unit while holding the handle.



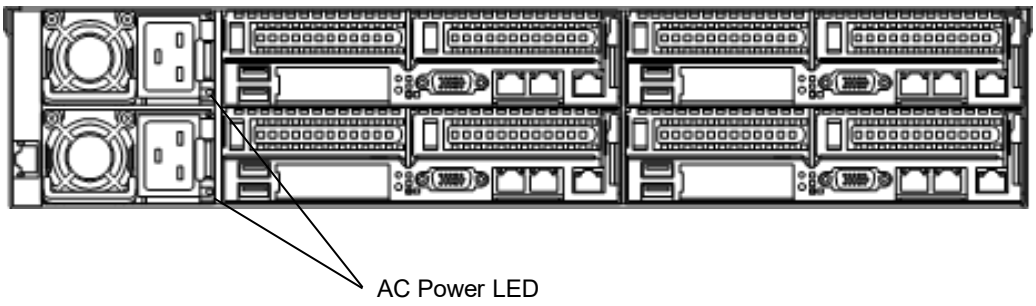
4. Insert the new power supply unit until it is locked with clicking sound.
5. Connect the power cord.

   Be sure to use the specified power cord.



   When the power cord is connected to one of the power supply unit, its AC POWER LED blinks green. At this time, AC POWER LED on another power supply unit goes on amber.

   When the power cords are connected, AC POWER LEDs on both power supply units light green.



6. Confirm, by the STATUS LED or on the POST screen, that there are no errors related to the power supply units.

   See *Chapter 3 (1. POST Error Message)* in the *Maintenance Guide* for details on the error messages.

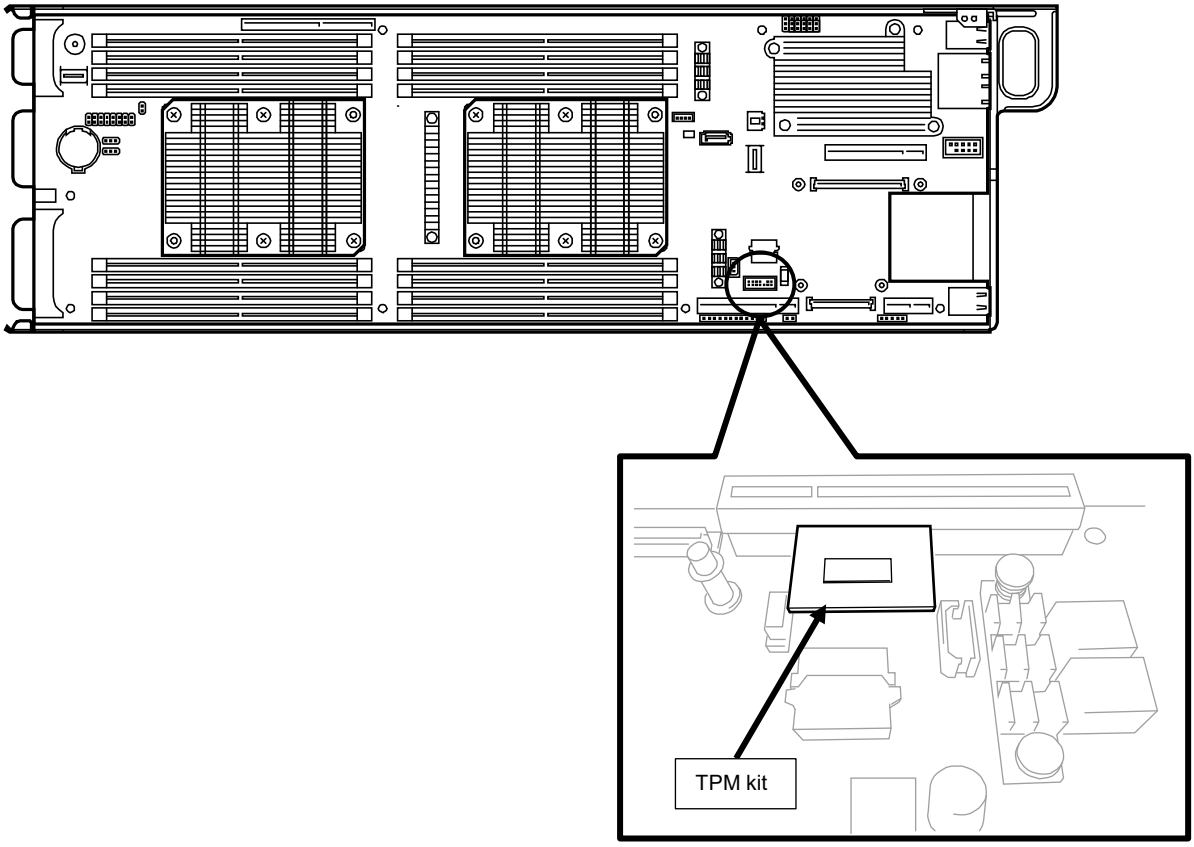
   If the AC POWER LEDs are off, reinstall the power supply units. If the same error message still appears, contact your service representative.

1.13 TPM kit (N8115-31)

This section describes the procedure for installation of the optional TPM kit (N8115-31).

1.13.1 Installation

Install the connectors at the following locations.



1.14 Additional RS-232C connector (N8117-01A)

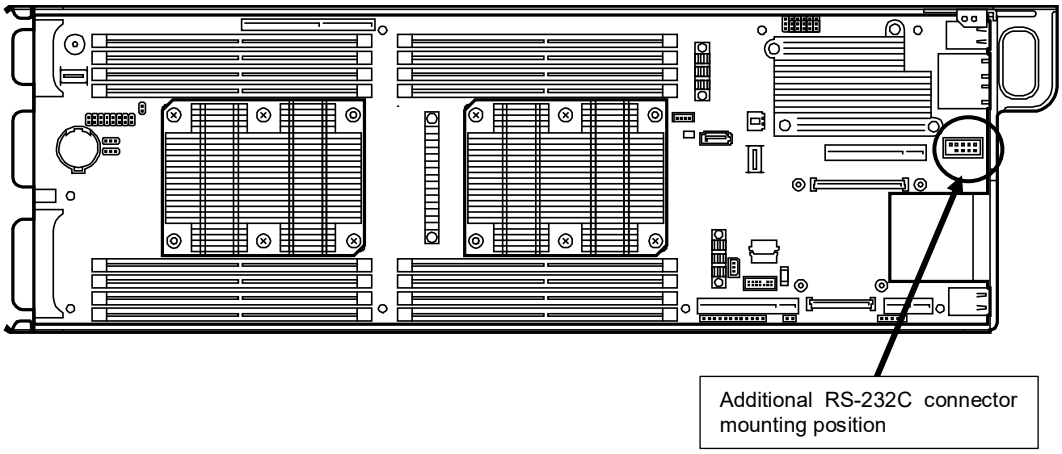
This section describes the procedure for installation of the optional additional RS-232C connector (N8117-01A).

Important

N8117-01A has two types of cables.
For this server, use the cable "RS-232C (A): 804-063264-020".

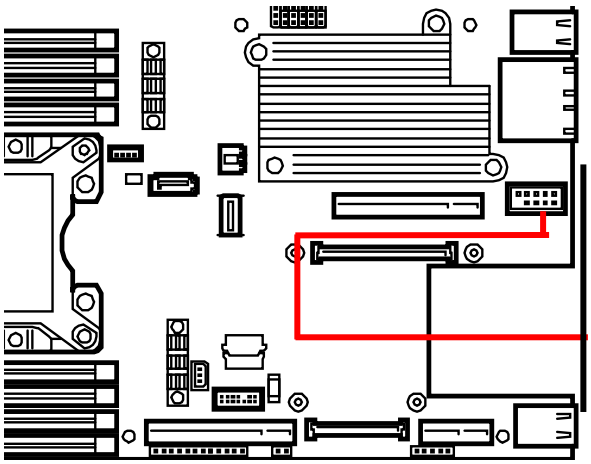
1.14.1 Installation

1. Install the connectors at the following locations.



2. Connect the cable according to the following cable route.

   At this time, take care not to touch the optional PCI board, etc.



2. Installation and Connection

This section describes how to install the server and connect cables.

2.1 Installation

This server must be mounted to a rack which conforms to EIA standards for use.

2.1.1 Installing Rack

Refer to the manual that comes with your rack for how to install the rack, or consult with your sales representative.

WARNING

Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices.*

- **Use only in the specified environment.**
- **Do not connect the ground wire to a gas pipe.**

CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not carry or install the server only by a single person.**
- **Do not install the server so that the load may be concentrated on a specific point.**
- **Do not install any components only by a single person.**
  Confirm that hinge pins of the door are completely secured in place.
- **Do not pull out the server from the rack when the rack is unstable.**
- **Do not leave more than one device being pulled out from the rack.**
- **Do not provide the wiring for the server to exceed the rating of the power supply.**
- **Do not use the server in the environment where corrosive gas is generated.**

Do not install the rack or server under the following environment. Doing so may cause malfunction of the server.

- Narrow space from which devices cannot be pulled out from the rack completely
- Place that cannot bear the total weights of the rack and devices mounted on the rack
- Place where stabilizers cannot be installed or where the rack can be installed only after the practice of proper earthquake-resistant construction
- Place of uneven or slanting floor
- Place of drastic temperature change (near a heater, air conditioner, or refrigerator)
- Place where intense vibration may be generated
- Place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc.) exist
  Place where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals
- Place where chemicals may be accidentally sprayed over
- Place where a carpet not subject to anti-static process is laid
- Place where some objects may be fallen on the rack
- Place near a device generating intense magnetic field (such as TVs, radios, broadcast/communication antennas, power transmission wires, and electromagnetic cranes) is placed.
- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption
- Place near equipment that generates power noise (e.g., contact spark at power-on/power-off of commercial power supply through a relay).
- Environment where operation of the server is not guaranteed

2.1.2 Installing the server to the rack or removing it from the rack

Mount the server to the rack. (This section also describes the removal procedure.)

WARNING

Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not use any racks out of standards.**
- **Use only under the specified environment.**

CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not drop.**
- **Do not leave the server being pulled out.**
- **Do not install with the cover removed.**
- **Do not get your fingers caught.**

Important

Temperature increases and airflow in the rack

If multiple devices are installed, or if the inside of the rack is not sufficiently ventilated, the internal temperature rises due to the heat emitted from each device, which may result in a malfunction. Review airflow in the rack and room and take sufficient measures so that the internal temperature will not exceed the operational temperature during operation.
Air enters the server from the front and exits from the rear.

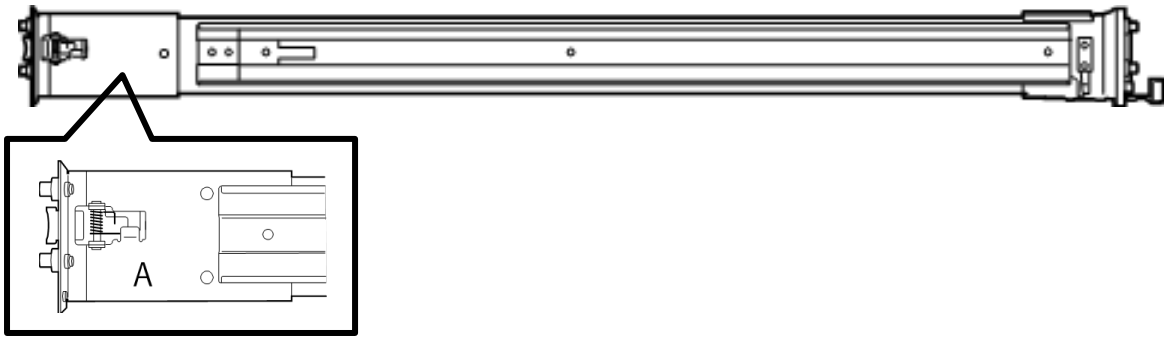
(1) Preparation

Check and install the rail.

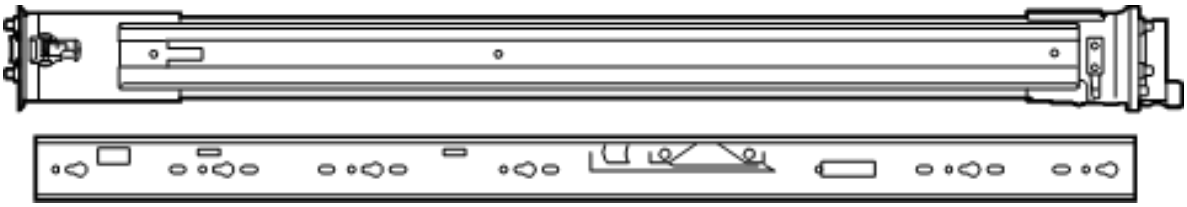
Checking rails

Make sure the orientation of right and left rails by viewing labels on each rail.

<Right>



Outer rail



Inner rail

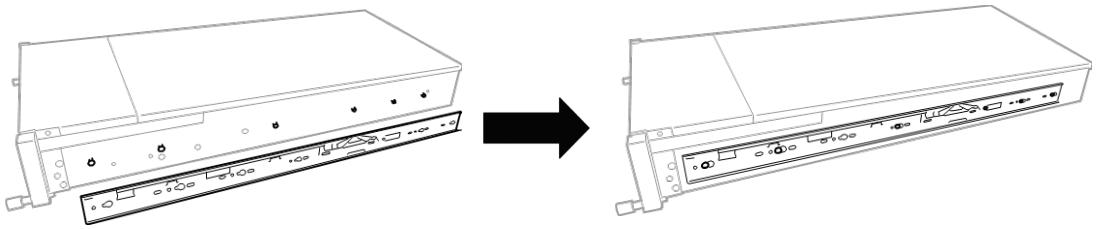
<Left>

Outer rail

Inner rail

Installing the inner rail

1. Viewing from the front of this server, install the inner rail with outer rail A on the right side and outer rail B on the left side.

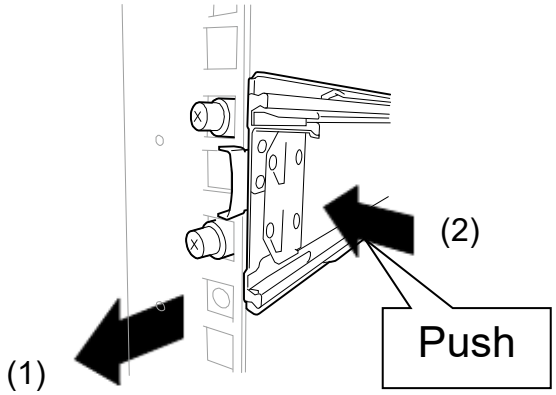


Installing the outer rail

1. Mount a rail marked as "A" to the right side of the rack and "B" to the left side when viewed the rack from front.
2. Fit the square-shaped protrusions of rail to the square holes of a 19-inch rack. Push the locking mechanism and make sure that it makes a clicking sound indicating that it is locked.

   The image on the right shows the front left side of the rack. Install to the rear left side and front and rear right sides following the same procedure.

   Make sure that the rail is installed at the same height as the other rail already installed.



Important **Confirm that the rails are securely locked so that they will not fall off.**

Tips Although the rail may be somewhat unsteady, it is not defective.

(2) Installing/Removing the Server

CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

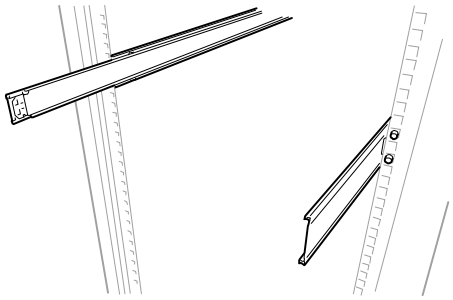
- **Do not attempt to lift the server with single person.**
- **Do not drop.**
- **Do not leave the server being pulled out.**
- **Do not install with the cover removed.**
- **Do not get your fingers caught.**

Installation

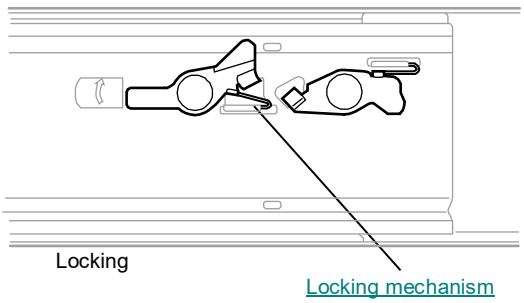
Mount the server to a rack in the following procedure.

Important **The weight of the module enclosure is a maximum of 41 kg. Always install the server with three or more persons.**

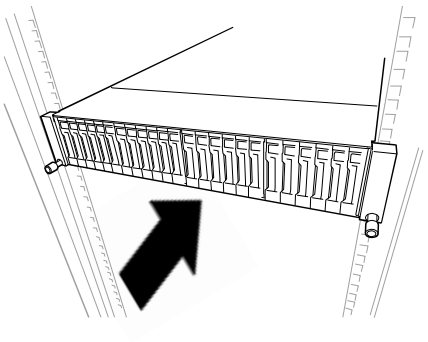
1. Pull out the slide rails of the right and left outer rails until they are locked.



Note Check that the locking mechanism works securely.



2. Hold this server by two persons, and install it to the rack.



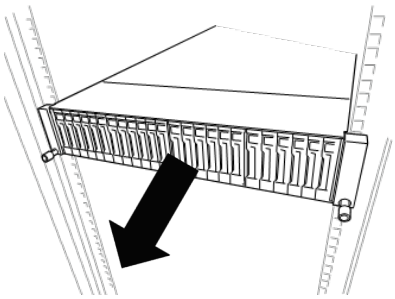
3. Secure this server with the screws on both sides.

Removal procedure

Remove the server from the rack in the following procedure.

Important **The weight of the module enclosure is a maximum of 41 kg. At least three persons are required to remove the server from rack.**

1. Make sure that the power of all servers mounted on the module enclosure is turned off and then disconnect the power cord or all interface cables from the module enclosure.
2. Remove screws from front left and right sides of the module enclosure, and take out the server from rack gently and carefully.



Important **Be careful not to get your fingers caught in the rails or lever.**

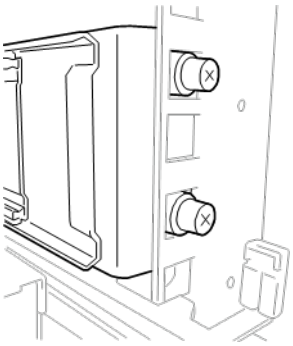
3. Hold the module enclosure firmly and remove it from the rack.

Important
- **While more than three persons are supporting the bottom part of the server, slowly pull out the server.**
- **Do not apply pressure on the server from top when it is being pulled out. Doing so cause the server to drop.**

Removing Rail

Remove rails from the rack in the following procedure.

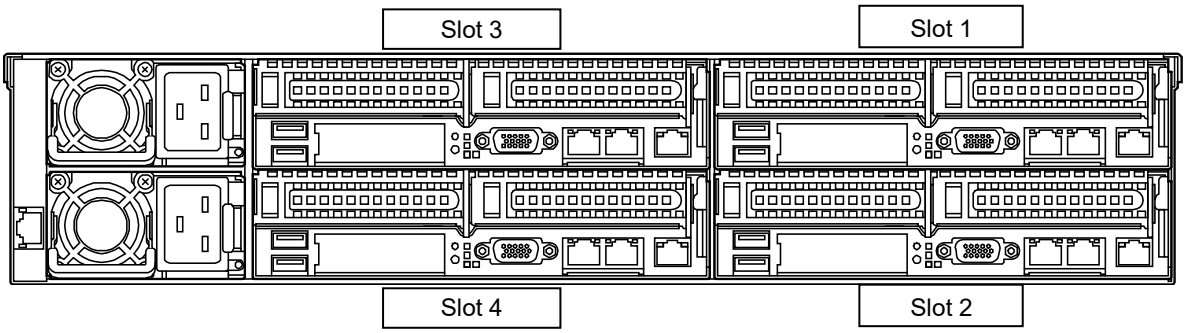
1. See *Chapter 2 (2.1.2 Installing the server to the rack or removing it from the rack, (2) Removal procedure)* to remove the module enclosure from the rack.
2. While pressing the lever on rail, push the rail toward inside of the rack, and then remove it.



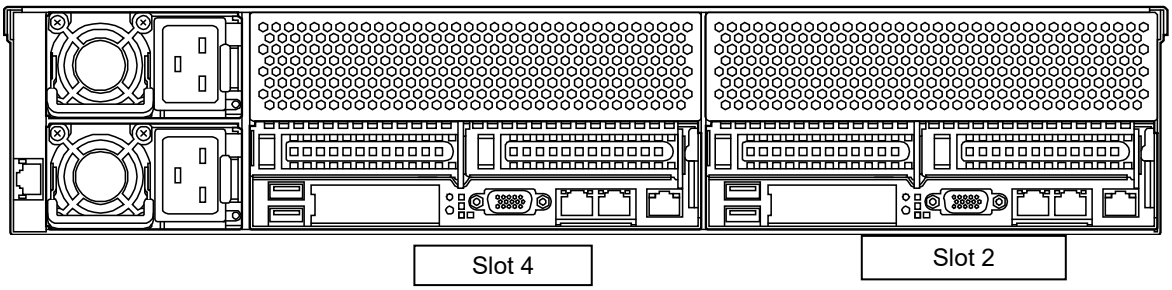
2.1.3 Installation/Removal of server module

(1) Preparation

Check the slot number (1 to 4) of the right and the left of the server modules and the corresponding module enclosure.



[Module enclosure: When installing the 1U server module]



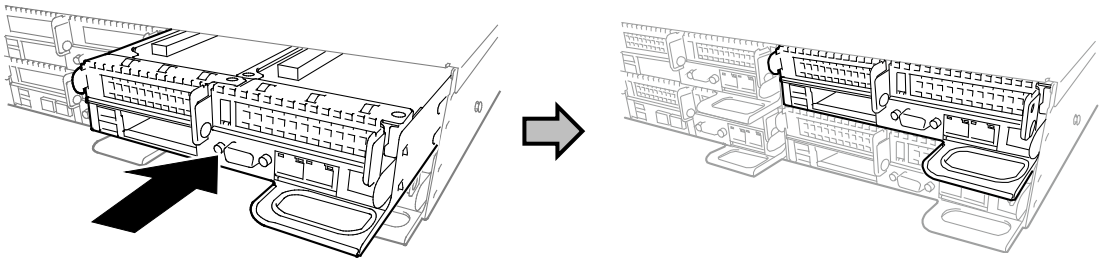
[Module enclosure : When installing the 2U server module]

(2) Installation

Important

- **For the 1U server module, install the server module in the order from slot 1, slot 2, slot 3, to slot 4.**
- **For the 2U server module, install the server module in the order from slot 2 to slot 4.**

1. With the lever held up, insert server modules slowly in the horizontal direction into the back until the position where it stops. Push the handle, and insert the server module slowly until it stops.



Important

- **Since server modules tend to be bumpy in the horizontal direction when being inserted due to their shape, insert it slowly along the right and left edges of the module enclosure. If insertion seems difficult, redo it.**
- **If the slots 2 and 4 have been filled when installing slots 1 and 3, take care not to touch the air ducts of the slots 2 and 4.**

2. Insert the server module slowly until click sound is heard.

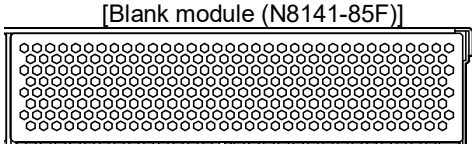
(3) Removal

To remove server module, reverse the installation procedure.

2.1.4 Installation of blank module (N8141-85F)

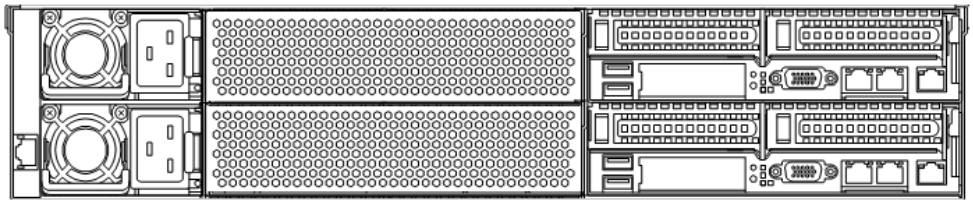
To the slots where server modules are not mounted, install a blank module (N8141-85F).

[Blank module (N8141-85F)]



(1) Installation procedure

1. Insert a blank module in free slots.
2. When inserted into the back of the module enclosure, the installation is complete.



(The above figure shows that the blank module is installed to the slots 3 and 4 when the 1U server module is installed.)

(2) Removal

To remove blank module, reverse the installation procedure.

2.2 Connection

Connect peripheral devices to the server.

Connectors that allow a variety of peripheral devices to be connected are provided at the front and rear of the server. Images on the following pages show the peripheral devices that can be connected in their standard state and their respective connector positions.

WARNING

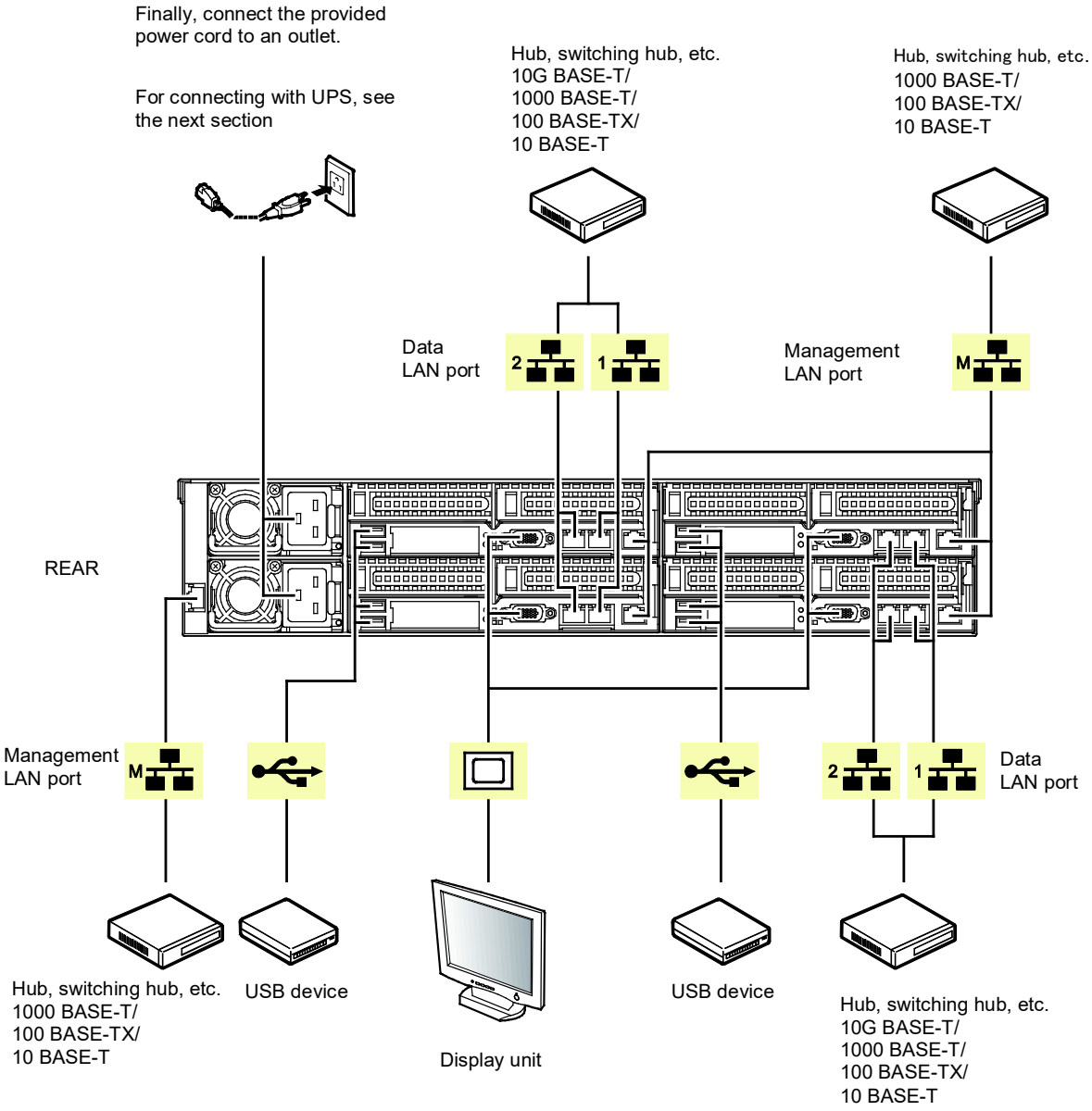
Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices.*

- **Do not hold the power plug with wet hands**
- **Do not connect the ground wire to a gas pipe**

CAUTION

Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices.*

- **Use only the specified outlet to insert.**
- **Do not connect the power cord to an outlet that has an illegal number of connections.**
- **Insert the power plug into the outlet as far as it goes.**
- **Use only the specified power cord**
- **Do not connect or disconnect the interface cable with the power plugged in the outlet.**
- **Use only the specified interface cable**



Note When connecting the line, use the certified card.

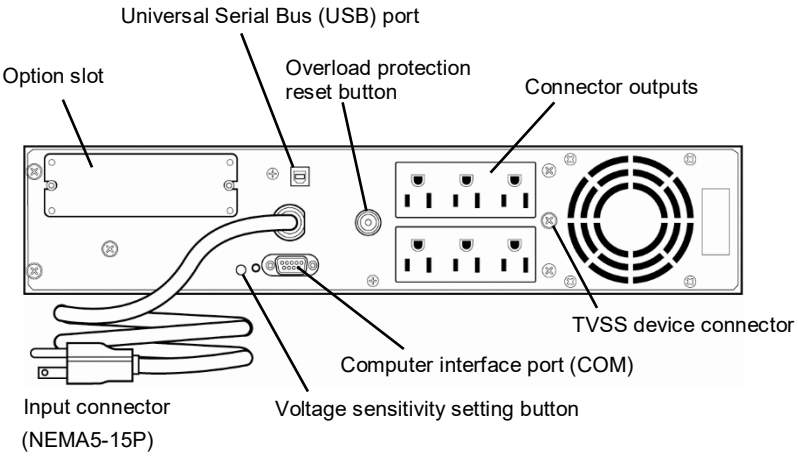
Note the following precautions to connect cables.

- When the device is not Plug and Play device, turn off the server and devices to be connected before connecting.
- If connecting any peripheral device and its interface cable made by other companies (a third party), contact your sales representative to check if they can be used with the server beforehand.
- Fix the power cord or interface cable with cable ties. Do not bend the cable so excessively to stress the cable.
- Make sure that no pressure is applied on the plug of power cord.

2.2.1 Connecting to Uninterruptible Power Supply (UPS)

To connect the power cord of the server to a UPS, use the connector output on the rear of the UPS. For details, refer to the manual supplied with the UPS.

Example



When the power cord is connected to a UPS, change the BIOS settings in order to link the server with the power supply from the UPS.

To change the settings, select **Advanced, Chipset Configuration,** and then **Restore AC Power Loss** in BIOS Setup Utility, and change the displayed parameters. Select **Power On** to perform automatic operations by using the UPS. For details, see *Chapter 3 (2 BIOS Setup Utility (SETUP)*.

NEC Express5800 Series
Express5800/D120h

3 Setup

This chapter describes how to set up the server.

1. **Turning on the Server**
   Instructions of turning on the server. Power-On Self-Test (POST) is explained in this section.

2. **BIOS Setup Utility (SETUP)**
   Instructions of setting BIOS by using BIOS Setup Utility.

3. **BMC/CMC**
   Instructions of using BMC/CMC with Baseboard Management Controller (BMC).

4. **EXPRESSBUILDER**
   Instructions of using EXPRESSBUILDER to set up server.

5. **Installing Software Components**
   Instructions of installing Windows and bundled software.

6. **Turning off the Server**
   Instructions of turning off the server.

1. Turning on the Server

Turn on the server by using the following procedure.

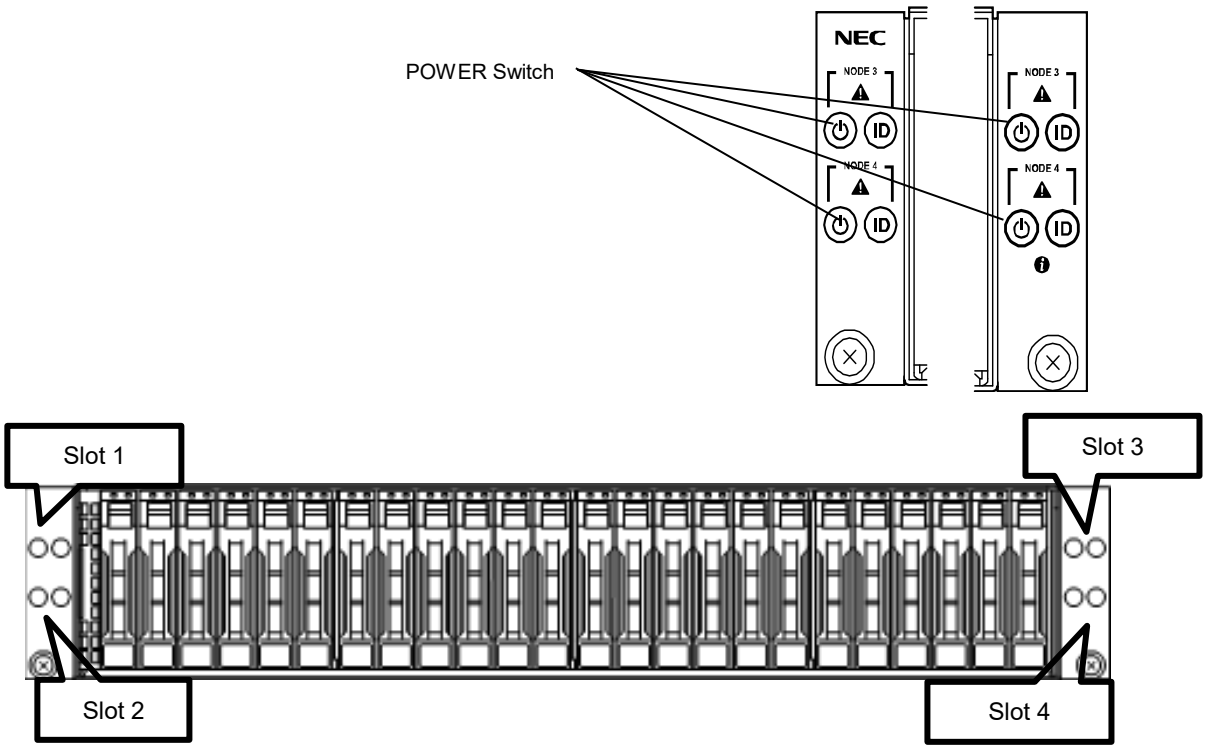
1. Turn on a display, uninterruptible power supply (UPS), and other peripherals.

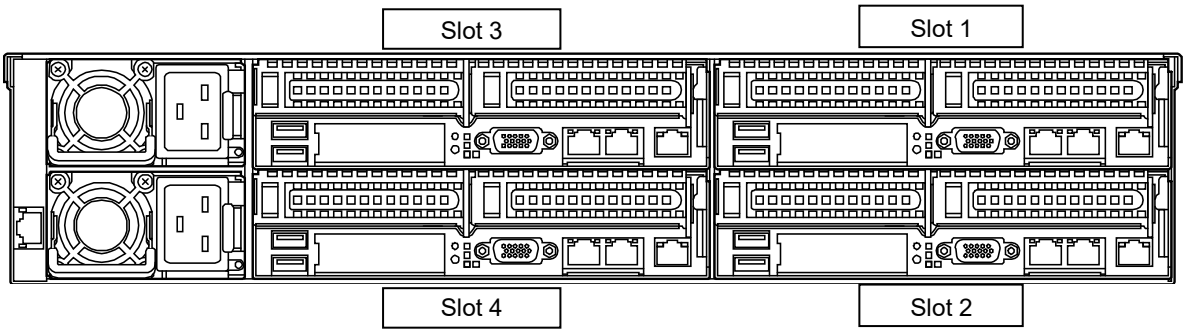
Note If a power control device such as an uninterruptible power system (UPS) is connected, check that the power of the power control device is turned ON.

2. Connect the power cord to outlet, and wait for at least 40 seconds before pressing POWER Switch. If STATUS LED is lighting green or amber, wait until it goes off.

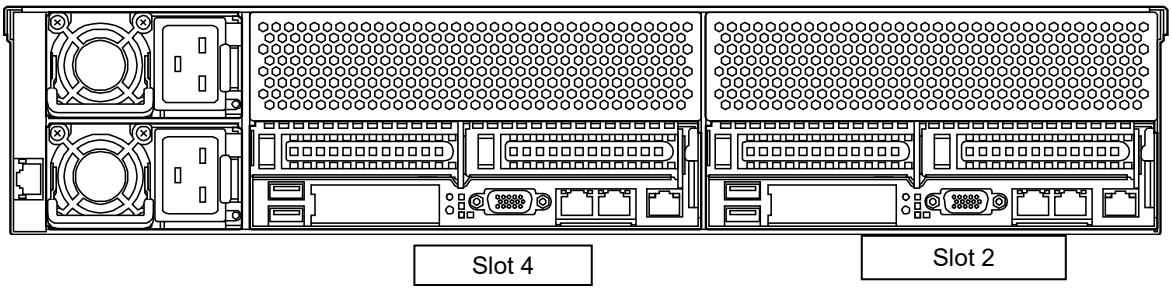
3. Press POWER Switch at the front of the server.
POWER LED is turned on green and after a while, NEC logo appears on the display.

Important **Do not connect or disconnect external USB device while POST is running.**





[Module enclosure: When installing the 1U server module]



[Module enclosure: When installing the 2U server module]

While the logo is being displayed, the self-diagnostic program (POST) runs and tests the hardware. For details, see *Chapter 3 (1.1 POST)*.

1.1 POST

Power-On Self-Test (POST) is a self-diagnostic program stored in the server as standard. POST automatically runs after the server is turned on and checks the motherboard, memory, and processor (CPU). POST also displays the start-up messages of utilities.

Usually, you do not need to check the message of POST. Check messages displayed at POST in the following cases:

- When introducing a server
- If you suspect a failure
- When you hear beep many times during the time between power on and OS startup
- When any error message is displayed

1.1.1 POST sequence

1. POST runs automatically when the server is turned on. NEC logo appears on the screen as factory settings.

Note

- Keyboard becomes operable after the logo appears.
- While an initialization message is displayed, a screen is sometimes switched over to the black screen. It's no problem for operation.
- Initialization messages are not displayed on the console redirection screen with a serial port.

2. When <Esc> key is pressed, the logo disappears and the details of POST are displayed.

Tips

For **Disabled** in **Boot** - **Quiet Boot** in the BIOS Setup Utility (SETUP), the log does not appear. Instead, the capacity of the installed CPU or memory appears.

3. After a while, the following message is displayed on the screen. The message depends on hardware settings.

```
Press <Del> to enter setup, <F10> Display Boot Menu, <F12> Force Network Boot
```

You can call the functions below upon completion of POST by pressing the function key.

<Del> key: Run BIOS Setup Utility (SETUP). For details, see *Chapter 3 (2 BIOS Setup Utility (SETUP)*.
<F10> key: Starts up from the selected device.
<F12> key: Boot from network.

4. When a boot mode is Legacy BIOS and a controller which has the dedicated BIOS (such as a RAID controller) is installed, a message that prompts you to start the configuration utility appears.

   Example: optional RAID controller

   ```
   Press <Ctrl> <S> to enter setup menu
   ```

   The utility starts by pressing <Ctrl> + <S> keys.

   For details, refer to the manual that comes with each optional board.

   "Press Any Key" appears to prompt a key entry depending on optional hardware settings. Continue to operate after checking the manual of the optional board.

5. The OS starts after POST is completed.

1.1.2 POST error messages

If POST detects an error, an error message appears on the screen or beeps are sounded. Write down the error message for future maintenance. For details, see *Chapter 3 (1. POST Error Message) in* "*Maintenance Guide*".

Note

Before contacting the maintenance service company, record details of the error. This record will be helpful for the maintenance works.

Tips

Press <Del> key to start the BIOS setup utility.

```
Press <Del> to enter setup, <F10> Display Boot Menu, <F12>
Force Network Boot
```

However, the following message appears in case of a POST error.

```
Press <F1> Skip, <F2> Enter Setup Menu
```

To start the BIOS setup utility after this message display, press <F2> key, instead of <Del> key.

2. BIOS Setup Utility (SETUP)

This section describes how to configure Basic Input Output System (BIOS).

2.1 Overview

BIOS Setup Utility (SETUP) is a utility to configure basic hardware settings. This utility is installed in the server as standard.

Factory settings of BIOS are set with optimal settings. Usually, you do not need to run SETUP. **Use only when the case applies to any of cases described in *Chapter 3 (2.4 Cases That Require Configuration)*.**

2.2 Starting SETUP Utility

Run POST following *Chapter 3 (1.1.1 POST sequence)*.

After a while, the following message will be displayed on the lower left of the screen. The on-screen message depends on your environment.

```
Press <Del> to enter setup, <F10> Display Boot Menu, <F12> Force Network
Boot
```

If you press the <Del> key, SETUP starts upon completion of POST, and the **Main** menu is displayed.

Tips

If the boot mode is the legacy BIOS mode, SETUP starts up if the <Del> key is pressed when the optional ROM message appears.

Password

If you have set a password, a message prompt you to enter password will be displayed.

```
Enter password [                ]
```

If you entered an incorrect password three times, operation stops and you cannot operate further.
Turn off the power and retry.

Saving changes

To save changes and exit, choose **Save & Exit** and then **Save Changes and Reset**.

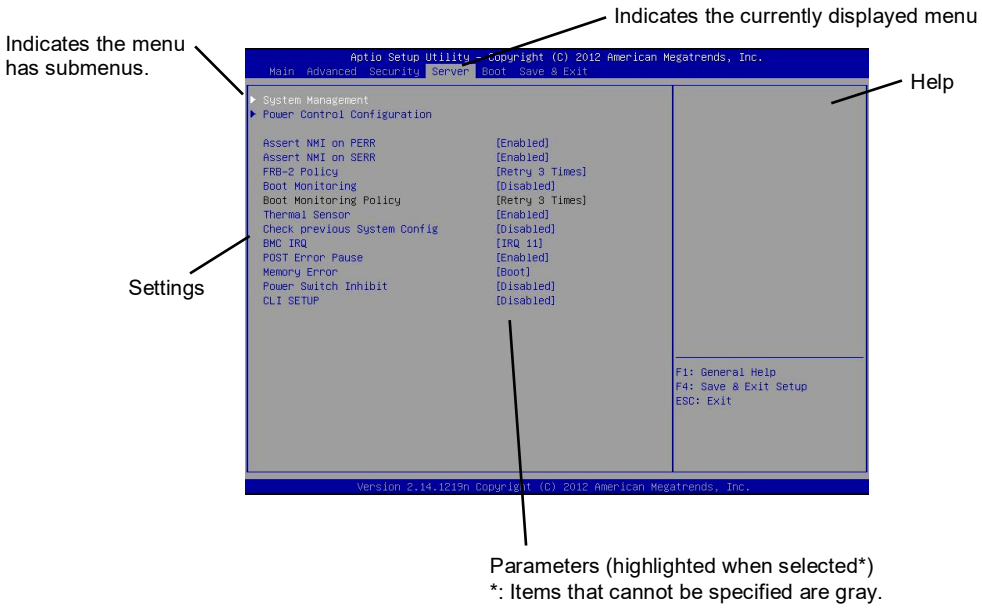
Choose **Save & Exit** and then **Discard Changes and Reset** when finishing the utility without saving.

Tips

- If you want to restore the setting to default values, select **Save & Exit** and then **Restore Defaults**.
- Some default values are different from the factory settings.

2.3 Usage of SETUP

Use the following keys to operate SETUP.



☐ Arrow keys (<↑>, <↓>)
Chooses an item displayed on the screen. If characters of an item are highlighted, that means the item is currently chosen.

☐ Arrow keys (<←>, <→>)
Chooses menus including **Main**, **Advanced, Chipset, Server Mgmt, Security**, **Server**, **Boot**, and **Save & Exit**.

☐ <–> key/<+> key
Changes the parameter of the chosen item. You cannot use this key when a menu which has ▶ on the left is chosen.

☐ <Enter> key
Determines the chosen parameter.

☐ <Esc> key
Returns to the previous screen. If you choose **Yes** in following message, SETUP closes without saving the changes.

Quit without saving?
[Yes] No

☐ <F1> key
Displays help information. Press <Esc> key to go back to the original screen.

☐ <F3> key
Restores the parameters. If you choose **Yes** in the following message, the previous parameter(s) are restored.

```
Load Previous Values?
[Yes]       No
```

☐ <F9> key
Loads default settings. If you select **Yes** in the following message, the default settings of SETUP are restored. **The default settings are different from the factory settings**.

```
Load Optimized Defaults?
[Yes]       No
```

Note The values set on **iSCSI Configuration** submenu and **UEFI Driver Configuration** submenu are not returned to the default setting.

☐ <F10> key
Saves the parameters. If you choose **Yes** in the following message, the parameters you configured are saved and SETUP closes.

```
Save configuration and reset?
[Yes]       No
```

2.4 Cases That Require Configuration

Only if a case applies to any of following cases, use SETUP to change a parameter which was configured as factory setting. A list of SETUP parameters and factory settings are described in ***Chapter 2 (1. System BIOS)*** **in "*Maintenance Guide*".**

Category	Description	To be changed	Remark
Basic	Change date and time	**Main → System Date** **Main → System Time**	Configurable on OS
	On NumLock on power ON	**Boot → Bootup Numlock State → ON** or **OFF**	-
	Off the function to display NEC logo during POST	**Boot → Quite Boot → Disabled**	By pressing <Esc> key, prevent the display of the logo.
Memory	Add or change DIMM	**Chipset → Runtime Error Logging → Memory Error Enabling → Clear Error Memory Even log on SMB → Enable**	Enable **Clear Error Memory Even log on SMB**, and restart the system. It is automatically **Disabled**.
Display	Display the MAC address of the onboard LAN2.	**Advanced → PCI Subsystem Settings → Onboard LAN2 I/O ROM → Enabled**	Set this to display the MAC address of "**Main → LOM2**". * Default indicates all zero MAC address of LOM2 when **Onboard LAN2 I/O ROM** is set to **Disabled**.
Optional board	Disable Option ROM Scan of installed option board	**Advanced → PCI Subsystem Settings → PCI Express Slot#*xx* I/O ROM → Disabled**	*xx* is PCI slot number of the installed option board
Optional board (GPGPU)	When GPGPU is implemented	Set as follows. **Advanced → PCI Subsystem Settings → Above 4G Decoding → Enable** **Advanced → PCI Subsystem Settings → PCI Express Slot#4 I/O ROM → Enable** **Chipset → Common RefCode Configuration → MMIO High Base → 1T**	Change BIOS setting before implementing GPGPU.
Boot	Set the boot mode to UEFI mode according to your OS.	Set as follows. **Step1: Boot – Boot Mode Select → UEFI** **Step2: Advanced – CSM Configuration – CSM Support → Enabled** **Step3: Boot option filter → UEFI only** **Network → UEFI** **Storage → UEFI** **Video → UEFI** **Other PCI devices → UEFI** **Step4: Advanced – CSM Configuration – CSM Support → Disabled** **Step5: Advanced → PCI Subsystem Settings → Onboard LAN1 I/O ROM → Enable*** **Step6: Advanced → PCI Subsystem Settings →Onboard LAN2 I/O ROM → Enable*** * If you do not use at UEFI mode, set the setting of LAN1 I/O ROM and the LAN2 I/O ROM to **Disabled**. ● Select UEFI mode for the following OS. - Windows Server 2012 R2 - Windows Server 2016 - Red Hat Enterprise Linux 7.3 (x86_64) - VMware ESXi 6	For details, see *Installation Guide*. Factory settings is set to **UEFI**. For detail of the CSM menu, see *chapter 2((9) CSM UEFI Driver Configuration submenu in 1.2.2 Advanced)* in *Maintenance Guide*.

Category	Description	To be changed	Remark
Boot	Set the boot mode to Legacy BIOS mode according to your OS.	Set as follows. **Step1: Boot – Boot Mode Select → LEGACY** **Step2: Advanced – CSM Configuration – CSM Support → Enabled** **Step3: Boot option filter → LEGACY only** **Network → LEGACY** **Storage → LEGACY** **Video → LEGACY** **Other PCI devices → LEGACY** **Step4: Advanced – PCI Subsystem Settings – Onboard LAN1 I/O ROM → Enable*** **Advanced → PCI Subsystem Settings →Onboard LAN2 I/O ROM → Enable*** * If you do not use at LEGACY BIOS mode, set the setting of LAN1 I/O ROM and the LAN2 I/O ROM to **Disabled**.	For details, see *Installation Guide*. Factory settings is set to **UEFI**. For detail of the CSM menu, see *chapter 2((9) CSM UEFI Driver Configuration submenu in 1.2.2 Advanced)* in *Maintenance Guide*.
	Change the boot order of devices	**Boot → FIXED BOOT ORDER Priorities** → Change the boot priority	When you use EXPRESSBUILDER, set **CD/DVD** to the highest priority.
	Use console redirection feature	**Advanced → Serial Port Console Redirection → COM1 → Console Redirection → Enabled** Or **Advanced → Serial Port Console Redirection → COM2/Serial Over LAN→ Console Redirection → Enabled**	-
Security	Set a password	**Security → Administrator Password** → Enter a password **Security → User Password** → Enter a password	If password is set, a message to enter password is displayed at next time SETUP is launched.
UPS Powerlink	When the server is supplied with power from UPS, always turn on the power.	**Advanced → Chipset Configuration → Restore AC Power Loss → Power On**	-
	If the server is turned off by using POWER switch, leave it OFF even when UPS supplies power.	**Advanced → Chipset Configuration → Restore AC Power Loss → Last State**	-
	Keep the power OFF even when UPS supplies power.	**Advanced → Chipset Configuration → Restore AC Power Loss → Power off**	-

3. BMC/CMC

3.1 Overview

The base board management controller (BMC) and chassis management controller (CMC) not only play role as the system management LSI but also provide various management functions.

BMC enables you to monitor the temperature, voltage and others in the server module.

CMC enables you to monitor the conditions such as the power supply unit or fan in the enclosure.

Network connection of the management LAN of BMC/CMC provides the remote control via Web browser as described below.

- Manage the server
- Remotely control the keyboard, video, and mouse (KVM)*
- Remotely access a CD/DVD/floppy disk/ISO image/USB memory*.

* To enable this feature, the optional license for “Remote KVM and Media License (N8115-32)” is required.

To actualize these functions, virtual USB mass storage (MP EMS Virtual Media 0399) is always connected as USB mass storage.

3.2 BMC/CMC Network Configuration

For details of the network settings of BMC/CMC, see “BMC/CMC Management Console User’s Guide”. BIOS Setup Utility (SETUP) also offers the BMC network settings.

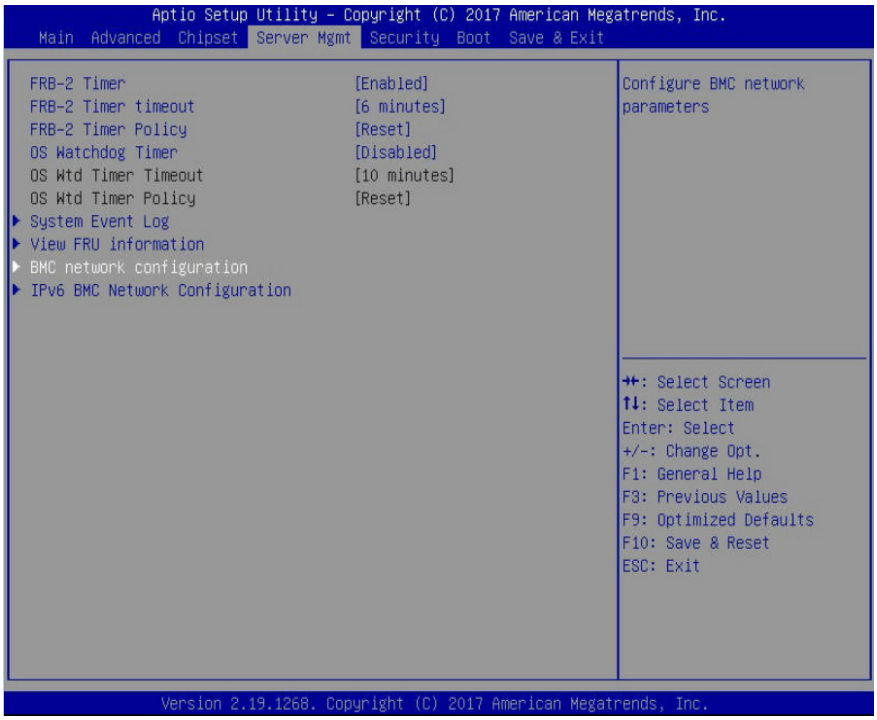
1. Run POST following *Chapter 3 (1.1.1 POST sequence)*. Wait until the following message appears on the lower left of the screen.

   ```
   Press <DEL> to enter setup, <F10> Display Boot Menu, <F12> Force Network
   Boot
   ```

2. Press the <Del> key while the message is being displayed to BIOS Setup Utility (SETUP).

   You can also press the <Del> key while the logo is being displayed to open the BIOS Setup Utility (SETUP) screen.

3. Select **Server Mgmt** → **BMC Network configuration**.



4. Select [**Lan channel 1**] to set [**Configuration Address source**].
   - In the DHCP environment: **DynamicBmcDhcp**
   - Out of the DHCP environment: **Static**

Note

To use the Shared BMC LAN, set Select **NCSI and Dedic** to **Mode2 (NCSI)**.
If the Shared BMC LAN is set, the Web function or virtual media/KVM function of BMC, or the command line interface function may be disconnected. In this case, reconnect it after a while.

5. Connect the LAN cable to the management LAN connector in order to connect to the network. It will be available for use if you access BMC via Web browser from management PC according to the setting.

● **Important Notice** ●

If you use the initial control password on a device controlled via a network, you have a risk of permitting an illegal access by a malevolent third party.

If the device is taken over by an illegal access, it may disturb the availability and completeness to damage the system and may be abused for a cyber-attack foothold by botnet.

The initial password of this product is absolutely set for initialization in maintenance operation. Be sure to change the password in initial setting.

If you operate the system with the initial password and cause an illegal access, we do not take any responsibility for it.

Even if you change the password, you have difficulty in preventing an illegal access with those in low intensity (short ones) and easily-found ones (such as “123456789”, “abcdefg”, “password” and “Administrator”).

Change the password to those in high intensity (we recommend more than 8 characters with upper case/lower case/numeric/symbols mixed.)

<How to change the password>

See *“Using remote management”* and *“Changing the default password”* in Chapter 5 of the BMC/CMC management console user’s guide.

4. EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows or maintain the server.

4.1 Features of EXPRESSBUILDER

EXPRESSBUILDER provides the following features.

Feature	Description
Setup (Windows installation)	Installs Windows on your server. Easily completes the process from RAID configuration to installation of applications. To use this feature, choose **OS installation** in Boot Selection Menu.
Bundled software	Stores NEC ESMPRO, Universal RAID Utility, and other bundled software.
Maintenance	Diagnoses the server. To use this feature, choose **Tool menu** in Boot Selection Menu.
Manuals	Stores *User's Guide, Installation Guide, Maintenance Guide*, and other manuals.

4.2 Usage of EXPRESSBUILDER

The EXPRESSBUILDER DVD comes with module enclosure as standard.

If the RAID configuration or OS installation is required, run EXPRESSBUILDER by using either following ways:

a) Insert the DVD into the drive connected the server module, and restart the server.

b) Insert the DVD into a computer running on Windows.

5. Installing Software Components

Continue to install software components such as OS.

See the instructions below.

- Installation Guide (Windows)

Tips Hibernate function of Windows Server cannot be used. Do not set Hibernate at Windows shutdown.

6. Turning Off the Server

Turn off the server by using the following procedure. If the power cord of the server is connected to a UPS, refer to the manual that comes with the UPS or the manual for the application controlling the UPS.

1. Shut down the OS.
2. The server automatically turns off after the OS shuts down.
   Confirm that POWER LED is OFF.
3. Turn off peripherals.
4. If a server module is removed from module enclosure, AC power of that server is turned off. Other server modules in enclosure are not turned off.

Important **If you removed a server module from module enclosure, wait at least 30 seconds before insert it again into enclosure.**

NEC Express5800 Series
Express5800/D120h

4 Appendix

1. Specifications
2. Glossary
3. Revision Record

1. Specifications

1.1 Server Module

<1U server module>

N code			N8100-2553F
CPU	Supported CPU		Intel® Xeon® processor Xeon Bronze 3104 Processor (1.70 GHz, 6C/6T, 8.25MB, 85W) Xeon Bronze 3106 Processor (1.70 GHz, 8C/8T, 11MB, 85W) Xeon Silver 4108 Processor (1.80 GHz, 8C/16T, 11MB, 85W) Xeon Silver 4110 Processor (2.10 GHz, 8C/16T, 11MB, 85W) Xeon Silver 4114 Processor (2.20 GHz, 10C/20T, 13.75MB, 85W) Xeon Silver 4116 Processor (2.10 GHz, 12C/24T, 16.50MB, 85W) Xeon Gold 5118 Processor (2.30 GHz, 12C/24T, 16.50MB, 105W) Xeon Gold 5120 Processor (2.20 GHz, 14C/28T, 19.25MB, 105W) Xeon Gold 5122 Processor (3.60 GHz, 4C/8T, 16.50MB, 105W) Xeon Gold 6130 Processor (2.10 GHz, 16C/32T, 22MB, 125W) Xeon Gold 6132 Processor (2.60 GHz, 14C/28T, 19.25MB, 140W) Xeon Gold 6134 Processor (3.20 GHz, 8C/16T, 24.75MB, 130W) Xeon Gold 6138 Processor (2GHz, 20C/40T, 27.50MB, 125W) Xeon Gold 6140 Processor (2.30 GHz, 18C/36T, 24.75MB, 140W) Xeon Gold 6142 Processor (2.60 GHz, 16C/32T, 22MB, 150W) Xeon Gold 6152 Processor (2.10 GHz, 22C/44T, 30.25MB, 140W) Xeon Platinum 8160 Processor (2.10 GHz, 24C/48T, 33MB, 150W) Xeon Platinum 8164 Processor (2GHz, 26C/52T, 35.75MB, 150W) Xeon Platinum 8160M Processor (2.10 GHz, 24C/48T, 33MB, 150W)
	No. of CPUs Standard / Maximum		0/2
Chipset			Intel® C621 chipset
Memory	Standard/Maximum		Not pre-installed/TSV Registered DIMM: 2TB(16x 128GB)
	Memory module		DDR4-2666 Registered DIMM (8GB/16GB/32GB) DDR4-2666 TSV Registered DIMM (64GB/128GB)
	Maximum clock speed		2666MHz (For the maximum operation frequency for each CPU, refer to “Memory Clock” in the User’s Guide or the System Configuration Guide.)
	Error check, correction		ECC, x4 SDDC
Auxiliary storage device	Hard disk drive	Standard	Not pre-installed
		Maximum	2.5-inch HDD: SATA 12TB(6x 2TB), SAS 10.8TB(6x 1.8TB) 2.5-inch SSD: SATA 11.52TB(6x 1.92TB), SAS 2.4TB(6x 400GB)
		Hot swap	Hot swap Supported
	Interface level / RAID level		SATA 6Gb/s : RAID 0/1/5/6/10/50/60 (Option) SAS 12Gb/s : RAID 0/1/5/6/10/50/60 (Option)
	Optical disk drive		External drive(Option) *1
	FDD		Option: Flash FDD (1.44MB) *2
	Device bay		None
PCI slot	Supported slot		1x PCI EXPRESS 3.0(x16 lane, x16 socket) (Low profile, 167.6mm in length) 1x PCI EXPRESS 3.0(x8 lane, x8 socket) (Low profile, 167.6mm in length) 1x PCI EXPRESS 3.0(x16 socket) , dedicated to LAN Mezzanine
Graphics	Chip		Embedded on management controller chip / 32MB
	Graphic display / resolution		16,770,000 colors: 640x480, 800x600, 1,024x768, 1,280x1,024, 1,600x1,200, 1,920x1,200
Standard interface			2x USB 3.0*3 (2x rear) , 1x SATA(1x internal), 1x Analog RGB (Mini D-sub 15-pin, 1x front), 2x 10GBASE-T LAN connector(RJ45, 2x rear), 1x Management LAN connector (1000BASE-T/100BASE-TX/10BASE-T supported, RJ45, 1x rear)
External dimensions (width x depth x height)			171.6mm x 547.5mm x 40.6mm(Projections are excluded) 171.6mm x 578mm x 40.6mm(Projections are included)
Weight(Standard/ Max.)			3.3 kg / 4.2 kg
Power consumption (12V DC, at maximum configuration, at maximum power) *5			607W
Temperature/Humidity			Operating:10 to 35°C/20 to 80%, Storage: -10～55℃/20～80%(No condensation either when operating or when stored)
Accessories			Getting Started, Safety Precautions and Regulatory Notices
Supported OSs	Support by NEC		Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter Microsoft® Windows Server® 2016 Standard Microsoft® Windows Server® 2016 Datacenter VMware ESXi™ 6.0 Update3 *4

*1 Prepare at least one external DVD-ROM per system for maintenance and OS reinstallation purposes.

*2 Prepare this if required. For the principal uses of a Flash FDD, see the notes on Flash FDD in the Maintenance Guide.

*3 Devices work in USB2.0 mode when VMware ESXi™ 6.0 is installed.

*4 More than 5GB of logical memory capacity is required to install VMware ESXi™ 6.0.

*5 CPU: Xeon Platinum 8160M Processor

<2U server module>

N code			N8100-2546Y
CPU	Supported CPU		Intel® Xeon® processor Xeon Bronze 3104 Processor (1.70 GHz, 6C/6T, 8.25MB, 85W) Xeon Bronze 3106 Processor (1.70 GHz, 8C/8T, 11MB, 85W) Xeon Silver 4108 Processor (1.80 GHz, 8C/16T, 11MB, 85W) Xeon Silver 4110 Processor (2.10 GHz, 8C/16T, 11MB, 85W) Xeon Silver 4114 Processor (2.20 GHz, 10C/20T, 13.75MB, 85W) Xeon Silver 4116 Processor (2.10 GHz, 12C/24T, 16.50MB, 85W) Xeon Gold 5118 Processor (2.30 GHz, 12C/24T, 16.50MB, 105W) Xeon Gold 5120 Processor (2.20 GHz, 14C/28T, 19.25MB, 105W) Xeon Gold 5122 Processor (3.60 GHz, 4C/8T, 16.50MB, 105W) Xeon Gold 6130 Processor (2.10 GHz, 16C/32T, 22MB, 125W) Xeon Gold 6132 Processor (2.60 GHz, 14C/28T, 19.25MB, 140W) Xeon Gold 6134 Processor (3.20 GHz, 8C/16T, 24.75MB, 130W) Xeon Gold 6138 Processor (2GHz, 20C/40T, 27.50MB, 125W) Xeon Gold 6140 Processor (2.30 GHz, 18C/36T, 24.75MB, 140W) Xeon Gold 6142 Processor (2.60 GHz, 16C/32T, 22MB, 150W) Xeon Gold 6152 Processor (2.10 GHz, 22C/44T, 30.25MB, 140W) Xeon Platinum 8160 Processor (2.10 GHz, 24C/48T, 33MB, 150W) Xeon Platinum 8164 Processor (2GHz, 26C/52T, 35.75MB, 150W) Xeon Platinum 8160M Processor (2.10 GHz, 24C/48T, 33MB, 150W)
	No. of CPUs Standard / Maximum		0/2
Chipset			Intel® C621 chipset
Memory	Standard/Maximum		Not pre-installed/TSV Registered DIMM: 2TB(16x 128GB)
	Memory module		DDR4-2666 Registered DIMM (8GB/16GB/32GB) DDR4-2666 TSV Registered DIMM (64GB/128GB)
	Maximum clock speed		2666MHz (For the maximum operation frequency for each CPU, refer to “Memory Clock” in the User’s Guide or the System Configuration Guide.)
	Error check, correction		ECC, x4 SDDC
Auxiliary storage device	Hard disk drive	Standard	Not pre-installed
		Maximum	2.5-inch HDD: SATA 24TB(12x 2TB), SAS 22TB(12x 1.8TB) 2.5-inch SSD: SATA 19.2TB(12x 1.6TB), SAS 4.8TB(12x 400GB)
		Hot swap	Hot swap Supported
	Interface level / RAID level		SATA 6Gb/s : RAID 0/1/5/6/10/50/60 (Option) SAS 12Gb/s : RAID 0/1/5/6/10/50/60 (Option)
	Optical disk drive		External drive(Option) *1
	FDD		Option: Flash FDD (1.44MB) *2
	Device bay		None
PCI slot	Supported slot		1x PCI EXPRESS 3.0(x16 lane, x16 socket) (Low profile, 167.6mm in length) 1x PCI EXPRESS 3.0(x8 lane, x8 socket) (Low profile, 167.6mm in length) 1x PCI EXPRESS 3.0(x16 socket), dedicated to LAN Mezzanine Card 1x PCI EXPRESS 3.0(x16 socket), dedicated to GPGPU
Graphics	Chip		Embedded on management controller chip / 32MB
	Graphic display / resolution		16,770,000 colors: 640x480, 800x600, 1,024x768, 1,280x1,024, 1,600x1,200, 1,920x1,200
Standard interface			2xUSB 3.0*3 (2x rear) , 1xSATA(1x internal), 1x Analog RGB (Mini D-sub 15-pin, 1x front), 2x10GBASE-T LAN connector(RJ45, 2x rear), 1x Management LAN connector (1000BASE-T/100BASE-TX/10BASE-T supported, RJ45, 1x rear)
External dimensions (width x depth x height)			171.6mm x 547.5mm x 81.5mm(Projections are excluded) 171.6mm x 578mm x 81.5mm(Projections are included)
Weight(Standard/ Max.)			4.2 kg / 6.7 kg
Power consumption (12V DC, at maximum configuration, at maximum power) *5			984W
Temperature/Humidity			Operating:10 to 35°C/20 to 80%, Storage: -10～55°C/20 to 80%(No condensation either when operating or when stored)
Accessories			Getting Started, Safety Precautions and Regulatory Notices
Supported OSs	Support by NEC		Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter Microsoft® Windows Server® 2016 Standard Microsoft® Windows Server® 2016 Datacenter VMware ESXi™ 6.0 Update3 *4

*1 Prepare at least one external DVD-ROM per system for maintenance and OS reinstallation purposes.

*2 Prepare this if required. For the principal uses of a Flash FDD, see the notes on Flash FDD in the Maintenance Guide.

*3 Devices work in USB2.0 mode when VMware ESXi™ 6.0 is installed.

*4 More than 5GB of logical memory capacity is required to install VMware ESXi™ 6.0.

*5 CPU: Xeon Platinum 8160M Processor

1.2 Module Enclosure

Product number	N8141-83F (Onboard Model) N8141-92F (RAID Controller,SAS Controller Model)	N8141-84F (Onboard Model) N8141-93F (RAID Controller,SAS Controller Model)
Number of server modules that can be mounted	Up to four Express5800/D120h can be mounted : 1U server module	
Chassis design	2U Rack mount type	
External dimensions (width x depth x height)	440.0mm x 820.0mm x 87.5mm (Rails/projections are excluded)	
	485.0mm x 820.0mm x 87.5mm (Rails/projections are included)	
Weight (minimum *1 / maximum *2)	22 kg / 39 kg (when four server modules are mounted)	
Power Supply Unit	1300W (N8181-154)	2200W (N8181-155)
Power supply	Pre-installed 1300W/2200W 80 Plus® Platinum compliant (bipolar grounded outlet) (hot-plug available) (Maximum: 2) 100 to 127/200 to 240 VAC ± 10% (1300-W power supply), 100 to 127/200 to 240 VAC ± 10% (2200-W power supply), 50/60 Hz ± 3 Hz (The power cable must be selected.)	
Redundant power supply	Supported (hot-plug available)	
Redundant fan	Supported(hot-plug unavailable)	
Temperature/Humidity	Operating: 5 to 35°C / 20～80%	
	Storage: -10 to 55°C/20 to 80% (No condensation either when operating or when stored)	
Accessories	Installation and Handling Guide, Safety Precautions and Regulatory Notices, Rack rails, EXPRESSBUILDER	

*1 The minimum configuration for operation (module enclosure, 2x power supply unit)

*2 The maximum configuration (module enclosure, 4x server module (full), 2x power supply unit)

Product number	N8141-91F (Onboard Model) N8141-94F (RAID Controller,SAS Controller Model)
Number of server modules that can be mounted	Up to two Express5800/D120h can be mounted : 2U server module
Chassis design 2U Rack mount type	2U Rack mount type
External dimensions (width x depth x height)	440.0mm x 820.0mm x 87.5mm (Rails/projections are excluded)
	485.0mm x 820.0mm x 87.5mm (Rails/projections are included)
Weight (minimum *1 / maximum *2)	22kg / 35.4 kg (when four server modules are mounted)
Power Supply Unit	2200W (N8181-155)
Power supply	Pre-installed 2200W 80 Plus® Platinum compliant (bipolar grounded outlet) (hot-plug available) (Maximum: 2) 100 to 127/200 to 240 VAC ± 10% (2200-W power supply), 50/60 Hz ± 3 Hz (The power cable must be selected.)*3
Redundant power supply	Supported (hot-plug available)
Redundant fan	Supported(hot-plug unavailable)
Temperature/Humidity	Operating : 5 to 35°C *3 / 20 to 80%
	Storage : -10 to 55°C/20 to 80% (No condensation either when operating or when stored)
Accessories	Installation and Handling Guide, Safety Precautions and Regulatory Notices, Rack rails, EXPRESSBUILDER

*1 The minimum configuration for operation (module enclosure, 2x power supply unit)

*2 The maximum configuration (module enclosure, 2x server module (full), power supply unit)

*3 The upper limit of operating temperature is 35°C when the power supply unit (2200 W) is installed.

2. Glossary

Term	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <Del> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
EXPRESSBUILDER	Standard software for setting up the server easily. This also includes several useful applications and instruction manuals.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (MG)	Software that can report the server failure to the contact center by E-mail, modem or HTTPS without NEC ESMPRO ServerAgentService. This software is installed with NEC ESMPRO Manager to "PC for Management".
ExpressUpdate	A feature for updating BIOS, firmware, driver, and software of the server. This feature is available when NEC ESMPRO Manager cooperates with BMC and ExpressUpdate Agent.
ExpressUpdate Agent	Software for performing ExpressUpdate. This is installed to the server.
Flash FDD	An optional USB device that can use as a floppy disk drive.
NEC ESMPRO	Standard software for the server management. This consists of several applications for managing or monitoring.
NEC ESMPRO Manager	Software for managing a number of servers on network.
NEC ESMPRO ServerAgentService	Software for monitoring the server. This works with NEC ESMPRO Manager. You can choose Service Mode or Non-Service Mode when installing this software. Service Mode resides as the OS service and Non-Service Mode does not use the OS service to reduce memory, CPU power, and other OS resources.
OEM driver	A Windows driver for the mass storage device.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can read and change SEL, SDR, FRU, and other IPMI data. You can start Offline tools from EXPRESSBUILDER.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
Product Info Collection Utility	Software for collecting several hardware/software statuses and event logs. You can easily collect the data for the server maintenance by using this software.
RAID Configuration Utility	Software for configuring RAID arrays. You can run this software during POST.
Server Configuration Utility	Software for setting BIOS or BMC.
Starter Pack	Software package for the server. This software includes the customized drivers for Windows. This must be installed before using Windows on the server.
TPM Kit	An optional product of Trusted Platform Module for the server.
Universal RAID Utility	Software for setting RAID arrays on Windows/Linux. This software is operated on "PC for Management" with NEC ESMPRO Manager.
Windows OS parameter file	A file that saved settings for installing Windows. You can install with the saved settings in this file when installing Windows with EXPRESSBUILDER.

3. Revision Record

Revision (Document Number)	Date Issued	Description
10.117.01-101.01	July 2017	Newly Created
10.117.01-101.02	November 2017	Thoroughly Revised
10.117.01-101.03	October 2019	Thoroughly Revised

NEC Express Server

Express5800/D120h
User's Guide

October 2019

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