Battery Backup Unit

User Guide

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Preface

Congratulations for your purchase of the RAID Battery Backup Unit (called BBU hereafter).

This guide describes how to install and use the BBU correctly and safely. Read the guide thoroughly before handling it, and refer to this manual when you want to know how to use it or should some malfunction occur.

For more information on the RAID controller to which the BBU is connected, refer to the User's Guide coming with the RAID controller. For the Internal RAID Controller to which the BBU is connected, refer to the User's Guide coming with the server.

Read the "Notes on Use" carefully before handling the BBU.

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Keep this User Guide handy for quick reference.
Be sure to read this section carefully.

⚠ NOTES ON USE - Always read the Notes -

The following includes information necessary for proper and safe operation of the product.

SAFETY INDICATIONS

In the User Guide, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:

⚠ WARNING Indicates a hazard that may result in death or serious personal injury.

⚠ CAUTION Indicates a hazard that may cause minor personal injury, including burns, or property damage.

Precautions against hazards are presented with the following symbols. The individual symbols are defined as follows:

△	Attention	This symbol indicates a hazard. An image in the symbol illustrates the hazard type.	(Example) Precaution against electric shock
⃠	Prohibited Action	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action.	(Example) Prohibition of disassembly
●	Mandatory Action	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard.	(Example) Unplug the power cord!

Symbols Used in This Manual and Warning Labels

Cautions

	Indicates a general notice or warning that cannot be specifically identified.
	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause a personal injury.
	Indicates that improper use may cause fumes or fire.

Prohibited Actions

	Indicates a general prohibited action that cannot be specifically identified.
	Do not disassemble, repair, or modify the server. Doing so may cause an electric shock or fire.

Mandatory Action

	Unplug the power cord of the server. Not doing so may cause an electric shock or fire.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

Safety Notes

Read the notes described below carefully to understand them, these will enable you to safely use your product. See "Safety Indications" described earlier for the descriptions of symbols.

General

⚠ WARNING

Do not use the product for services involving human lives or requiring high reliability.

The product is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. The manufacturer assumes no liability for any accident resulting in personal injury, death, or property damage if the Disk Expansion Unit has been used in the above conditions.

Do not use the product if you are aware of any suspect smoke, odour, or noise.

If smoke, odour, or noise is present, immediately switch off the unit and disconnect the power plug from the outlet. Contact your sales agent. Using the product in such conditions may cause a fire.

Keep needles or metal objects away from the server.

Do not insert needles or metal objects into the ventilation holes or cartridge slot of the server. Doing so may cause an electric shock.

⚠ CAUTION

Keep water or foreign matter away from the server.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the AC outlet. Do not disassemble the server. Contact your service representative.

Power Supply and Power Cord Use

⚠ CAUTION

Disconnect the power cord(s) before installing or removing the product in/from the server.

Make sure to power off the server and disconnect the power cord(s) from the power outlet before installing/removing the product in/from the server, or connecting with the peripheral devices. All voltage is removed only when the power cords are unplugged.

Always observe the following to prevent an electric shock or fire that could be caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use a damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your sales agent for replacement.)

Do not hold the power plug if your hands are wet.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.

Do not pull the cable when disconnecting the power cord.

When disconnecting the power cord from the server, hold the plug and pull it straight out. Pulling the cord out by the cable portion could damage the cable to result in an electrical shock hazard or a fire.

Installation, Relocation, Storage, and Connection

⚠ CAUTION

Do not connect any interface cable when the power cord of the Disk Expansion Unit is plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before connecting/disconnecting the interface cable. If the server is off-powered but its power cord is plugged to a power source, touching the cable may cause an electric shock or a fire may result from a short circuit. Also, connect/disconnect the interface cable after turning off the power of the destination.

Do not use any unauthorized interface cable.

Use only interface cables authorized by the manufacturer and locate a proper device and connector before connecting a cable. Using an unauthorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire.
Also, observe the following notes on using and connecting an interface cable.

- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.
- Do not use any damaged cable connector.
- Make sure the cable is securely locked with the relevant screws.

Do not use or store the product in the place where corrosive gases exist.

Make sure not to locate or use the server in the place where corrosive gases (sulphur dioxide, hydrogen sulphide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.
Also, do not set it in the environment where the air (or dust) includes components accelerating corrosion (ex. sulphur, sodium chloride) or conductive metals. There is a risk of a fire due to corrosion and/or short-circuits of an internal printed board.

Avoid installation in extreme temperature conditions.

Immediately after the server is powered off, its internal components, such as hard disk drives are very hot. Let the installed components fully cool down before installing/removing anything.

Cleaning and Working with the Product

⚠ WARNING

Do not disassemble, repair, or alter the server.

Do not attempt to disassemble, repair, or alter the product in any occasion other than those described in this User Guide. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the product.

Disconnect the power plug before accessing inside the server.

Make sure to power off the server and disconnect the power plug from the AC outlet before accessing inside the server. Touching any internal device of the server when its power cord connected to a power source may cause an electric shock even if the server is off-powered.

⚠ CAUTION

Make sure to complete installation.

Always connect the DC cable and/or interface cable firmly. An incompletely connected cable may cause a contact failure, resulting in smoke or fire.

During Operation

⚠ CAUTION

Avoid contact with the server during thunderstorms.

Disconnect the power plug from the outlet when a thunderstorm is approaching. If the thunderstorm begins before you can disconnect the power plug, do not touch any part of the server containing the product. Failure to follow this warning may cause an electric shock.

Keep animals away from the server.

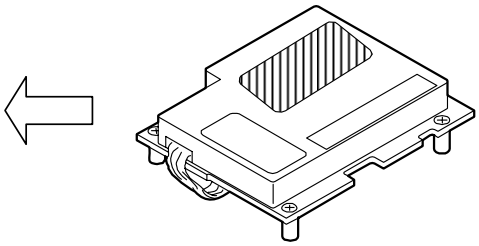
Do not use a cellular phone or a pager around the server.

Turn off cellular phones or pagers near the server containing the product. Radio interference may cause malfunctions of the server.

Warning Labels

A warning label is attached to the products potentially dangerous or in their vicinity to inform the user that a hazardous situation may arise when operating the product. (Do not intentionally remove or damage any of the labels.)

If you find any labels to be totally/partially removed or illegible due to damage, contact your sales representative.



Notes on Use - for correct operation of BBU
Note the following when using the BBU. If you ignore these notes, your assets (including important data and/or other devices) may be damaged.

- The BBU cannot be connected to any RAID controller, but only to the ones for which it was purchased.
- The BBU is an extremely sensitive electronic device. Touch the metallic frame of the server to discharge static electricity from your body before handling the BBU.
- Do not drop the BBU.
- Do not hit the BBU against other objects.
- To recycle or dispose of the BBU, see "Recycle and Disposal" in this chapter.
- Turn off your cellular phone or pager near the server containing the product. Radio interferences may cause malfunctions of the server.

This Manual

The guide is intended for persons who are familiar with operating systems, including Windows, and fundamental operations of general-purpose I/O devices, including the keyboard and mouse.

Text Conventions

The following conventions are used throughout this User Guide. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

Items to be observed or points to be noted when operating the product.

Items to be checked when operating the product.

Information useful or convenient for you.

In the Package

Check the package contents.

The package contains various accessories, as well as the product itself. Check with the packing list and make sure you have everything and that individual components are not damaged. If you find any missing or damaged components, contact your sales agent.

Transportation

To transport the BBU, remove it from the server following "Chapter 1 Overview" and put the BBU and all the accessories in the package used for the delivery.

Third Party Transfer

Make sure to provide this manual along with the product to a third party.

About data on the hard disk
Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk to any third parties.
Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk. Data not erased completely may be restored by special software and used for unexpected purposes.
It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.
The manufacturer assumes no liability for data leakage if the product is transferred to third party without erasing the data.

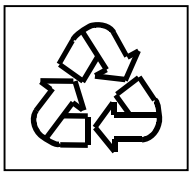
Life of BBU

The BBU is equipped with a backup battery. The life of the battery is about 2 years, but can vary depending on the environmental and operating conditions.

Replace the battery with a new one after about two years starting from the installation of the BBU (check the battery label put on the server and the BBU). Contact your service representative for the replacement.

Recycling and Disposal

The battery pack of the BBU is equipped with a lithium ion battery which is recyclable. To enable such valuable resources to be reused, contact your service representative or bring it to the nearest recycle agent. For the removal of the BBU, see "4. Battery Pack Replacement Procedure" in "Chapter 3 Operation and Maintenance".



Dispose of other devices following the regulation of the local government. Formore information, contact the local government or your service representative.

Handle the battery pack according to the precautions listed in "Chapter 3 Operation and Maintenance".

Notice

It is the user's responsibility to completely erase or modify all the data stored in storage device such as hard disk, backup data cartridge, floppy disk, or any other media (CD-R/CD-RW) so that the data cannot be restored.

Chapter 1 Overview

Read this chapter if you are using the RAID Battery Backup Unit (called Battery Backup Unit=BBU) for the first time.

This chapter describes the characteristics and configuration of the BBU and outlines the additional battery installation procedure.

1. Characteristics of the BBU

Connecting the BBU to the RAID controller can prevent data from being lost in incidents such as instantaneous power interruptions (in the WriteBack mode).

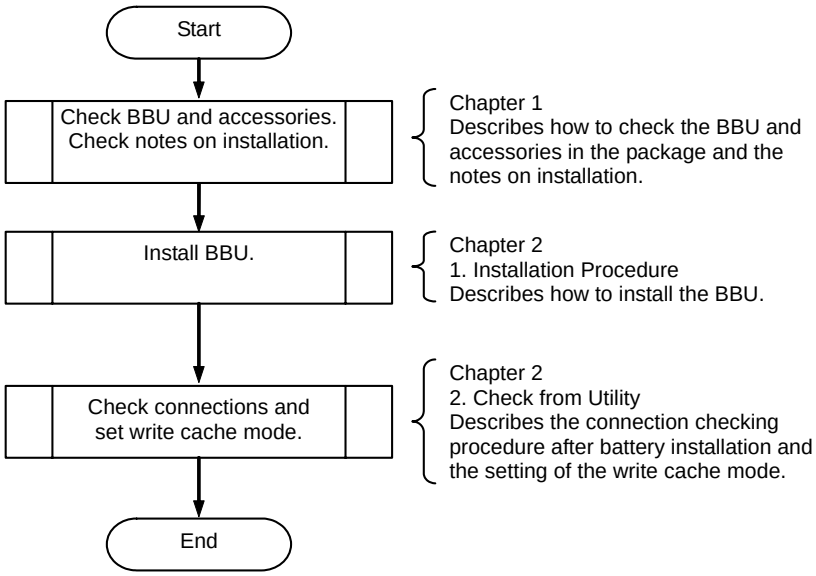
- Backup of data in SDRAMs on the RAID controller for up to 72 hours.
- Reliability improvement in WriteBack mode.
- Rechargeable lithium ion battery use.

2. Specification

Item		**Specification**	**Remarks**
Maximum data backup time		72 hours	Full charging
Outer dimension		67 (width) × 54 (depth) x 13 (height) mm	Excluding battery cable
Weight		Approx. 0.10 kg	
Operating voltage		3.7 V or higher	In normal operation
Power consumption		1.85 W	
Operating environment	Temperature	10°C to 35°C	
	Humidity	20% to 80%	Without condensation
Storage environment	Temperature	0°C to 35°C	
	Humidity	20% to 80%	Without condensation
Life (battery back)		About 2 years	Varies depending on the operating environment and boundary conditions

3. Installation Flow

For more information, refer to the respective chapters.

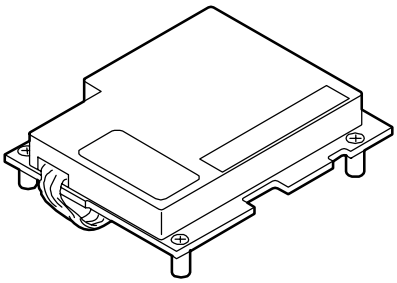


4. Checking the Package Contents

The package contains the following items. Check the contents to confirm that all the items are provided before starting the installation job.

Item	Qty	Remarks
RAID Battery Backup Unit	1	This unit
Setup Date Label	1	
Screw	3	

The package contains the following items.



Battery Backup Unit

Set up Date
Y .M

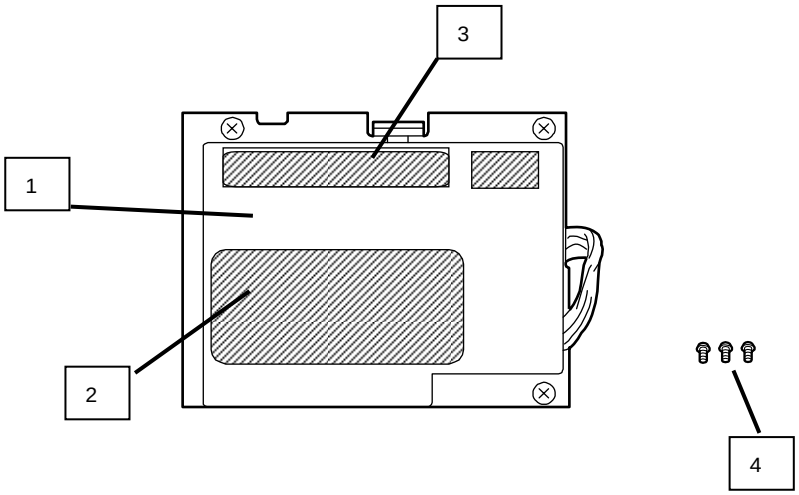
Setup Date Label

Screw

5. Names and Functions of Sections

This section describes the sections of the BBU.

Front view



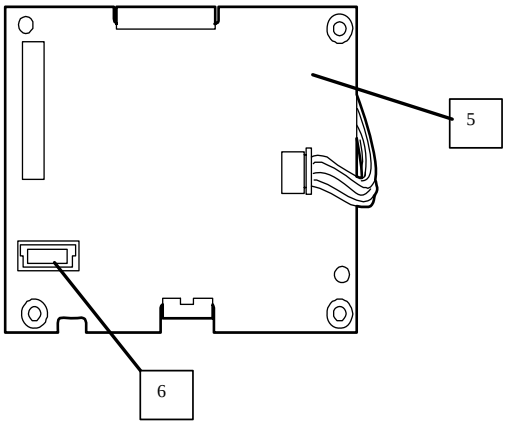
1 Battery case
Contains the Lithium battery cell

2 Recycle & Caution Label
This label is put on the battery case.
It indicates the recycle symbol, the battery type, a warning message, and is filled with the management revision of the battery.

3 Serial Number Label
Indicates the Rev Number, Product Name, Serial Number.

4 Screw (3 pcs)
Secures this battery case to the RAID controller

Rear view



Accessories

7

Set up Date
Y .M

5	Battery Board Relays the electric power from the battery pack to the RAID Controller
6	Battery Connector Connects to the RAID controller.
7	Setup Date label (accessory) The label is included with the BBU. Fill the year and month corresponding to the installation time on the RAID controller, and stick the label on the battery case.

6. Notes

Read the following notes thoroughly before using the BBU.

6-1. Notes on Installation

- Do not put the BBU on a metallic plate, including the chassis of the server.
- Do not hold the BBU with wet hands.

If you do not follow these directions, the battery may be short-circuited.

6-2. Notes on Operation

- The life of the battery pack used for the BBU is about 2 years, which may vary a little depending on the environment of use and the environmental conditions. Replace the battery pack with a new one two years after the installation. For the replacement, contact your service representative.
- To manage properly the BBU states, install the “MegaRAID Storage Manager” RAID Controller Management Utility. The MegaRAID Storage Manager allows you to detect errors and check the BBU states.
- The following alert may be logged when you restart the system immediately after charging the BBU, but you can ignore it. If you continue to charge the BBU, the alert will no longer be logged.

- When the battery is charging

> Your battery is either charging, bad or missing, and you have VDs configured for write-back mode. Because the battery is not currently usable, these VDs will actually run in write-through mode until the battery is fully charged or replaced if it is bad or missing.
>
> The following VDs are affected : XX
> Press any key to continue.

- When the battery is missing

> The battery hardware is missing or malfunctioning, or the battery is Unplugged, or the battery could be fully discharged. If you continue to boot the system, the battery-backed cache will not function.
> If battery is connected and has been allowed to charge for 30 minutes and this message continues to appear, then contact technical support for assistance.
> Press ‘D’ to disable this warning (if your controller does not have a battery).

Chapter 2 Installing the BBU

This chapter describes the installation of the BBU in the server.

1. Installation Procedure

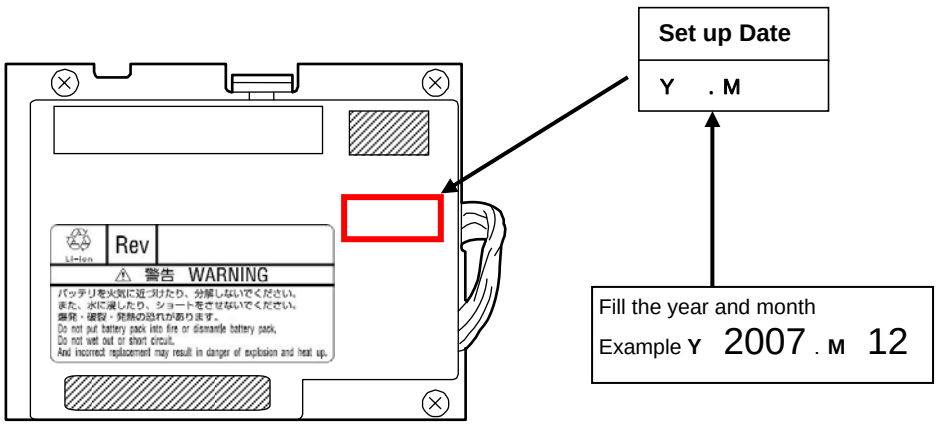
To install the BBU in the RAID controller, see the following procedure.

Check

Before the installation, refer to the User's Guide of the RAID controller and that of the server.

1-1. Putting the Setup Date Label

Fill the year and month corresponding to the installation time on the RAID controller, and stick the label on the battery case.

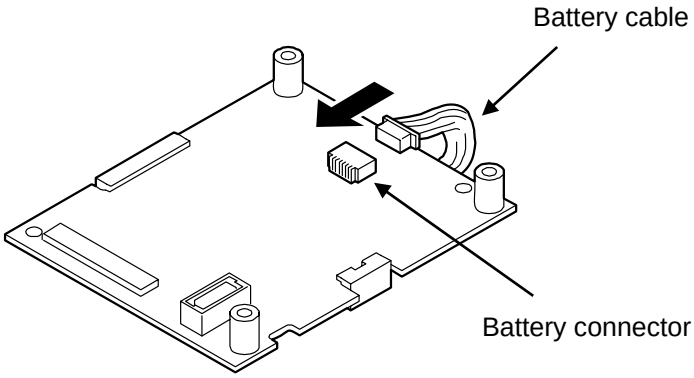


Notice

The life of the battery pack for the BBU is about 2 years, which may vary a little depending on the environment of use and the environmental conditions. If the battery pack is used after its estimated lifespan, the maximum data backup time (72 hours) cannot be secured. Replace such a battery pack with a new one as soon as possible following the instructions in "Chapter 3 Operation and Maintenance."

1-2. Connecting the battery cable

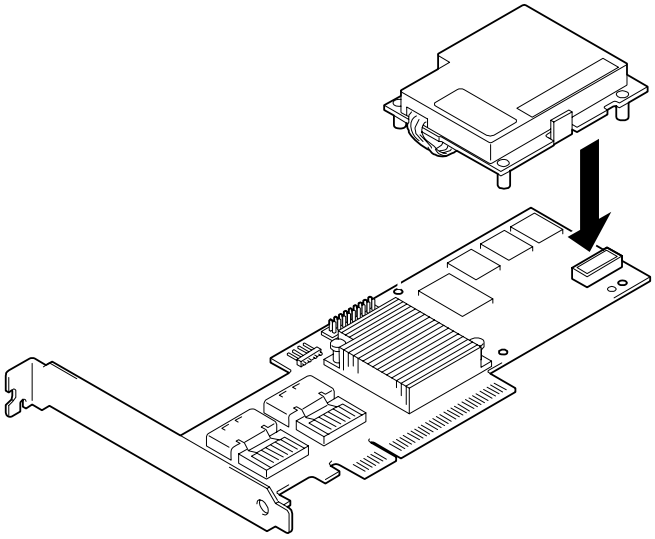
Connect the battery cable to the battery board firmly.



1-3. Installing the BBU in the RAID controller

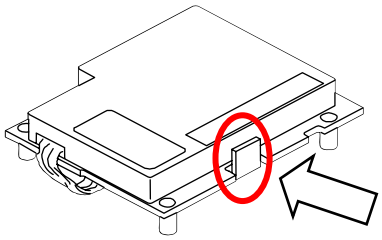
See the following instructions and figures.

1. Connect the connector of the battery board to the RAID controller board securely.



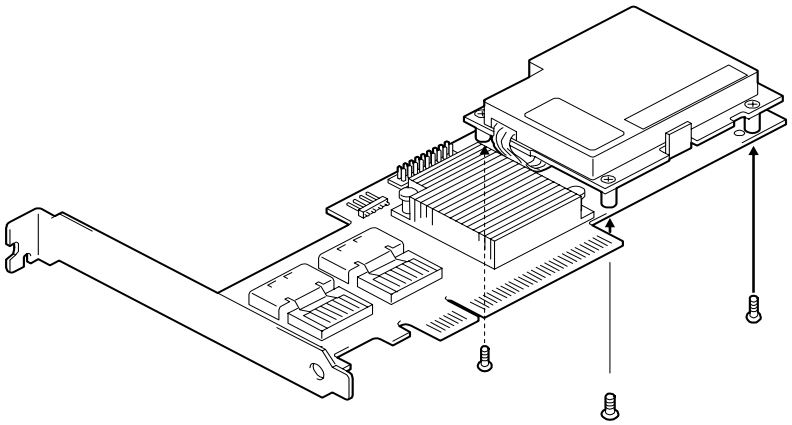
重要

Please do not hold the card via the part shown in the figure to avoid damaging it.



2. Confirm that the screw holes on the standoffs are lined up with the screw holes on the rear side of the RAID board.

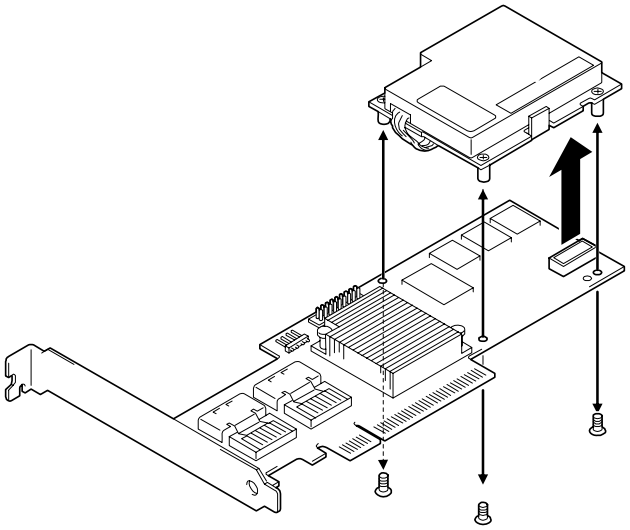
Carefully insert 3 screws from the back of the board through the holes on the standoffs.



***** To remove the additional battery from the RAID board, see the following procedure.

3. Remove the 3 screws from the rear side of the RAID board, and store them safely.

4. Pull out the additional battery from the battery connector.



2. Checking via the Utility

Refer to the MegaRAID Storage Manager™ User Guide.

Chapter 3 Operation and Maintenance

1. Maintenance Service

We recommend you contact a Service Representative approved by the manufacturer to order genuine spare parts or to perform any operations on your system.

2. Preventive Maintenance

2-1. Preventive Maintenance of the BBU

Check the BBU states (including voltage and temperature) regularly as a preventive maintenance. Use WebBIOS for this purpose.

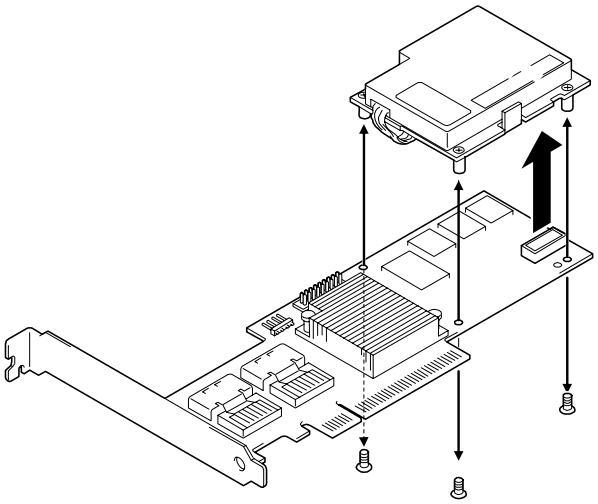
2-2. Life of Battery Pack

The life of the battery pack is about 2 years. If the battery pack is used after its estimated lifespan, replace such a battery pack with a new one as soon as possible following the instructions in "Chapter 3 Operation and Maintenance."

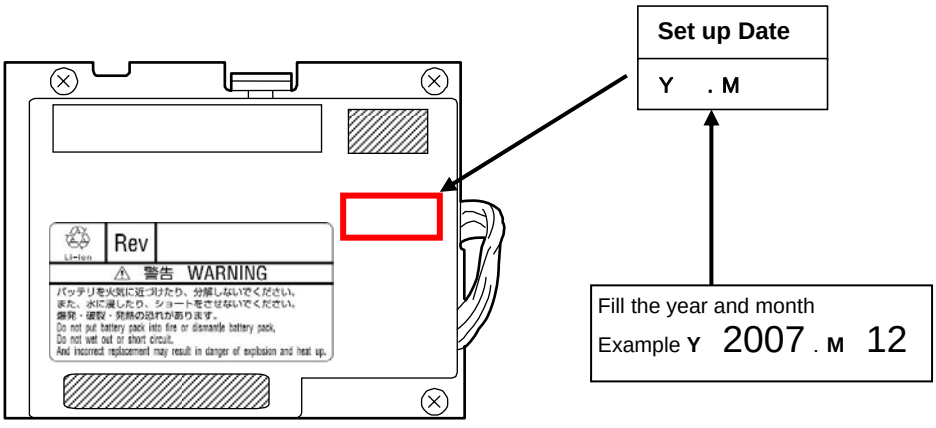
3. Battery Pack Replacement Procedure

Replace the battery pack as described in the following procedure:

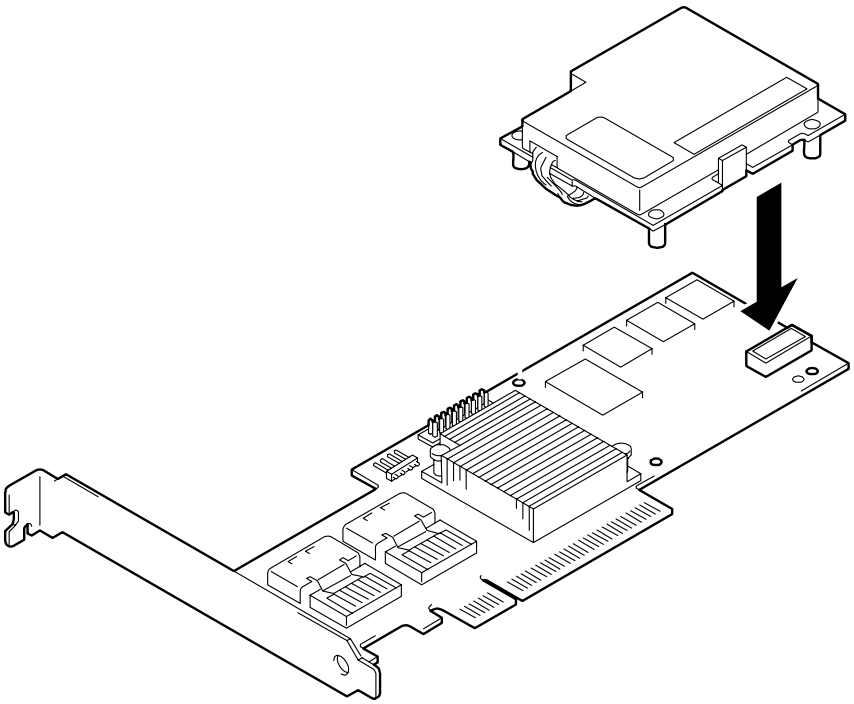
1. Exit from all the applications and shutdown the OS.
2. Power off the server and disconnect all the power cords from the power unit.
3. Remove the side cover as described in the User's Guide of the server.
4. Remove all the cables from the RAID controller and the server.
5. Remove the screw securing the RAID controller, and remove the RAID controller from the server.
6. On the rear face of the RAID controller, remove the screws (3) securing the BBU.



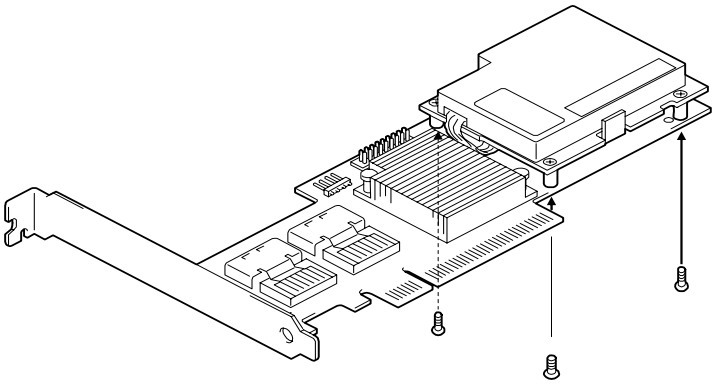
7. Fill the year and month corresponding to the installation time on the RAID controller, and stick the label on the battery case.



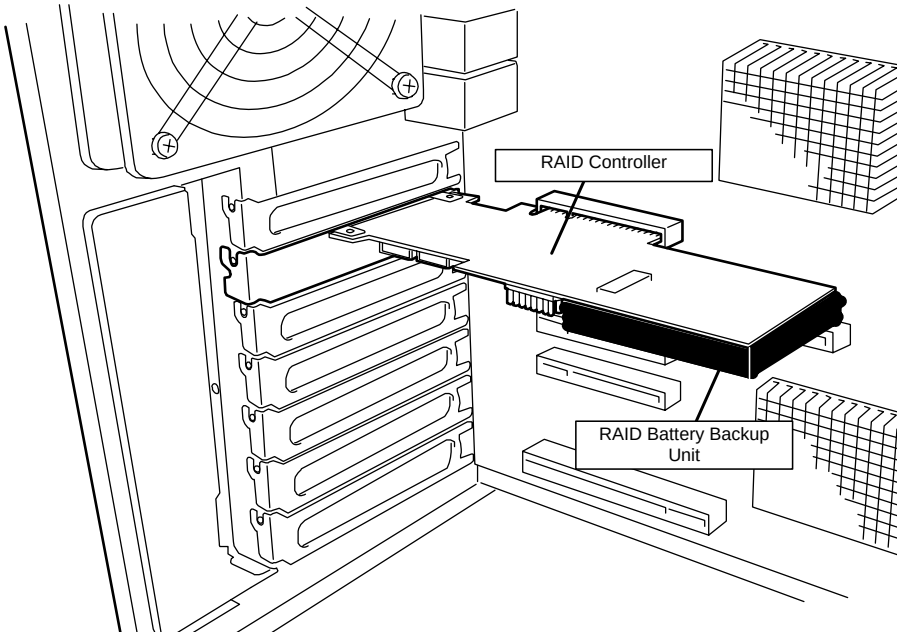
8. Connect this battery to the connector on the RAID controller.



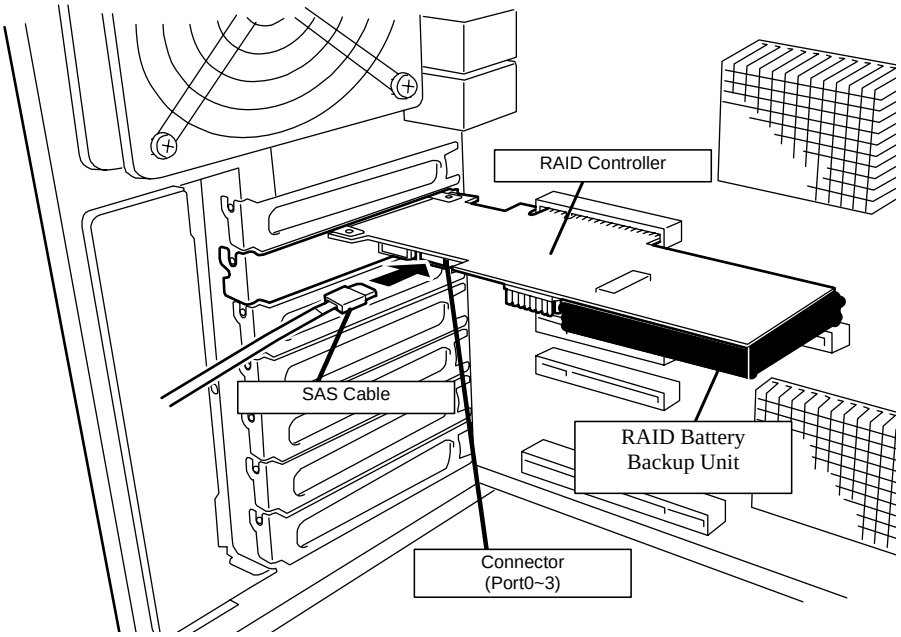
Secure with 3 screws from the rear .



9. Insert the RAID controller into the PCI slot and secure the BBU with the screw removed previously.



10. Connect the cable between the RAID controller and the system to recover the original state.



11. Put the Setup Date Label in a place you easily notice such as the system case.

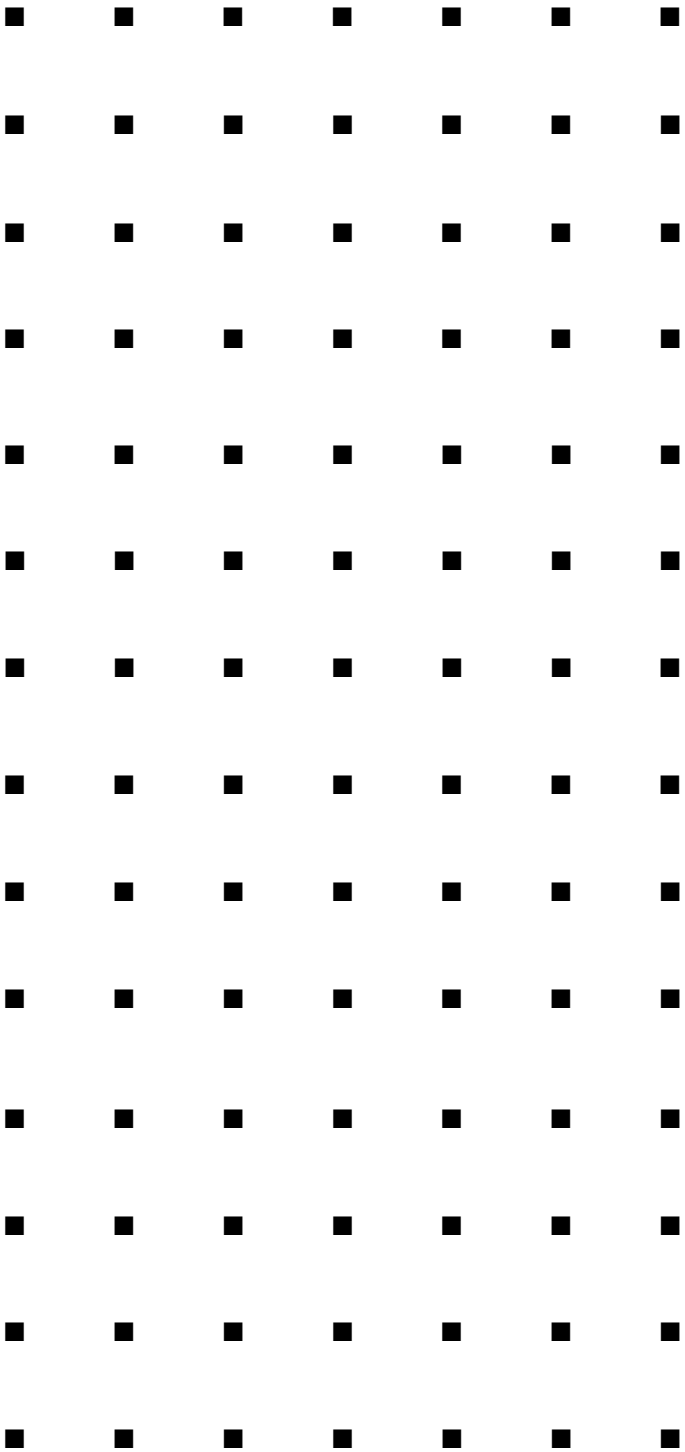
12. Install the side cover on the server.

13. Connect the power cords and power on the system.

14. Confirm whether the RAID controller is recognized by the system after the OS starts. Refer to [2-2. Checking by Utility].

Notice

The MegaRAID Storage Manager may not able to recognize the battery pack if it is charged only at the minimum level (or uncharged). If this occurs, charge the battery pack for nine hours or longer. Reboot the server and try to recognize the battery pack again using the MegaRAID Storage Manager.

Tips

The battery pack is recyclable. Contact your service representative or bring it to the nearest recycle agent.