JanusRAID SA-4378S
Hardware User Manual

42-30000-5084

PCIe to Serial ATA II

Disk Array System

Version 1.1

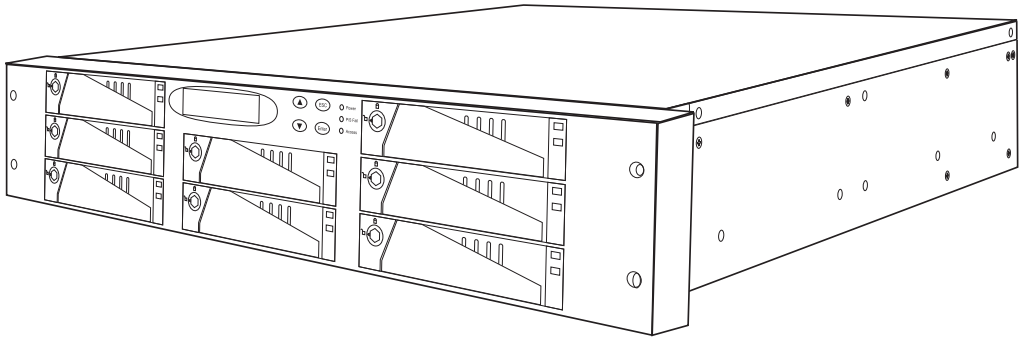

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Table of Contents

Preface i

Chapter 1 System Requirements

Operating Environment 1
VT100 Terminal Settings 1

Chapter 2 Basic Configuration

Unpacking 3
Components 4
SA-4378S Front Panel 4
Disk Tray 5
SA-4378S Rear View 6
Installing Disks 7
Making Connections 10
Connecting the Host Interface 10
Connecting PCIe cable to the server 11
Connecting and Turning on the Power 12

Chapter 3 Maintenance

Replacing a Disk 13
Replacing a Power Supply 14
Upgrading Memory 17
Replacing a FAN module 18

Appendix

Hardware Specifications 19

Preface

About this Manual

This manual is designed to make the disk array system as easy to use as possible. Information contained in this document has been checked for accuracy, but no guarantee is given that the contents are correct. Information and specifications are subject to change without notice.

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Conventions

Caution

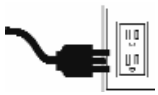
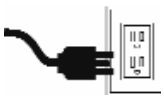
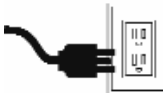
This symbol is used to remind users to pay attention to important descriptions regarding usage and maintenance (repair) or additional important information related to this disk array system.

Note

This symbol is used to remind users of useful information that can make procedures such as configuration easier to accomplish.

Important Safety Instructions, Care and Handling

	Before starting, take a few minutes to read this manual. Read all of these instructions and save this manual for later reference.
	Protect the disk array system from extremely high or low temperatures. Let the disk array system warm (or cool) to room temperature before using it.
	Protect the disk array system from being bumped or dropped. Do not place the disk array system on an unstable cart, stand, or table. It may fall, causing serious damage to the product.
	Keep the disk array system away from magnetic forces.
	Do not use the disk array system near water.
	Keep the disk array system away from dust, sand, or dirt.
	Gaps and openings in the cabinet are provided for ventilation. Never block or cover these openings, because the disk array system may overheat and become unreliable. Don't place the disk array system on a bed, sofa, rug, or other similar surface.
	Do not place the disk array system near or over a radiator or other heat source.
	Refer to the rating plate for the correct voltage and ensure that the appliance voltage corresponds to the supply voltage.

	The appliance must be grounded. The disk array system is equipped with a 3-wire grounded type of power cord. This power cord will only fit into a grounded type of power outlet.
	If an extension cord or a power center is used with the disk array system, make sure that the total current consumption of all products plugged into the wall outlet does not exceed the ampere rating.
	Do not place the disk array system where the cord will be walked on.
	Never push any kind of object into the disk array system through cabinet gaps and openings, since they may touch dangerous voltage points and cause a risk of fire or electric shock.
	Unplug the power cord from the wall outlet before cleaning. Keep the disk array system dry. Do not use liquid cleaners, aerosol cleaners, or a wet cloth. Use a damp cloth for cleaning.
	Except as specifically explained in this User Manual, do not attempt to service the disk array system by yourself. Opening or removing the covers may expose you to dangerous voltages.
	Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions. • If the disk array system has been exposed to water or any liquid. • If the disk array system has been dropped or the cabinet damaged.
	Users should not remove the cover.
	Disconnect all power supply cords before servicing.

Placement Notes

- The disk array system LCD panel can be damaged by exposure to direct sunlight. Limit exposure to subdued or indirect sunlight only.
- The disk array system should be used only in clean environments that are free from airborne contaminants such as dust, dirt, and smoke. Excessive moisture or oil particles in the air can also hinder disk array system performance.
- To reduce the possibility of data errors caused by electromagnetic interference, locate the disk array system at least five feet away from electrical appliances and equipment that generates magnetic fields.

Power Supply Safety Notes

- To avoid electric shocks, do not use an extended power cord or an outlet that does not match the disk array system plug or leaves the plug exposed.
- The disk array system has a 3-wire grounded plug. The third pin connects to ground; do not remove it.
- If the power cord or plug is damaged or worn, unplug it immediately and contact a qualified service technician for maintenance.
- To avoid fire or electric shocks, do not overload electric power outlets.

CAUTION : MULTIPLE POWER SOURCES

Disconnect all AC power cords to completely power from the unit

CAUTION

Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.

CAUTION

The thumbscrews on the rear surface shall be secured by the screwdriver, which cannot be loosened by bare hands to prevent the unintentional access to the hazardous parts inside the equipment.

1 System Requirements

Ensure that the following requirements are met before installing the disk array system.

Operating Environment

- 15 cm (6-inches) of space around the disk array system for proper ventilation
- ambient temperature of 5°C to 40°C (40°F to 104°F)
- ambient non-condensing relative humidity of 10% to 85%
- dust, smoke, and oil free environment
- no large magnetic fields, such as those generated by a high voltage power cables and motors, etc.
- no direct sunlight
- a flat, stable surface capable of supporting the disk array system

VT100 Terminal Settings

Refer to the following table for a summary of VT100 terminal settings required to communicate with the disk array system. Refer to your system manual for instructions on setting up the VT100 terminal settings.

Item	Required Setting
Connection	Serial Port (COM1 or COM2)
Protocol	RS232 (Asynchronous)
Cabling	Null Modem cable
Baud Rate	115200
Data Bits	8
Stop Bit	1
Parity	None

2 Basic Configuration

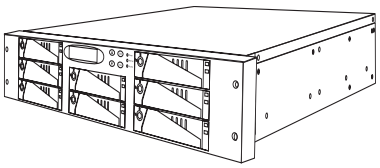
This chapter describes disk array system connections and disk installation.

Unpacking

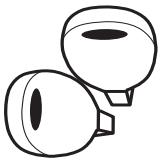
Contact your supplier if any of the following items are missing or damaged.

Caution

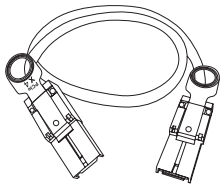
The disk array system is heavy. Be careful when lifting and moving it.



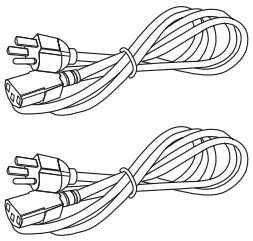
Disk Array System



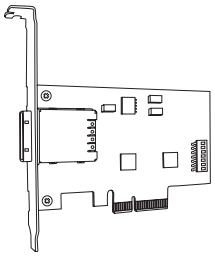
Disk Tray Keys



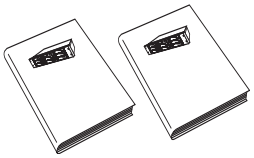
PCIe cable



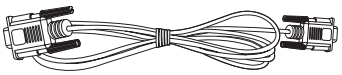
Power Cables



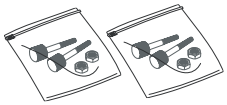
Re-drive card



Hardware and software user Manuals

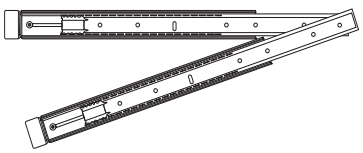


RS-232 Cable



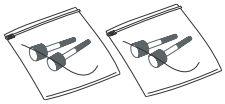
Fix Screw pack M5

Screw pack



Rails(option)

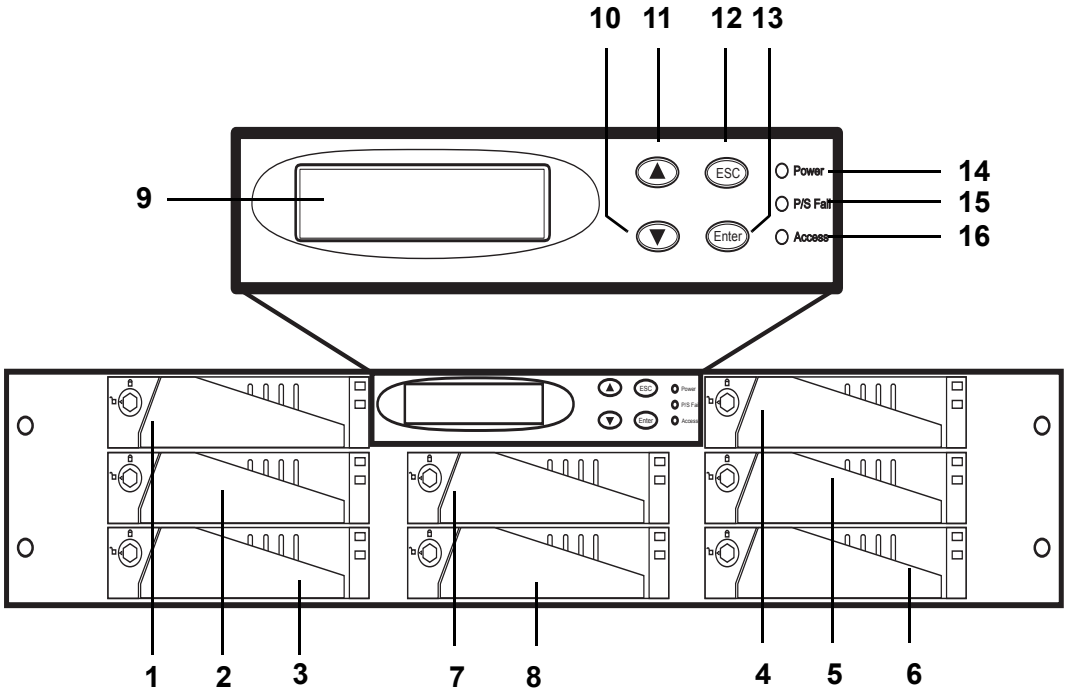
Fix Screw pack M4



Fix Screw pack UNC #10-32

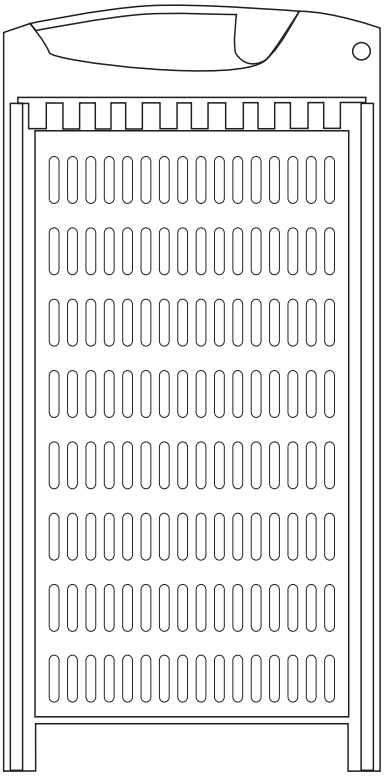
Components

SA-4378S Front Panel

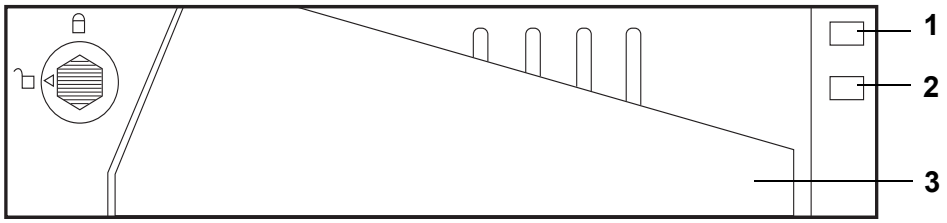


No.	Name	Description
1-8	Disk trays 1 to 8	Removable hot swap disk trays.
9	LCD panel	Displays warning, operating, and configuration information.
10	Down function button	Moves down in the LCD menus.
11	Up function button	Moves up in the LCD menus.
12	Escape function button	Returns to the previous LCD menu without making changes.
13	Enter function button	Selects a menu item or confirms a choice or entry.
14	Power-on indicator (green)	Indicates the disk array system power is on.
15	Power supply fail indicator (red)	Indicates a failed power supply.
16	Host computer access indicator	Indicates data transfer between the disk array system and the host computer.

Disk Tray

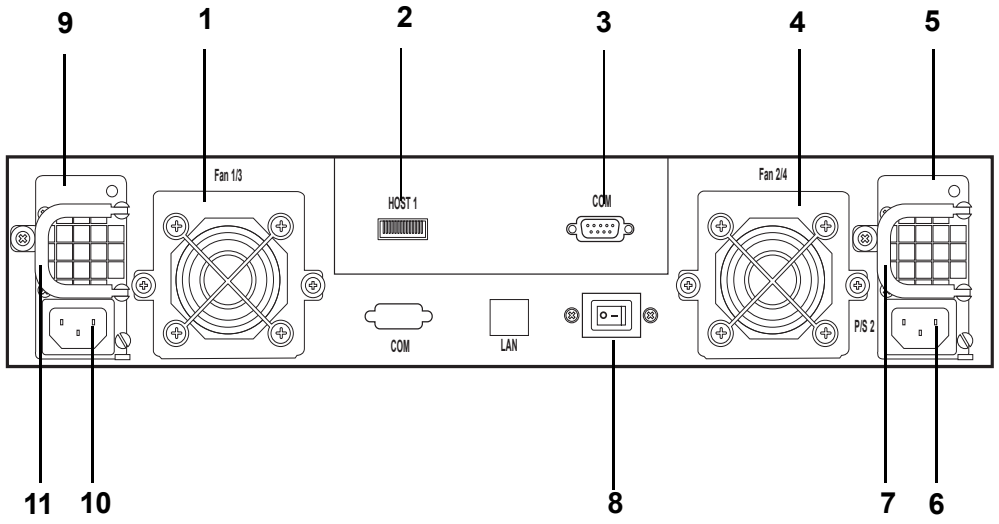


Front



No.	Name	Description
1	Status LED	• Green-Disk online • Red-No Disk
2	Access LED	This blue LED indicates that the disk is being accessed.
3	Tray handle	Releases the disk tray.

SA-4378S Rear View

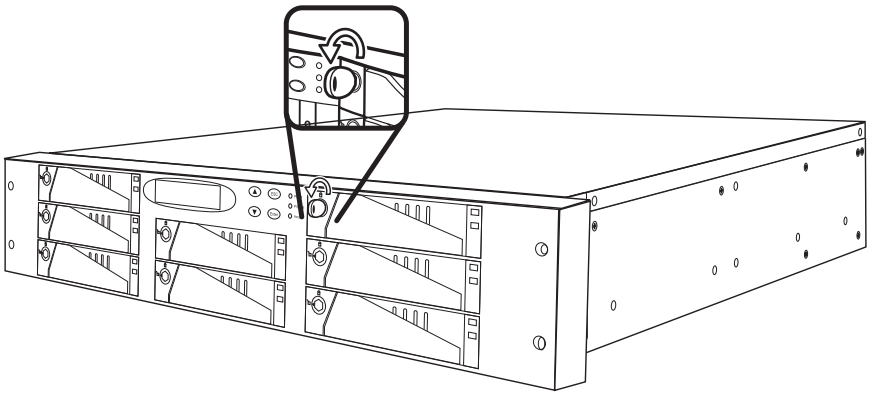


No.	Name	Description
1	Cooling fan 1/3	System cooling fan.(Fan1 is standard, Fan3 is optional)
2	Host Port 1 (PCIe channel)	Connects to the host server.
3	RS-232 Port	Connects to a VT100 terminal or equivalent
4	Cooling fan 2/4	System cooling fan.(Fan2 is standard, Fan4 is optional)
5	Power Supply 2	Removable redundant power supply 2.
6	Power Supply AC In	Connects to a 100-240 VAC power source.
7	Power Supply Handle	For power supply removal.
8	Power Switch	Switches the power on or off.
9	Power Supply 1	Removable redundant power supply 1.
10	Power Supply AC In	Connects to a 100-240 VAC power source.
11	Power Supply Handle	For power supply removal.

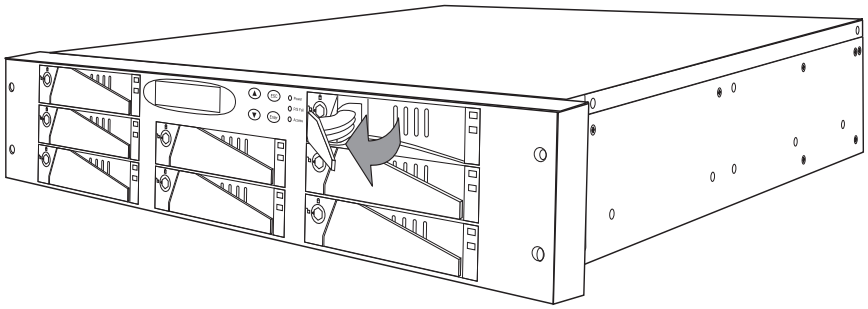
Installing Disks

This section describes how to install disks in the disk array system.

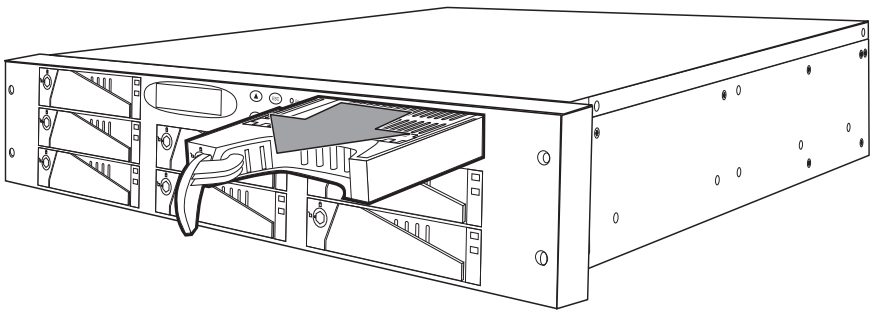
1 Unlock the disk tray with an included disk tray key



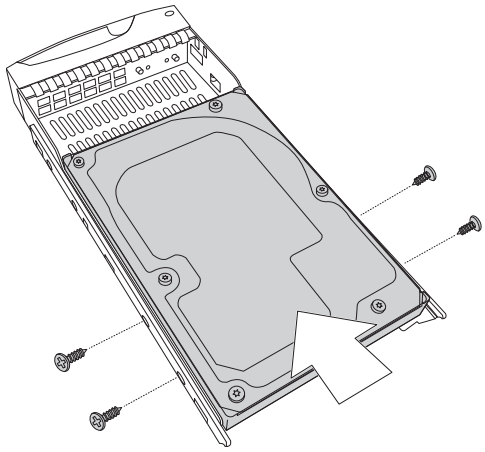
2 .Gently pull the disk tray handle to the opened position.



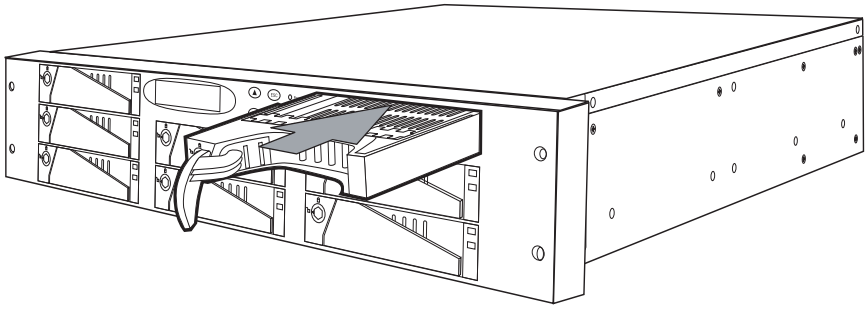
3 Remove the disk tray



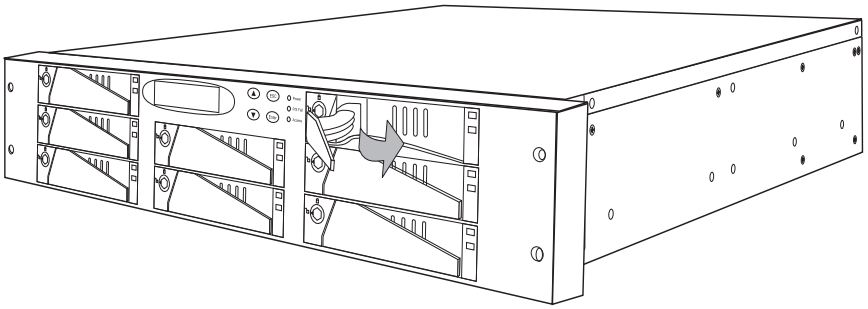
4 Insert the disk into the disk tray and fix into place with screws supplied with the disk.



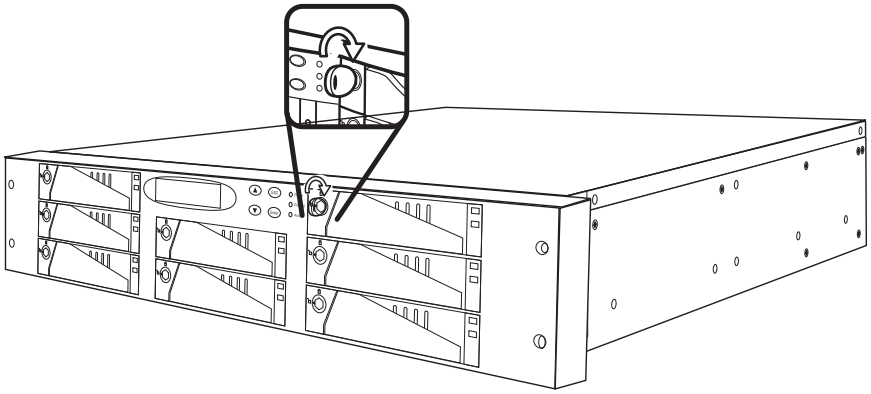
5 Slide the disk tray back into the empty slot.



6 Slowly push the disk tray handle closed.



7 Lock the disk tray with the key.



8 Repeat steps 1 to 8 until all of the required disks have been installed.

Making Connections

After the required number of disks have been installed, external connections to the disk array system must be made. This section describes how to make all of the necessary connections.

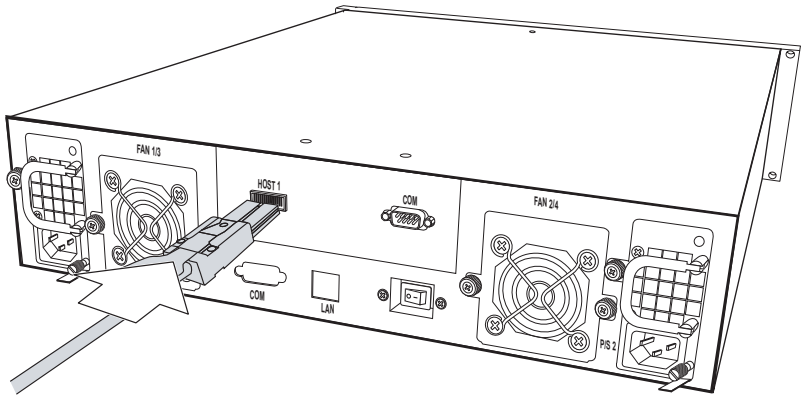
Connecting the Host Interface

The disk array system has PCIe interface. Refer to the following sections to make host interface connections.

Small Computer Systems Interface

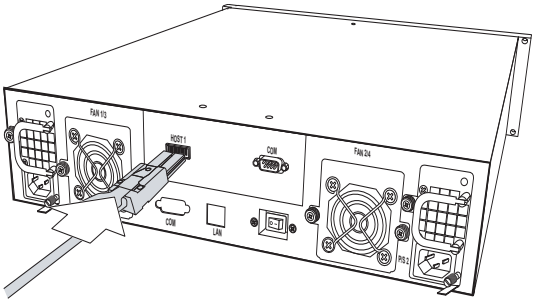
The SA-4378S has PCIe interface. Follow these instructions to make connections.

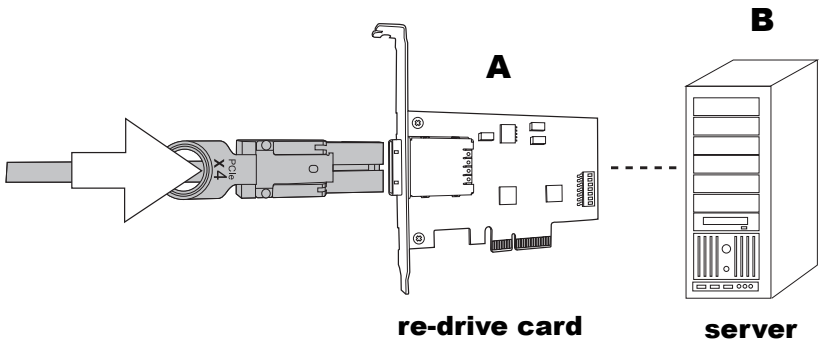
1. Connect the PCIe cable to the left top connector of the SA-4378S host port 1 at the rear of the disk array system.



Connect PCIe cable to the server

While the PCIe cable has connect to the SA-4378S, the other side of the cable connect to the re-drive card (A). Then install the re-drive card (A) into the PCI slot in the server (B).



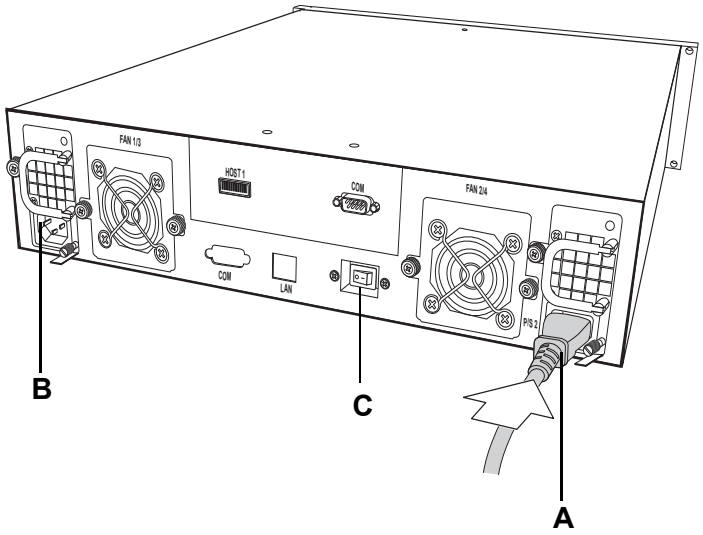


Connecting and Turning on the Power

1 Plug a power cable (**A**) to a power connector at the rear of the unit, then plug the second power supply cable into the second power connector (**B**).

Note

- The system is equipped with auto switching power supplies tha that can run on 100 to 240 VAC.
- Please turn on SA-4378S first then turn on the server which contain the redrive card.



2 Switch (C) on the disk array system.

3 Maintenance

Replacing a Disk

A disk failure is indicated when the Power/Error LED at the front of the drive tray turns red and the audible alert sounds.

Note

Turn off the audible alert by pressing the Up ↑ and Down ↓ function buttons on the front panel twice simultaneously.

The LCD panel displays the failure with the symbol “R” or “W”. “R” indicates a disk failure or error, and “W” indicates that there are too many bad sectors on the disk.

Example:

- Disks 1 to 3 are members of array group 1.
- Disks 4 to 6 are members of array group 2.
- Disk 7 has too many bad sectors.
- Disk 8 has an error or a fault.

Disks are hot swappable, which means that they can be inserted and removed while the disk array system is powered on and operating. Follow these instructions to replace a failed disk.

1. Unlock the front panel door, then pull it open.
2. Pull the tray handle away from the disk tray to release it; and pull the disk tray out.
3. Remove the screws from the failed disk, then remove the disk from the disk tray.
4. Align the rear of the new disk with the rear of the disk tray.
5. Insert the new disk into the disk tray.

Note

The new disk must have the same or a greater capacity than the faulty disk that was removed. If the disk capacity is smaller, the audible alert sounds and the auto-rebuild operation doesn’t start. For best performance, it is recommended that the new disk be identical to the failed disk.

6. Attach the disk to the disk tray with the screws that came with the disk.
7. Slide the disk tray back into the empty slot, then close the disk tray handle.
8. Push the front panel door closed, and lock it.

Replacing a Power Supply

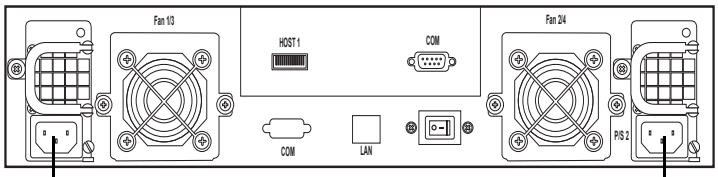
The disk array system is equipped with a Power Supply Fail Indicator LED at the front of the unit that turns red when one of the power supplies fails. The message “Power x failure” also appears on the LCD panel, where x refers to power supply 1, or 2, and an audible alert sounds.

Note

Turn off the audible alert by pressing the Up ↑ and Down ↓ function buttons on the front panel twice simultaneously.

Power supplies are hot swappable, which means that they can be inserted and removed while the disk array is powered on and operating. Follow these instructions to replace a failed power supply.

1 Identify the power supply that has failed.



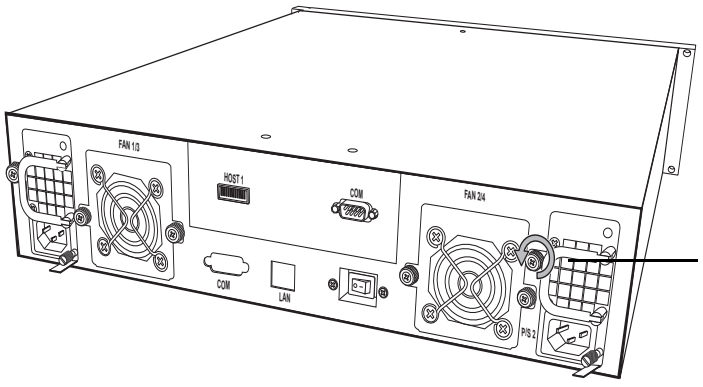
Power Supply 1 **Power Supply 2**

2 Remove the power cable from the power supply connector at the rear of the unit.

Note

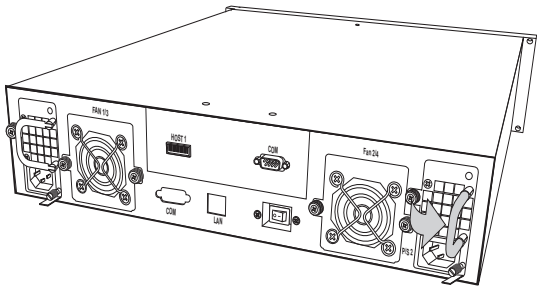
The system is equipped with auto switching power supplies that can run on 100 to 240 VAC.

3 Loosen the power supply retaining screw.

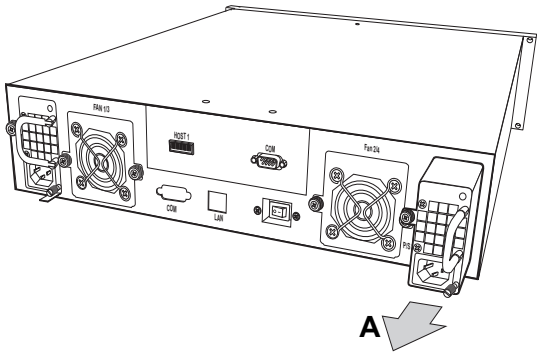


Power Supply retaining screw

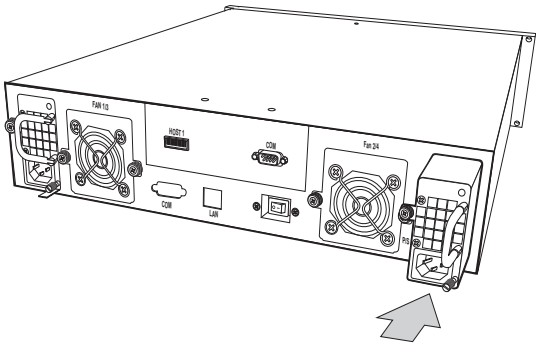
4 Pull the power supply handle out.



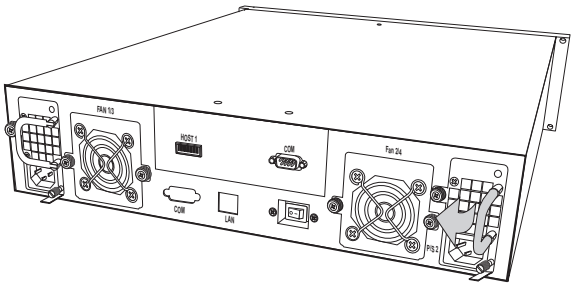
5 Remove the faulty power supply by pulling the power supply handle **A** and pressing the release catch **B** at the same time.



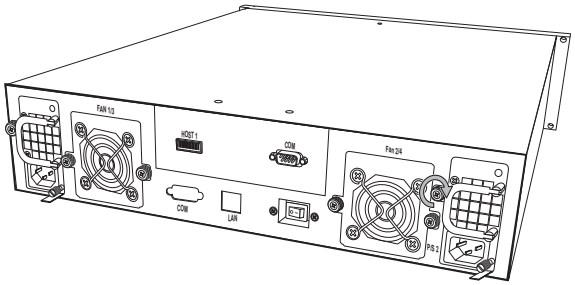
6 Insert a new power supply.



7 Push the power supply handle into place.



8 Tighten the power supply thumbscrew

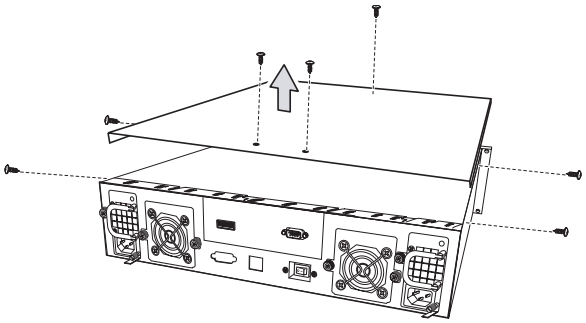


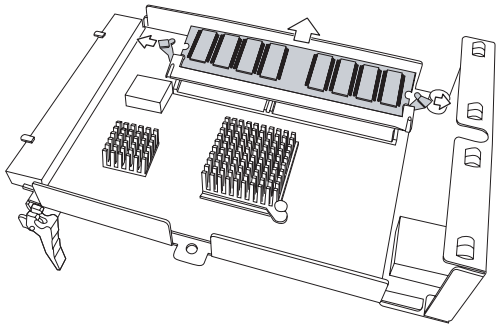
9 Reconnect the power cable.

Upgrading Memory

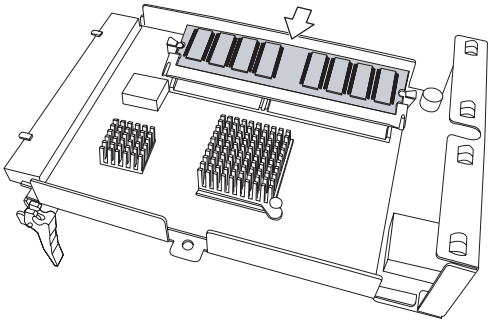
The disk array system takes a single DDR-333 DIMM with a maximum capacity of 2 GB. Follow these instructions to upgrade the memory.

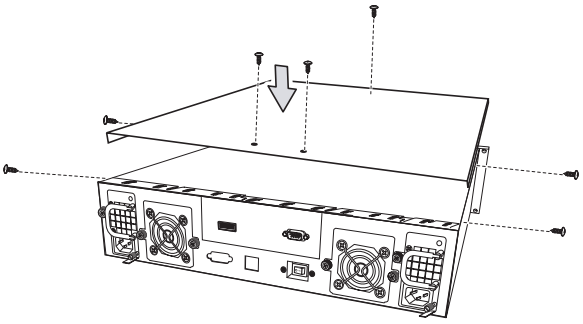
1 Remove the screws from the disk array system top cover and pull theDIMM retaining away, the DIMM springs out of the socket. Remove the DIMM.





2 Gently push the new DIMM into the socket, then push the corners of the DIMM down. The DIMM is secured by the DIMM retaining clips. Please the top cover on the disk array system and replace the screws to fix the cover.





Note

The DIMM module will fit in only one direction. Do not force the DIMM into place.

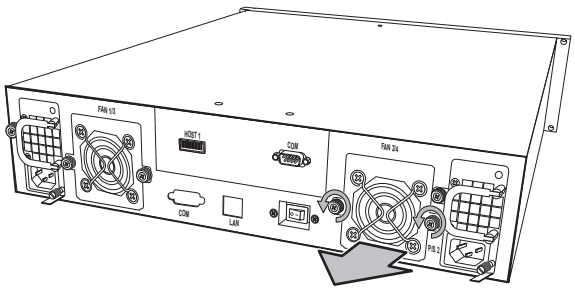
Replacing a FAN module

When one of the FAN module fails, the massage “FANx Fail” appears on the LCD panel, where x refers to fan 1, or 2, and an audible alert sounds.

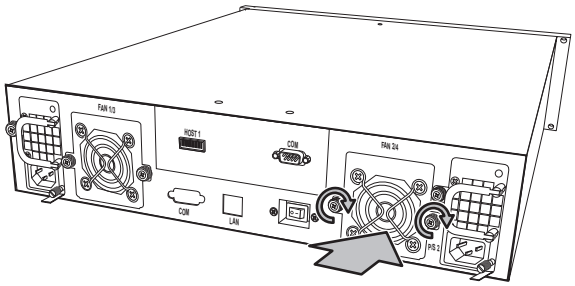
Note

Turn off the audible alert by pressing the Up and Down function buttons on the front panel twice simultaneously.

1 Identify the FAN module that has failed, loosen the retaining screws, slide it out of chassis.



2 Insert a new FAN module, tighten retaining screws.



Appendix

Hardware Specifications

Item	Specification
Host Interface	PCIe
Disk Interface	SATA II, 3.0 Gb/s
Dimensions	88 mm (H) x 485 mm (W) x 470 mm (D)
RAID Functions	• Raid levels: JBOD, 0, 1, 0+1, 5, 6 • Hot spare support • Disk hot swapping with automatic online rebuilding • Multiple RAID (max. 8)
Disk Array Functions	• O/S independent and transparent • Up to 2GB DDR SDRAM • LCD panel operation indicator • Audible alarm/disable alarm • LED indicator on disk failures
Connectors	• PCIe port • RS-232 Serial port (115200, 8, N, 1)
Power Supply	• Redundant, 300 Watt • 100 - 240 VAC, 47-63 Hz, 8~4A +/- 10% • Over voltage, current, power, and short circuit protection • LED indicates power status • Operating temperature: 5°C ~ 40°C • Output: +5V, +3.3V, +12V
Warranty	3 year warranty
Safety	UL, CE and FCC Class B

Item	Specification	
Controller	CPU	Intel i80333 64-bit RISC microprocessor
	Disk Interface	SATA II (3.0 Gb/s)
	Disk Channels	8 channels
	Memory Type	DDR-333 DIMM
	Memory Sockets	1
	Memory Size	Up to 2 GB
	Button Interface	Up, Down, Enter, and ESC
	Backplane Interface (connector)	Compact-PCI
	Temperature Sensors	2
Backplane	Disk Channel Support	8 channels
	Disk Number Supported	8 channels
	Disk Connector Type	Serial ATA II
	Temperature Sensors	5
	Power Connector Type	2 x Slot-2
	Fan Connector Type	4 x Slot-2