

**80 Bays
SAS to SAS/SATA
JBOD Subsystem**

User Manual

Revision 1.2

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Preface

About this manual

This manual provides information regarding the hardware features and installation of the **80Bay JBOD subsystem**. Information contained in the manual has been reviewed for accuracy, but not for product warranty because of the various environment/OS/settings. Information and specifications will be changed without further notice.

This manual uses section numbering for every topic being discussed for easy and convenient way of finding information in accordance with the user's needs. The following icons are being used for some details and information to be considered in going through with this manual:



NOTES:

These are notes that contain useful information and tips that the user must give attention to in going through with the subsystem operation.



IMPORTANT!

These are the important information that the user must remember.



WARNING!

These are the warnings that the user must follow to avoid unnecessary errors and bodily injury during hardware and software operation of the subsystem.



CAUTION:

These are the cautions that user must be aware of to prevent damage to the subsystem and/or its components.

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Changes

The material in this document is for information only and is subject to change without notice.

Before You Begin

Before going through with this manual, you should read and focus on the following safety guidelines. Notes about the subsystem's controller configuration and the product packaging and delivery are also included here.

Safety Guidelines

To provide reasonable protection against any harm on the part of the user and to obtain maximum performance, user is advised to be aware of the following safety guidelines particularly in handling hardware components:

Upon receiving of the product:

- ❖ Place the product in its proper location.
- ❖ Do not try to lift it by yourself alone. Two or more persons are needed to remove or lift the product to its packaging. To avoid unnecessary dropping out, make sure that somebody is around for immediate assistance.
- ❖ It should be handled with care to avoid dropping that may cause damage to the product. Always use the correct lifting procedures.

Upon installing of the product:

- ❖ Ambient temperature is very important for the installation site. It must not exceed 30°C. Due to seasonal climate changes; regulate the installation site temperature making it not to exceed the allowed ambient temperature.
- ❖ Before plugging-in any power cords, cables and connectors, make sure that the power switches are turned off. Disconnect first any power connection if the power supply module is being removed from the enclosure.
- ❖ Outlets must be accessible to the equipment.
- ❖ All external connections should be made using shielded cables and as much as possible should not be performed by bare hand. Using anti-static hand gloves is recommended.
- ❖ In installing each component, secure all the mounting screws and locks. Make sure that all screws are fully tightened. Follow correctly all the listed procedures in this manual for reliable performance.

Controller Configurations

This JBOD subsystem supports dual JBOD controller configurations.

Packaging, Shipment and Delivery

- ❖ Before removing the subsystem from the shipping carton, you should visually inspect the physical condition of the shipping carton.
- ❖ Unpack and verify that the contents of the shipping carton are complete and in good condition.
- ❖ Exterior damage to the shipping carton may indicate that the contents of the carton are damaged.
- ❖ If any damage is found, do not remove the components; contact the dealer where you purchased the subsystem for further instructions.

Unpacking the Shipping Carton

The shipping carton contains the following:

| | |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|  | <p>JBOD Subsystem Unit</p> |
|  | <p>80 pairs of HDD side brackets</p> |
|  | <p>Four (4) Power cords</p> |
|  | <p>One (1) external SAS cable for single JBOD controller Note: Two SAS cables for dual JBOD controllers</p> |
|  | <p>One (1) external serial cable for single JBOD controller Note: Two serial cables for dual JBOD controllers</p> |
|  | <p>Key of Top Cover</p> |
|  | <p>Screws</p> |
|  | <p>User Manual</p> |



NOTE: If any damage is found, contact the dealer or vendor for assistance.

Chapter 1 Product Introduction



The 80 bays JBOD Subsystem

The JBOD subsystem features the latest SAS2 (6Gb/s) interface and designed to fit in with the environments which needed highly reliable and relentless data growth. It is also a versatile SAS2 / SATA3 Disk Expansion system, ideal for high capacity and scalability storage in IT demands. Based on the 6G SAS2.0 technology, it supporting the choice of SAS2 and SATA3 drive configurations to deliver the best cost-performance index with higher bandwidth.

Features

- 80 hot-swappable drive bays in a rackmount 4U chassis
- Simultaneously support SAS2 or SATA3 disk
- Single or dual SAS2 JBOD controller module
- Each SAS2 JBOD controller module consist of four mini SAS (4X) port
- Modulize design of JBOD controller, power supply and cooling system
- Four 650W high efficiency redundant hot swappable power supplies
- Incorporates a cableless design for maximum signal integrity
- Utilizes industry-standard SCSI Enclosure Services to monitor enclosure and disk environmental conditions

Enclosure monitoring

- S.E.S. support for standard enclosure management
- System LED indications
- Fan speed monitoring
- Power supply monitoring
- System voltage monitoring
- System temperature monitoring
- System alarm

1.1 Technical Specifications

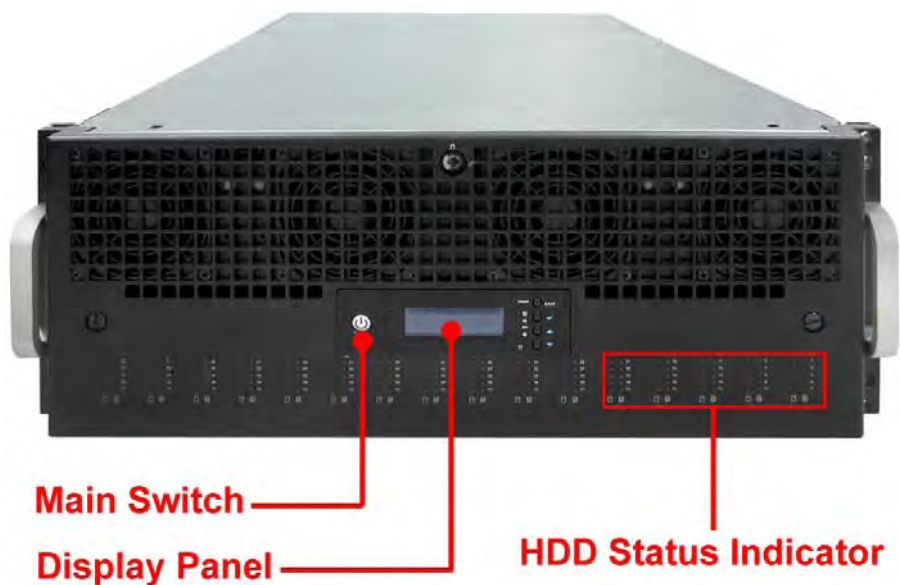
| | |
|-----------------------|----------------------------------------|
| RAID Controller | JBOD |
| Controller option | Single / Redundant |
| Host Interface | Two / Four 6Gb/s SAS (SFF-8088) |
| Disk Interface | 6Gb/s SAS, 6Gb/s SATA |
| SAS Expansion | Two / Four 6Gb/s SAS (SFF-8088) |
| - Direct Attached | 80 Disks |
| - Expansion | Refer to RAID controller specification |
| Monitor Port support | Yes |
| Enclosure | |
| Platform | Rackmount |
| Form Factor | 4U |
| # of Hot Swap Trays | 80 |
| Disk Status Indicator | Access / Fail LED |
| Backplane | SAS2 / SATA3 |
| # of PS/Fan Modules | 650W x 4 w/PFC |
| # of Fans | 12 |
| Power requirements | AC 90V ~ 254V Full Range 50Hz~60Hz |
| Environmental | |
| Relative Humidity | 10% ~ 85% Non-condensing |
| Operating Temperature | 10°C ~ 40°C (50°F ~ 104°F) |
| Physical Dimension | 930(L) x 482.6(W) x 177(H) mm |
| Weight (Without Disk) | 45.5 / 48Kgs |

Specification is subject to change without notice.

Chapter 2 Identifying Parts of the JBOD Subsystem

2.1 Main Components

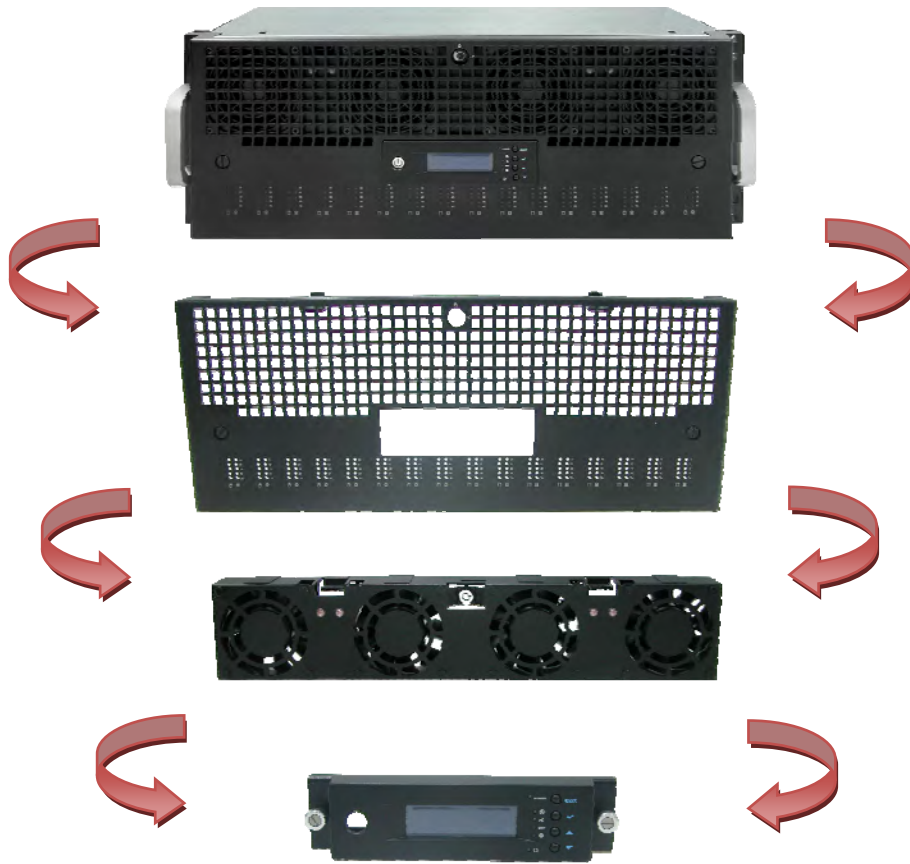
2.1.1 Front View



IMPORTANT: When powering off the JBOD subsystem, turn off first the Main Switch last for more than 4 seconds and allow at least 4 minutes for the subsystem to shutdown properly. Then turn off the switches of the 4 Power Supply Fan Modules.



NOTES:
The hot-swap design allows for the replacement of front bezel without interrupting system operation.

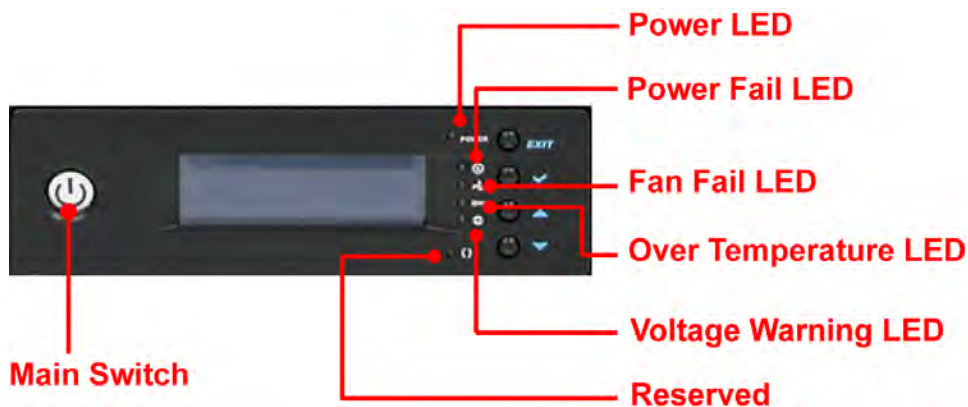






2.1.1.1 LCD Panel Function Buttons



| Parts | Function | |
|----------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Up and Down Arrow buttons | ▲ ▼ | Use the Up or Down arrow keys to go through the information on the LCD screen. This is also used to move between each menu. |
| Select button | ✓ | This is used to enter the option you have selected. |
| Exit button | EXIT | Press this button to return to the previous menu. NOTE: This button can also be used to silence the alarm beeper when in main menu. If you are in submenu and a failure event happens, press the EXIT button few times as necessary to go back to main menu, and press again to silence the alarm. |

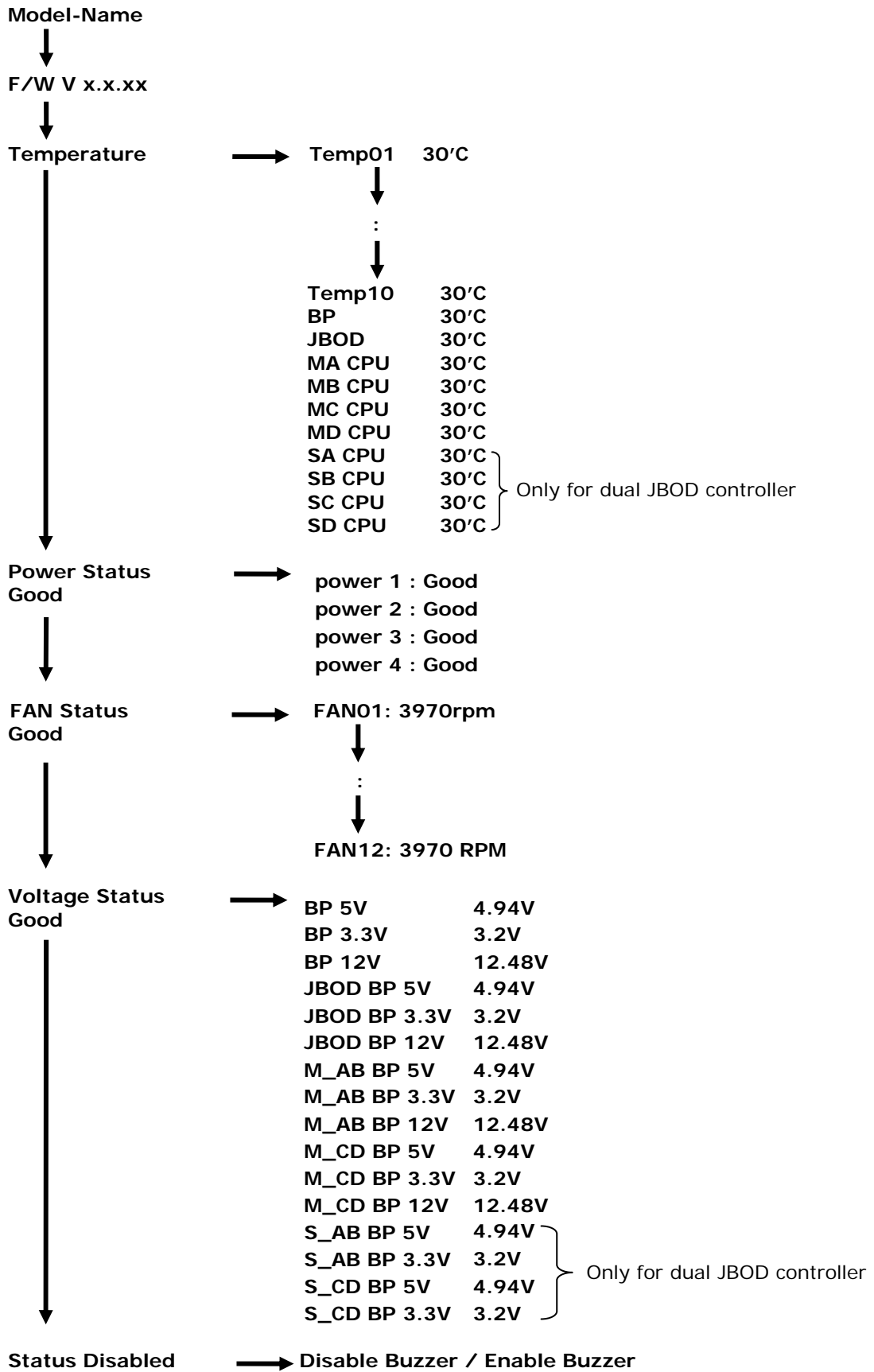
2.1.1.2 LCD Display Panel LED



| Parts | Function |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Power LED | Green indicates power is ON. |
| Power Fail LED  | If one of the redundant power supply unit fails, this LED will turn to RED and alarm will sound. |
| Fan Fail LED  | Turn RED when fan fails, or speed is lower than 3000 RPM |
| Over Temperature LED  | If system backplane temperature is over 85°C or BP and disk temperatures exceed 55°C, the Over Temperature LED will turn RED and alarm will sound. |
| Voltage Warning LED  | An alarm will sound if detected voltage in the controller is abnormal and LED will turn RED. |

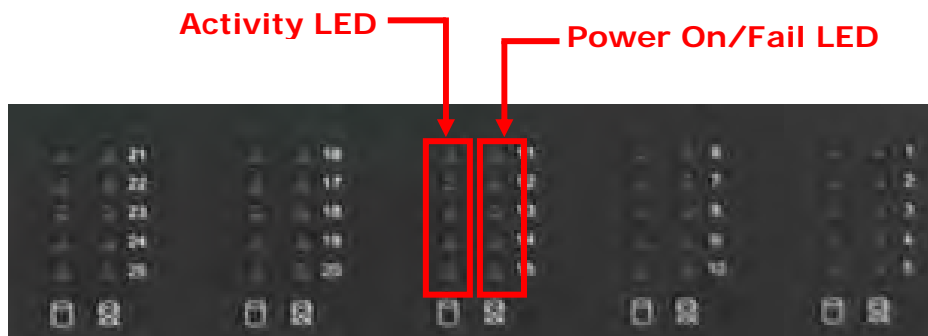
| Main Switch Button | |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Flashing Blue | Indicates that the system is powering off. The main switch button will flash blue at least 4 minutes for the subsystem to shutdown properly. |
| Light Blue | Indicates that the system is on. |
| No Light | Indicates that the whole system is power off. |

2.1.1.3 Menu Diagram



2.1.1.4 HDD Status LEDs

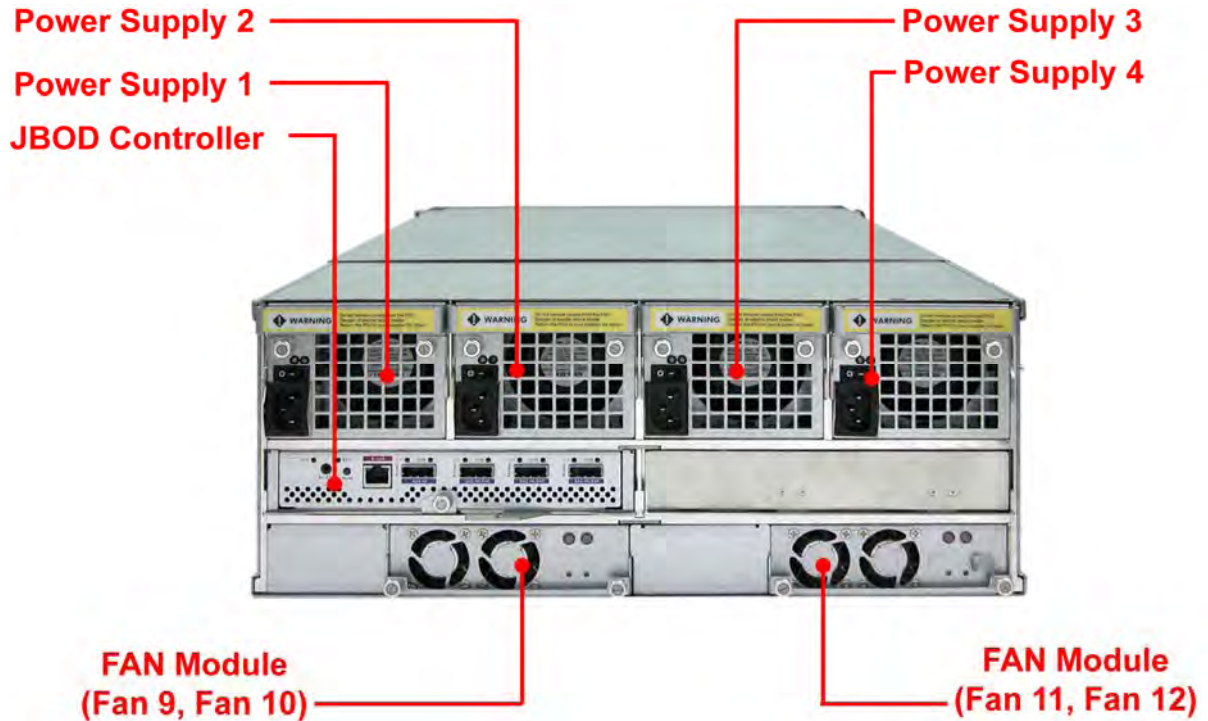
The Front Panel shows the disk drives status.



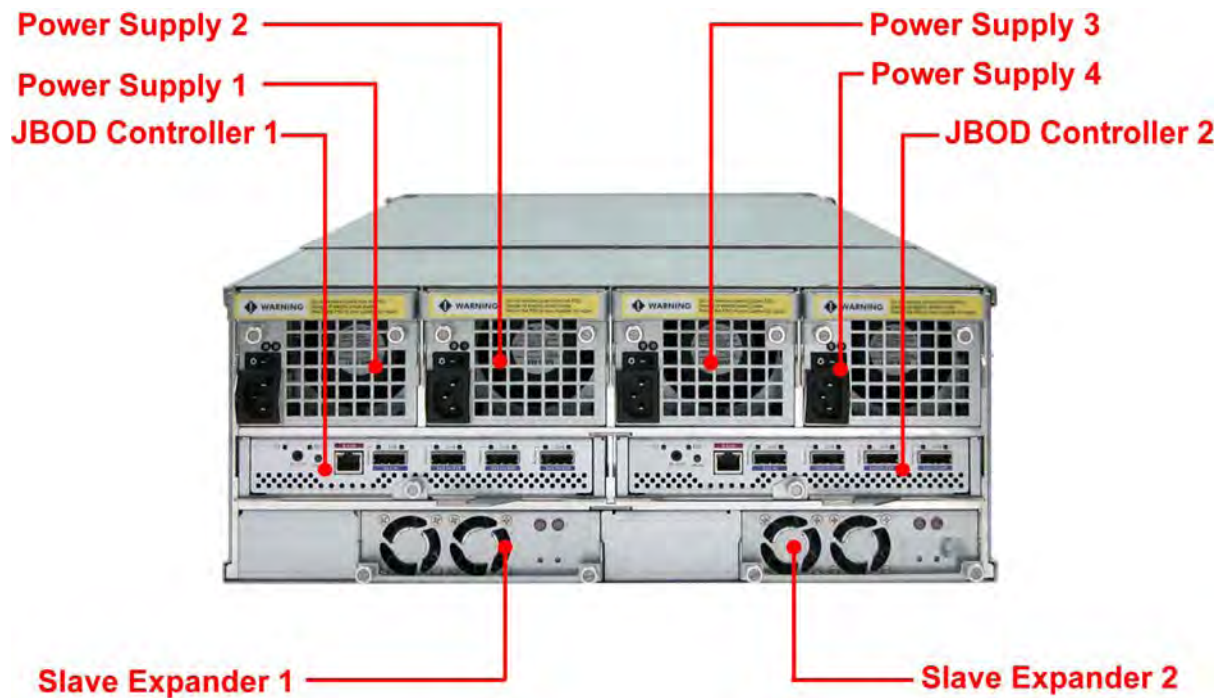
| Indicator | Color | Description |
|-------------------|---------------|-----------------------------------------------------|
| Activity LED | Blue Blinking | Indicates the disk drive is busy or being accessed. |
| Power On/Fail LED | Green | Indicates the disk drive in this slot is good. |
| | RED | Indicates the disk drive in this slot is failed. |
| | LED is off | Indicates there is no disk drive in this slot. |

2.1.2 Rear View

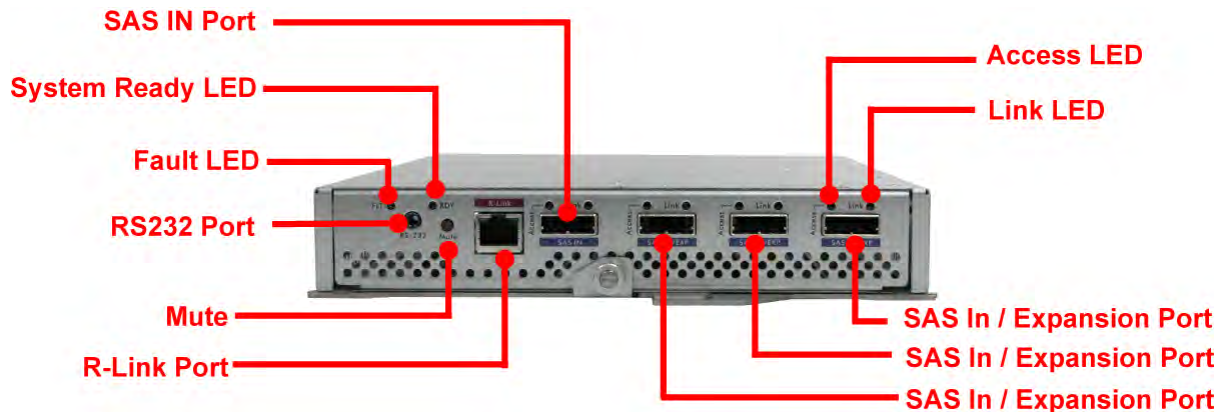
Single Controller



Dual Controller



2.2 JBOD Controller Module



SAS IN Port: SAS cable must be connected to this port and to the SAS HBA, or other Expansion Chassis's SAS Expansion Port, if this chassis is connected in daisy-chain.

System Ready LED: Green indicates Expansion Chassis is Powered On and Ready.

Fault LED: Red (LED is on) indicates there is problem within the Expansion Chassis. If LED is off, the Expansion Chassis is in normal condition.

RS-232 Port: Used for upgrading the Firmware of JBOD controller in the Expansion Chassis.

Mute: Use this button to silence the alarm beeper. If another failure event happens, the alarm beeper will sound again and this button can be pressed again to silence alarm.

R-Link Port: Use to connect to Telnet for upgrading the Firmware of JBOD controller

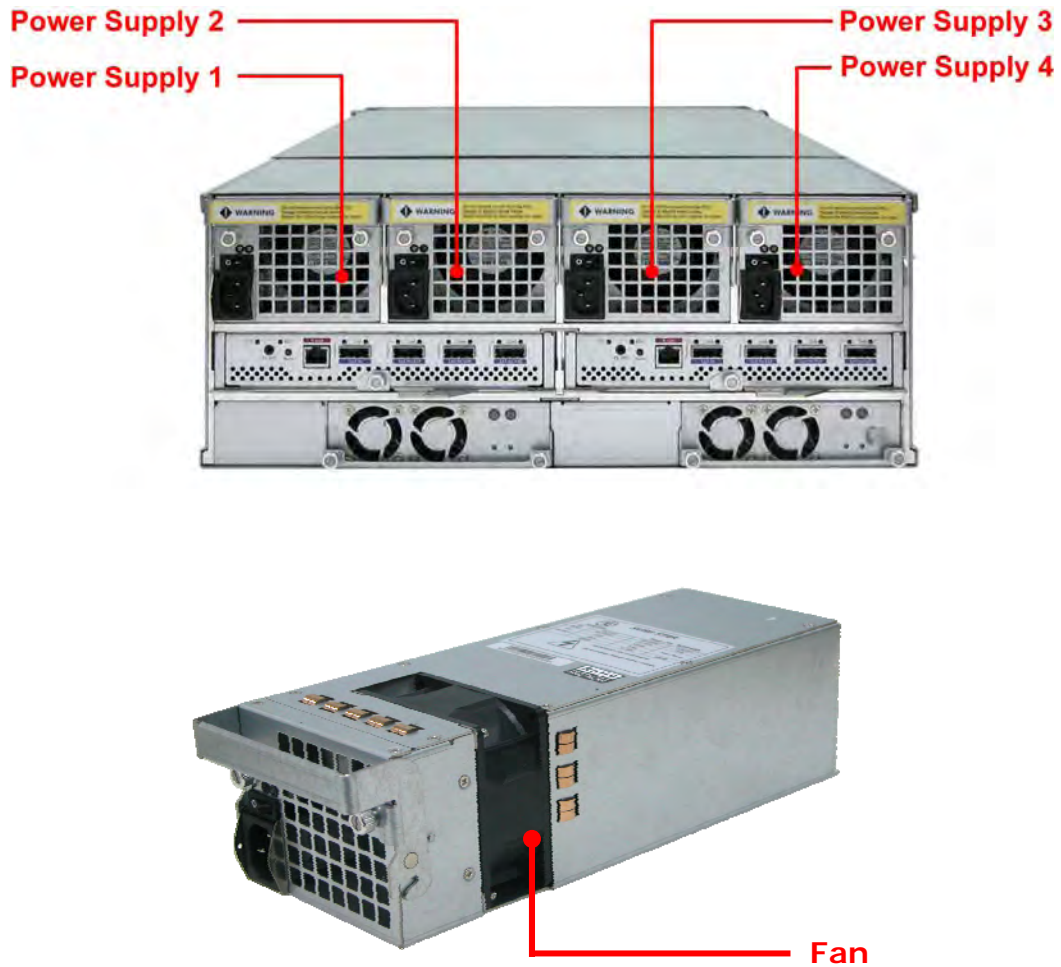
Link LED (SAS IN and SAS Exp): Green indicates SAS In/Exp. Port has connected or linked.

Access LED (SAS IN and SAS Exp): Blue indicates SAS In/Exp. Port is being accessed.

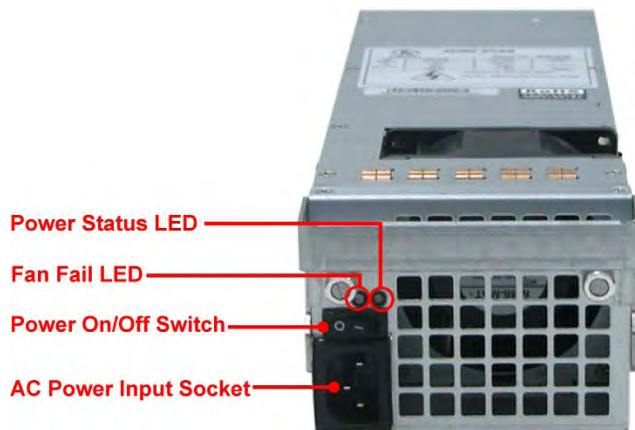
SAS Expansion Ports: SAS cable must be connected to these ports and to other SAS IN Port of other expansion chassis for daisy-chaining.

2.3 Power Supply Fan Module (PSFM)

The 80bay JBOD subsystem contains **four 650W Power Supply/Fan Modules**. All PSFM are inserted at the rear of the chassis.



NOTE: Each PSFM delivers Full-Range 100V ~ 240V (+/-10%) voltage AC electricity. Each PSFM consists of 1 power supply and 1 fan.



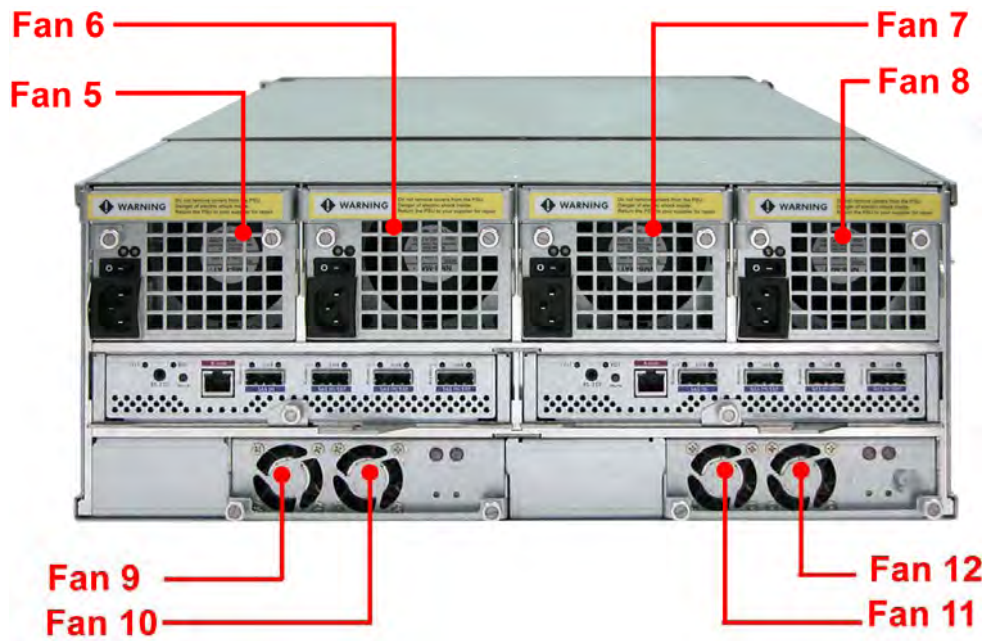
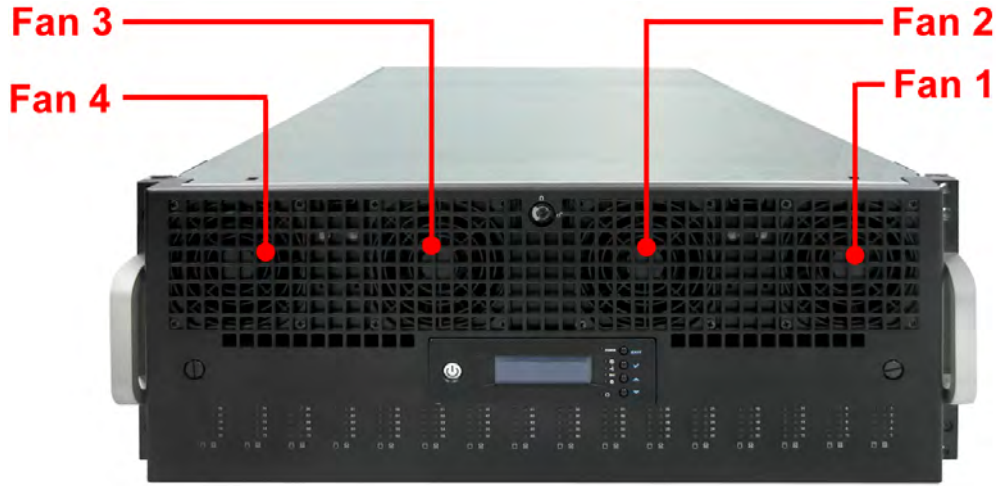
| Part | Description |
|-----------------------|--------------------------------------------------|
| AC Power Input Socket | Use to connect the power cord from power source. |
| Power On/Off Switch | Use to power on or power off the PSFM. |

| Indicator | Color | Description |
|------------------|-------|----------------------------------------------|
| Power Status LED | Green | Indicates the power supply module is good. |
| | Red | Indicates the power supply module is faulty. |
| Fan Fail LED | Red | Indicates fan in the PSFM has failed. |

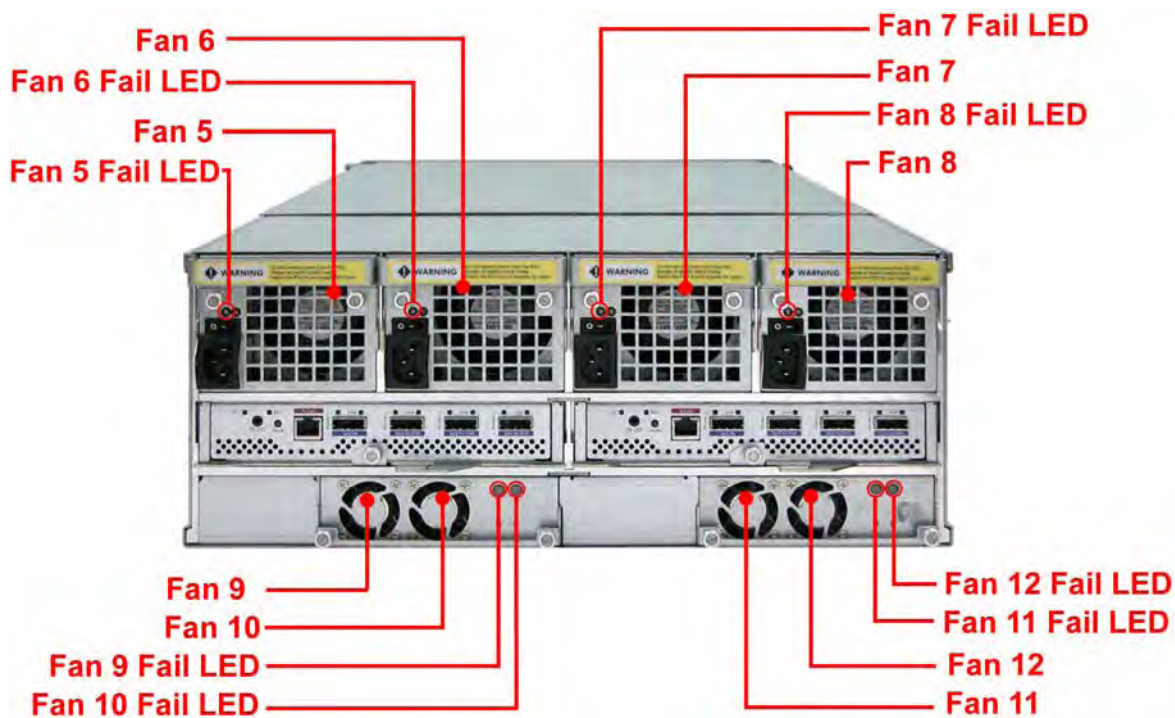
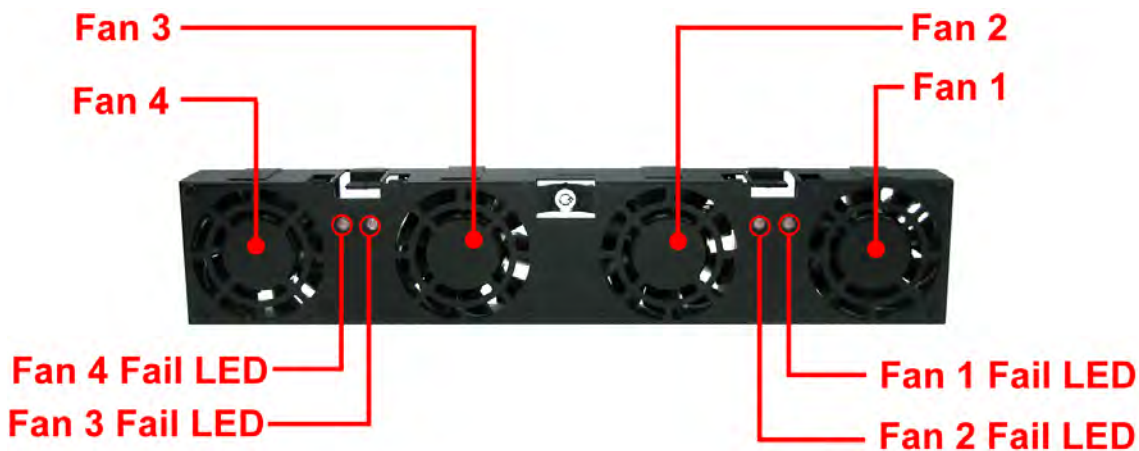
When the power cord connected from main power source is inserted to the AC Power Input Socket the Power Status LED becomes **RED**. When the switch of the PSFM is turned on, the LED still shows **RED**. After the main switch in front panel is turned on, the LED turns **GREEN**, which means it is functioning normally.

2.4 Fan Module

The 80bay JBOD subsystem contains 12 fans.



2.4.1 FAN Panel

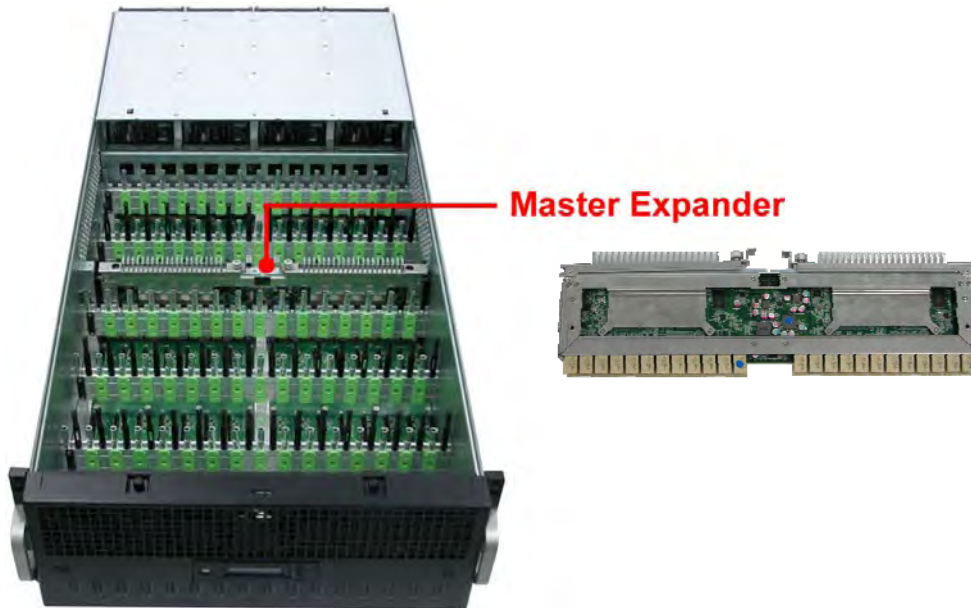


| Indicator | Color | Description |
|--------------|----------|-------------------------------------|
| Fan Fail LED | No light | Indicates the fan is normal. |
| | Red | Indicates the turbo fail is faulty. |

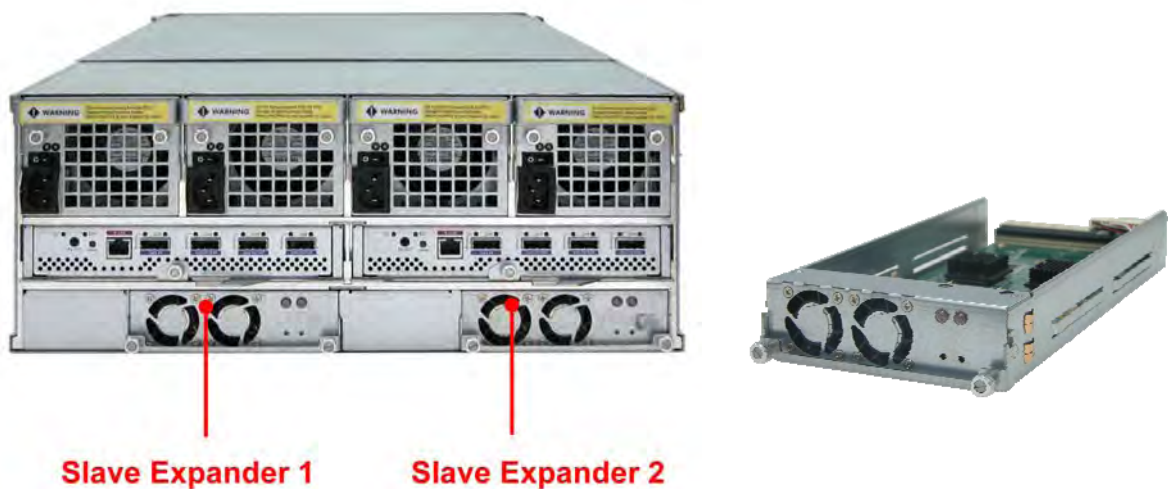
2.5 Expander Module

The 80bay JBOD subsystem contains **Master** and **Slave Expander Modules**. The Expander Module contains the SAS expander. It can be used to upgrade the SAS expander firmware. It also contains the SES module (SCSI Enclosure Services). SES is the protocol used for enclosure environmental control.

The **master** expander module monitors the following enclosure conditions: temperature, power supply voltage, and fan speed.



The slave expander module monitors the temperature and power supply voltage conditions. (Only for dual JBOD controller)

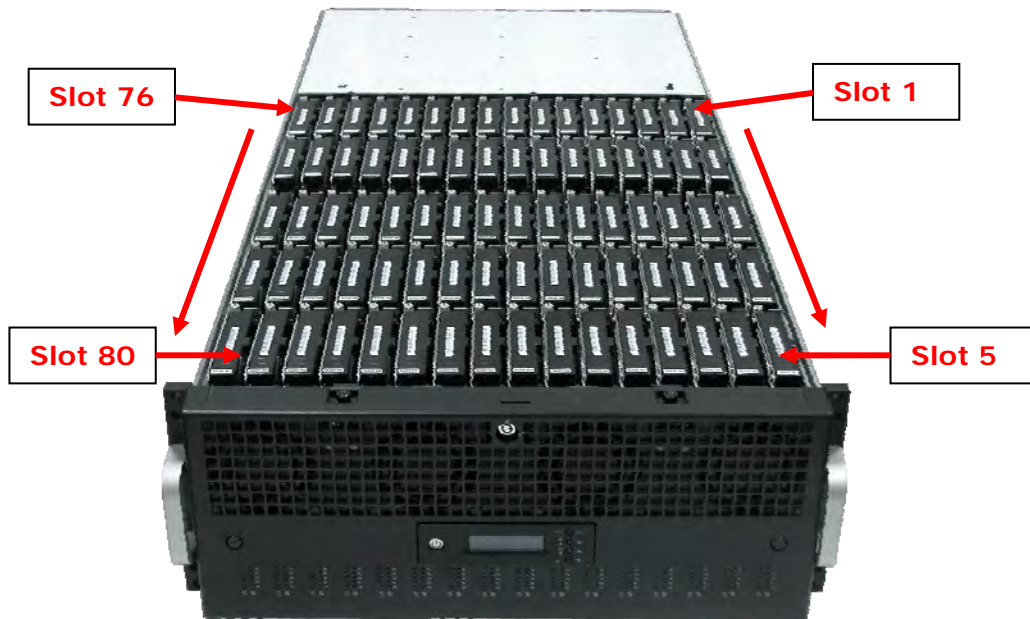


2.6 Disk Drive Installation into the Disk Slot

This section describes the physical locations of the hard drives supported by the subsystem and give instructions on installing a hard drive.



NOTE: When the Disk Array is shipped, the disk trays are not placed in the disk slots. If all disk trays will be used to install all 80 disk drives, for quicker and easier installation of disk drives in the Disk Array, it is recommended to attach first each disk drive with HDD side brackets and paste the slot number labels.



DISK SLOT NUMBERS

| Rear side | | | | | | | | | | | | | | | |
|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 76 | 71 | 66 | 61 | 56 | 51 | 46 | 41 | 36 | 31 | 26 | 21 | 16 | 11 | 6 | 1 |
| 77 | 72 | 67 | 62 | 57 | 52 | 47 | 42 | 37 | 32 | 27 | 22 | 17 | 12 | 7 | 2 |
| 78 | 73 | 68 | 63 | 58 | 53 | 48 | 43 | 38 | 33 | 28 | 23 | 18 | 13 | 8 | 3 |
| 79 | 74 | 69 | 64 | 59 | 54 | 49 | 44 | 39 | 34 | 29 | 24 | 19 | 14 | 9 | 4 |
| 80 | 75 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 |
| Front Side | | | | | | | | | | | | | | | |



NOTE: The actual slot numbers according to the RAID Card or RAID Controller detection.



IMPORTANT: In dual controller mode, the installation of SATA disk drive in a disk tray is done differently. In single controller mode, the installation of SATA disk in a disk tray is the same with SAS disk.

| HDD | Single Controller | Dual Controller |
|------|----------------------|----------------------|
| SATA | No need dongle board | Need dongle board |
| SAS | No need dongle board | No need dongle board |

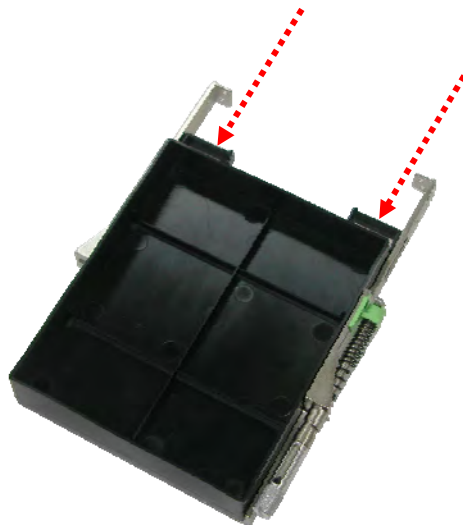


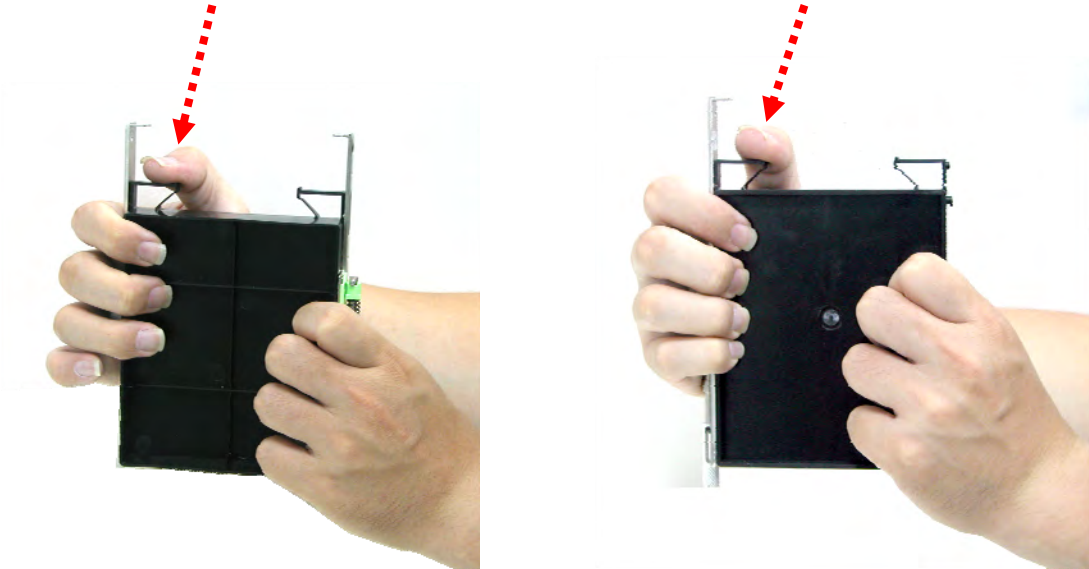
NOTE: In this model, it is recommended to use 6Gb/s hard drive disks.

2.6.1 To install a SATA disk drive (Dual Controller Mode) in a disk tray:

A. HDD side brackets without dongle boards

1. Prepare the HDD side brackets. Remove them from the dummy disk by pushing the upper sides of the dummy disk as shown below:





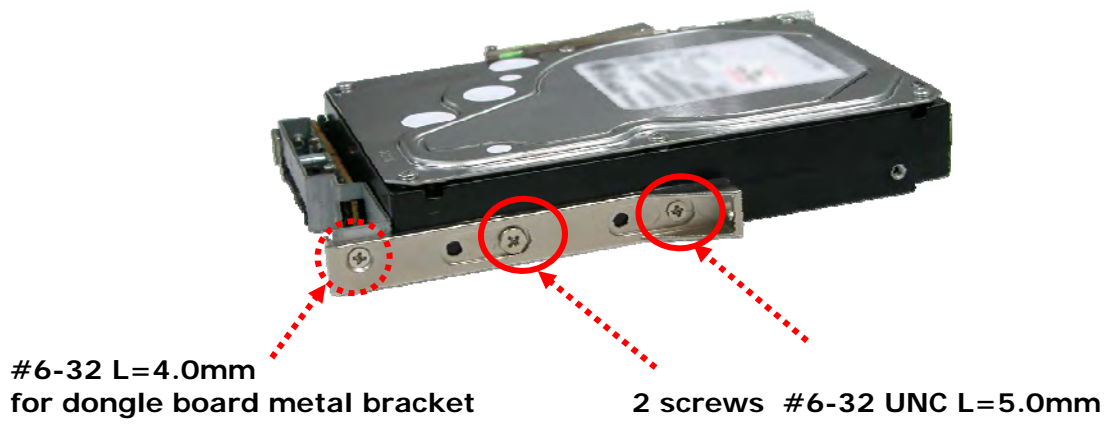
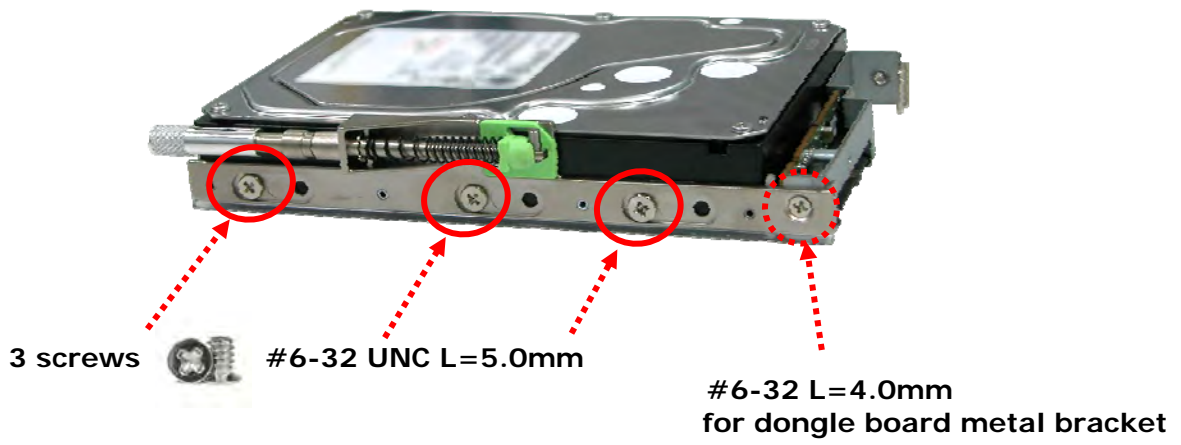
2. Prepare the dongle board with metal bracket.



3. Connect the dongle board into the SATA disk drive.

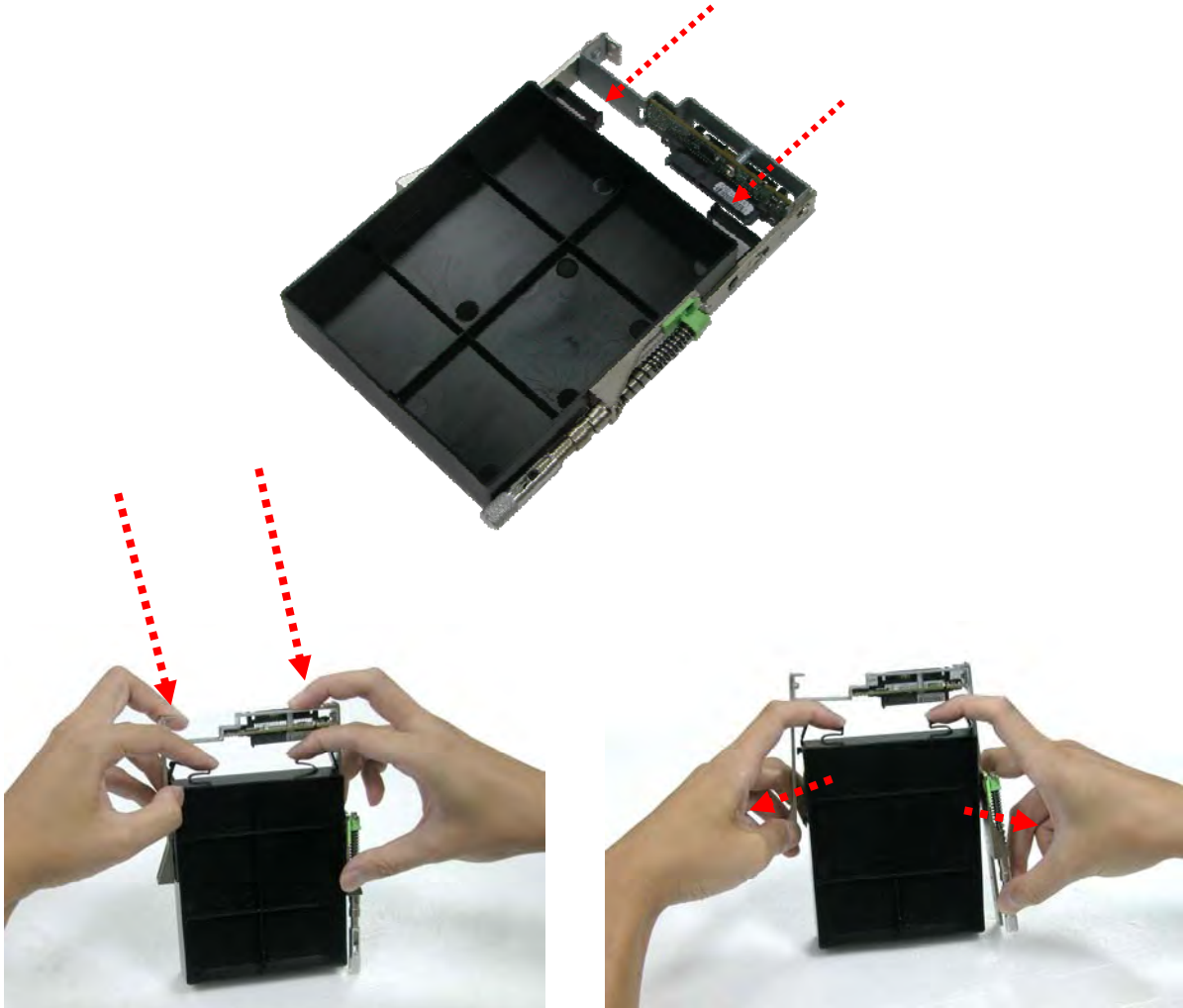


- Place the brackets on both sides of the disk drive and secure them with screws.



B. HDD side brackets with dongle boards

1. Prepare the HDD side brackets. Remove them from the dummy disk by pushing the upper sides of the dummy disk as shown below:

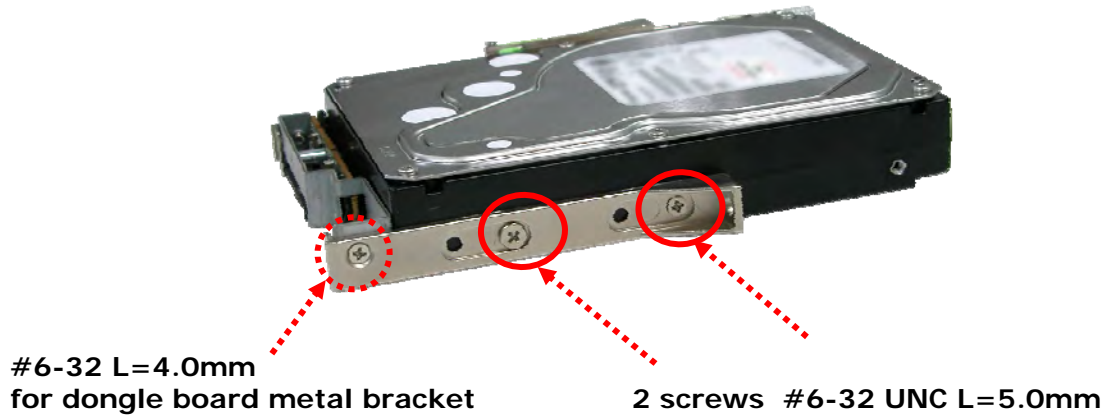
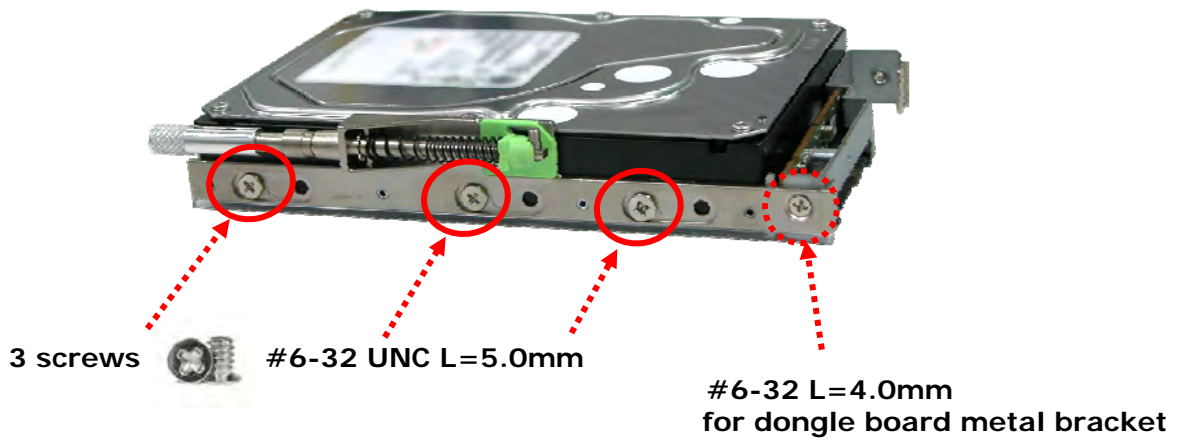


Hold the HDD side bracket and push the upper sides of the dummy disk

Pull outward to release side bracket from the dummy disk

2. Place the brackets on both sides of the disk drive and secure them with screws.





2.6.2 To install a SAS disk drive (Single or Dual Controller Mode) or SATA disk drive (Single Controller Mode) in a disk tray:

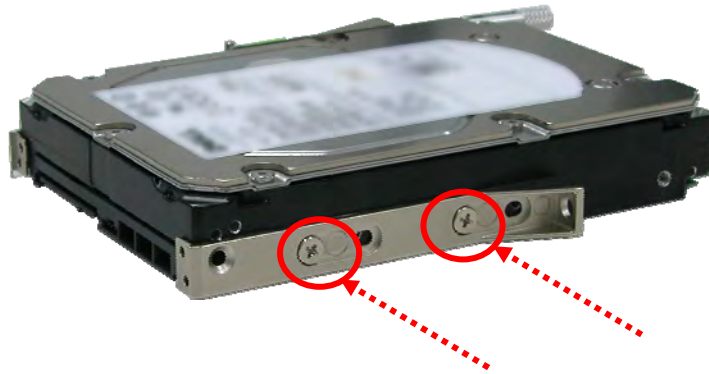
1. Prepare the HDD side brackets. Remove them from the dummy disk by pushing the upper sides of the dummy disk as shown below:



2. Place the brackets on both sides of the disk drive and secure them with screws.



3 screws #6-32 UNC L=5.0mm



2 screws #6-32 UNC L=5.0mm

3. Place the drive carefully in the disk slot.

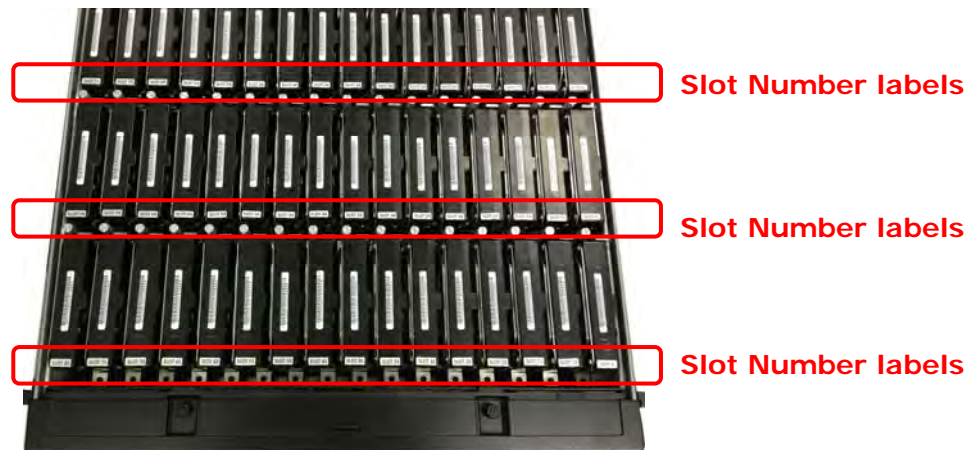




4. Tighten the thumbscrews on the sides of the disk drive.

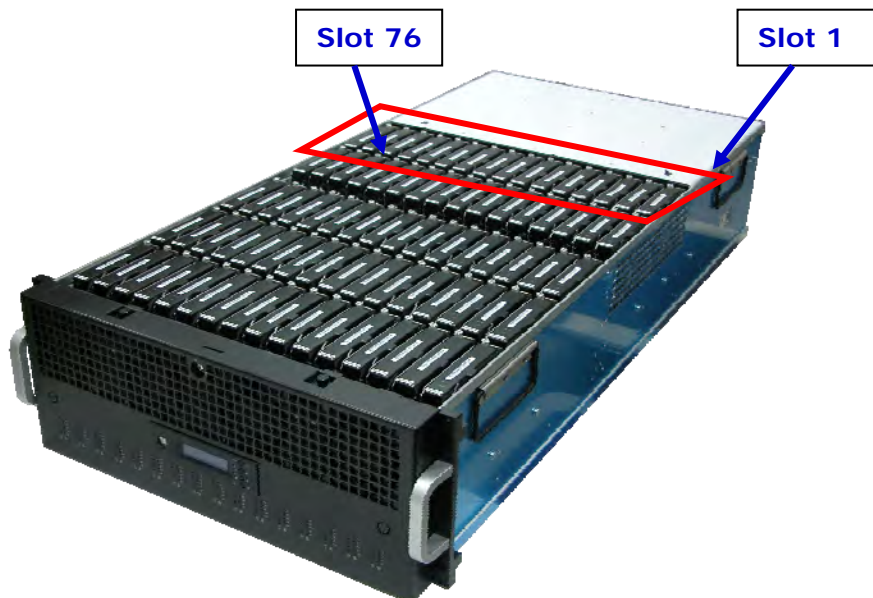


- Repeat the same steps for the rest of the disks.



Note:

The slot Number labels are included in the package. It is recommended to paste these labels on the hard disks to identify drives.



Note:

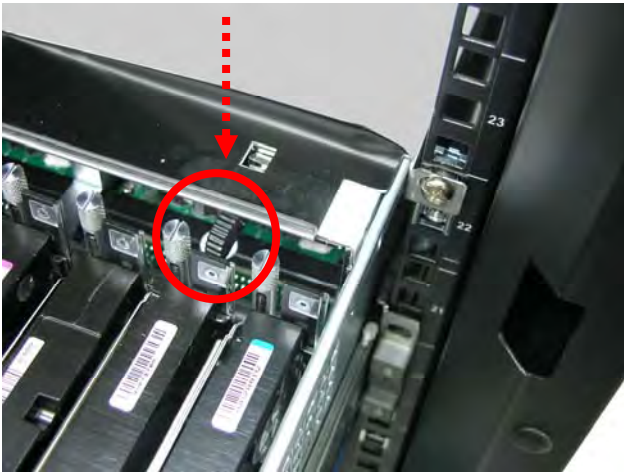
When installing the first column disks (Slot #1, #6, #11, #16, #21, #26, #31, #36, #41, #46, #51, #56, #61, #66, #71, #76), you need to release the subsystem from the rail by pushing white locks on both sides of the inner rail members at the same time.



**View from Right Side of Enclosure
White Lock of Inner Rail is Pushed a Little Outwards and
Enclosure is Pushed Outwards**



6. Close the top cover by pressing the black locks.



7. Then push the enclosure inwards (or backwards) until it goes inside the rack.



Chapter 3 Getting Started with the Subsystem

3.1 Installing the Rails and Mounting into Rack



NOTE: At least two persons are needed to lift the Disk Array. To reduce the weight of the Disk Array, remove the power supply modules from the rear of Disk Array. If disk drives are already installed in the disk trays, remove also the disk trays. Refer to appropriate sections on how to remove the power supply modules and how to remove the disk trays/disk drives.

NOTE: The sample model used in the following installation might not be the actual model for this manual.

NOTE: The Disk Array must be installed near the Disk Array or host system where it will be connected. A screwdriver is needed in installation.



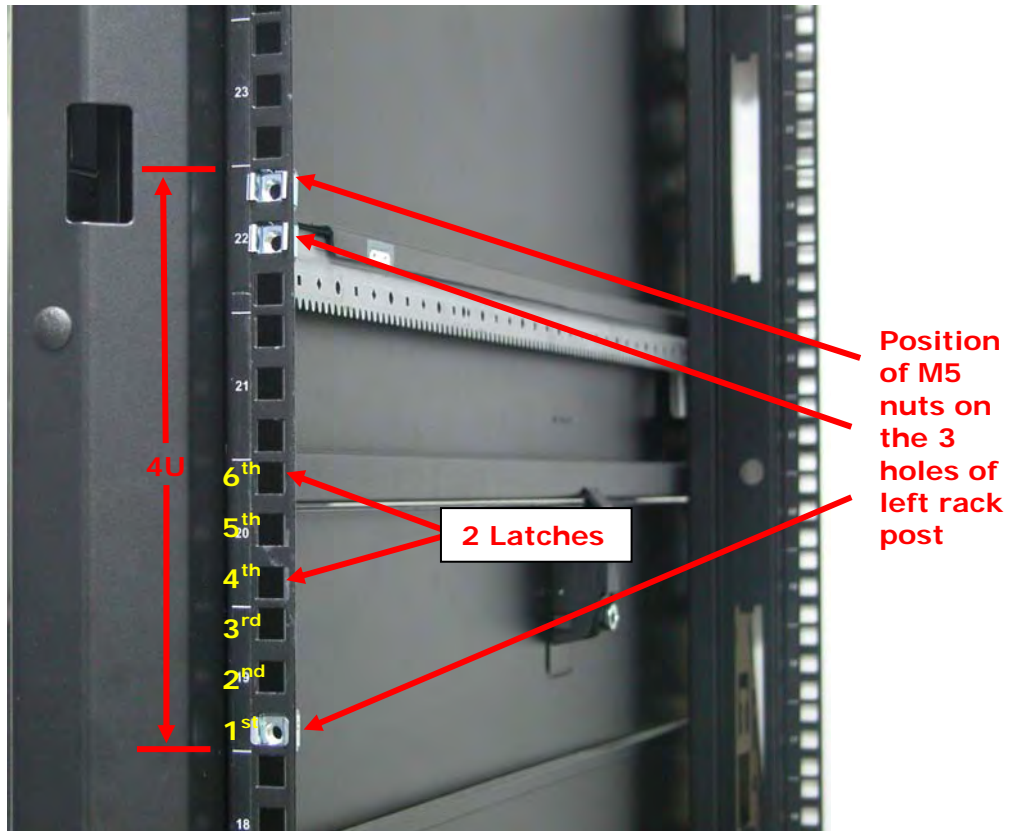
WARNING! It is prohibited to put other enclosures on top of the 80-bay Disk Array because the total weight will not be supported by the rails.

Steps:

1. Open the rail box.
2. Remove the 2 rail assemblies and the screws/accessories from the box. Check its contents.

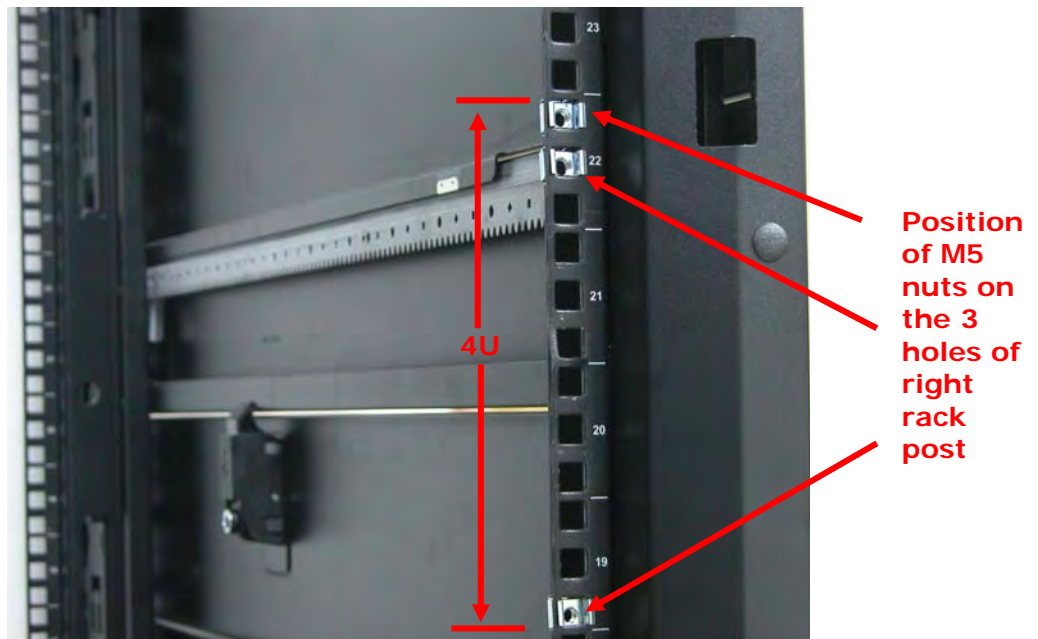


3. Insert three (3) M5 nuts on the 2 holes of the front left side of the rack post.



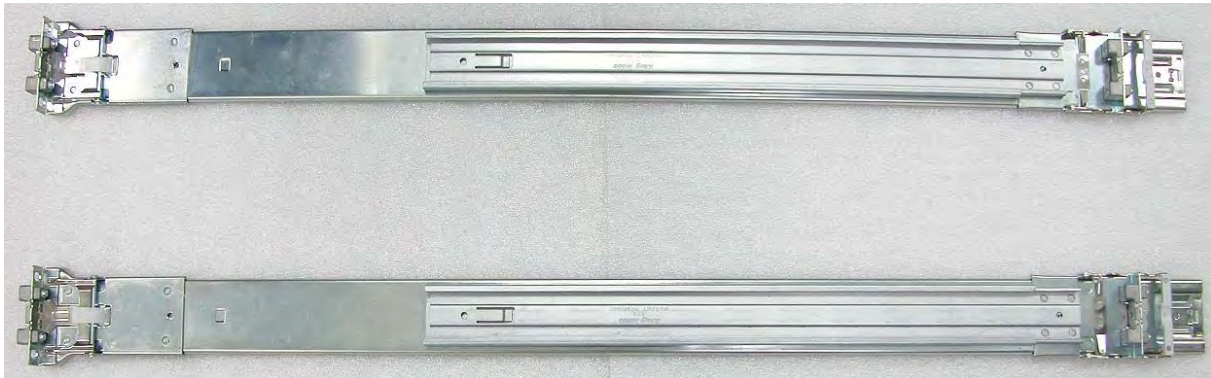
Rack Post – Front Left Side

4. Insert three (3) M5 nuts on the 2 holes of the front right side of the rack post.



Rack Post – Front Right Side

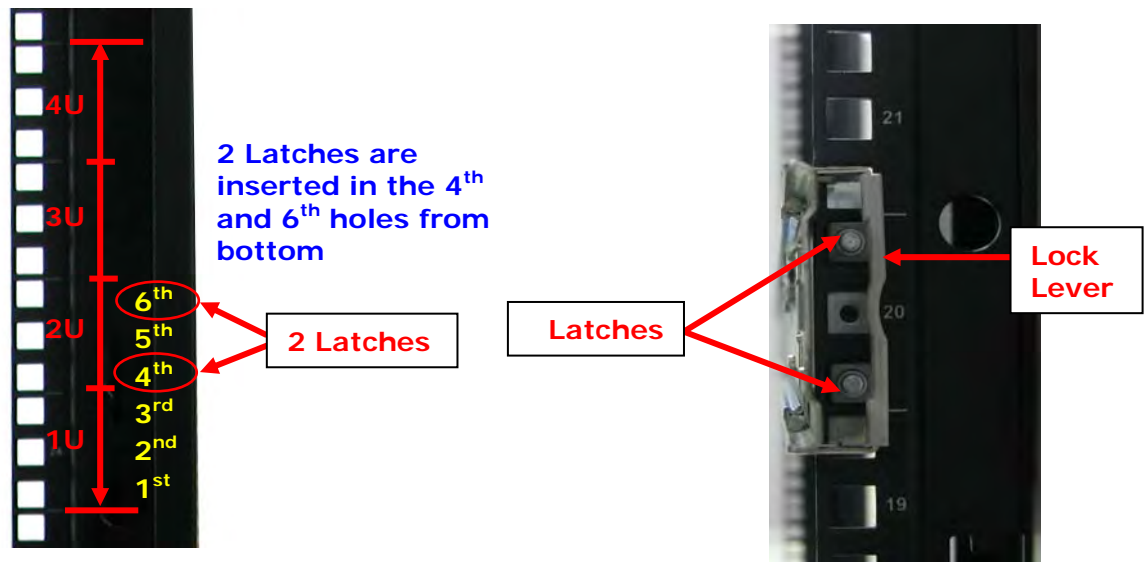
5. Prepare the 2 rail assemblies.



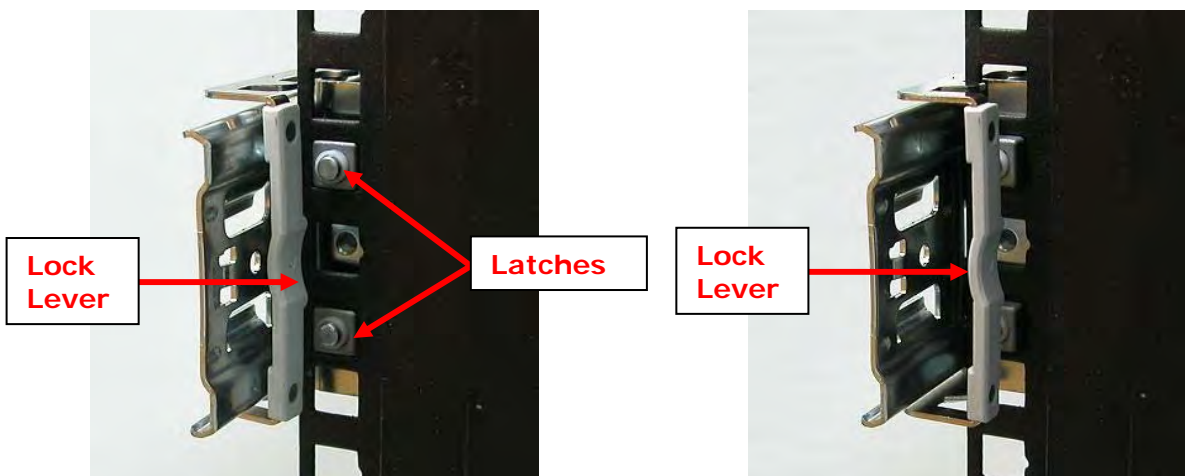
Front Side of Rail Assembly

Rear Side of Rail Assembly

6. Hold one rail assembly and install in the rear left side of rack. Align and insert the 2 latches on the 2 holes on the rear rack post, and then push the rail a little towards the rear side and lock the lock lever on the rack post.



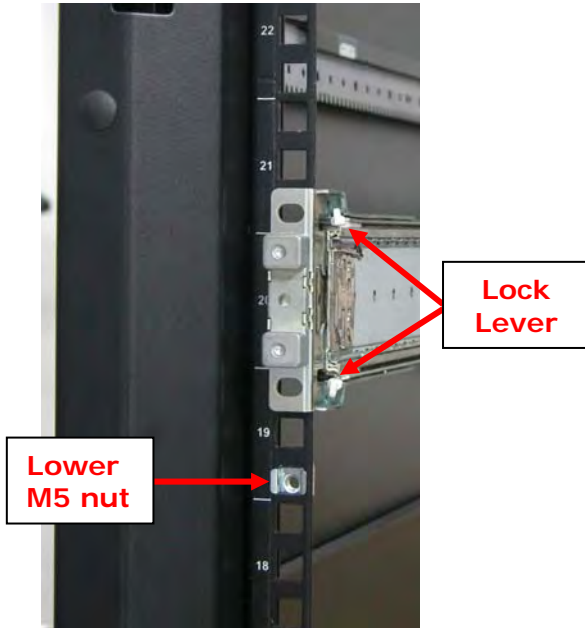
View from Rear Side of Rear Left Rack Post



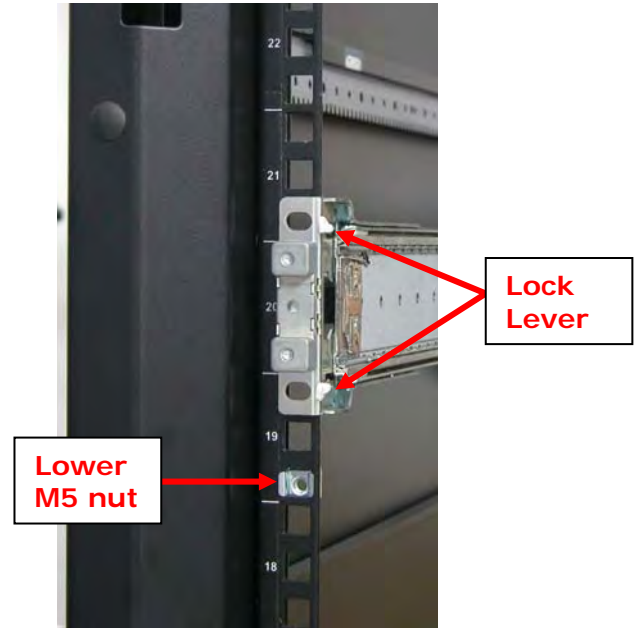
**View from Rear Side of Rear Left Rack Post
Lock Lever is Not Locked**

**View from Rear Side of Rear Left Rack Post
Lock Lever is Locked**

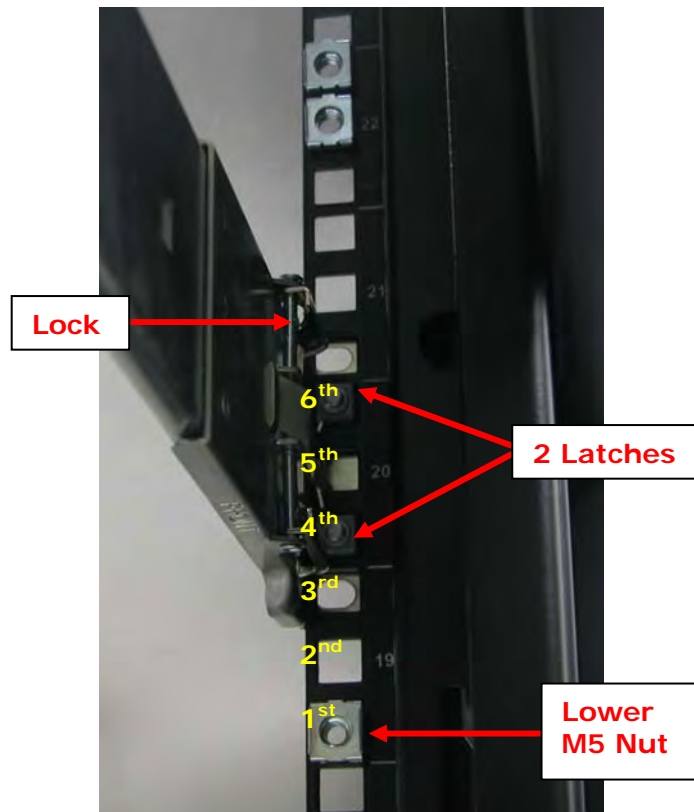
7. Install the other end of rail assembly to the left front side. To install, align and insert the 2 latches of the rail into the 2 holes on the rack post. Use the Lock Lever to lock the rail assembly in the left rack post.



View from Front Side of Front Left Rack Post
Lock Lever is Not Locked

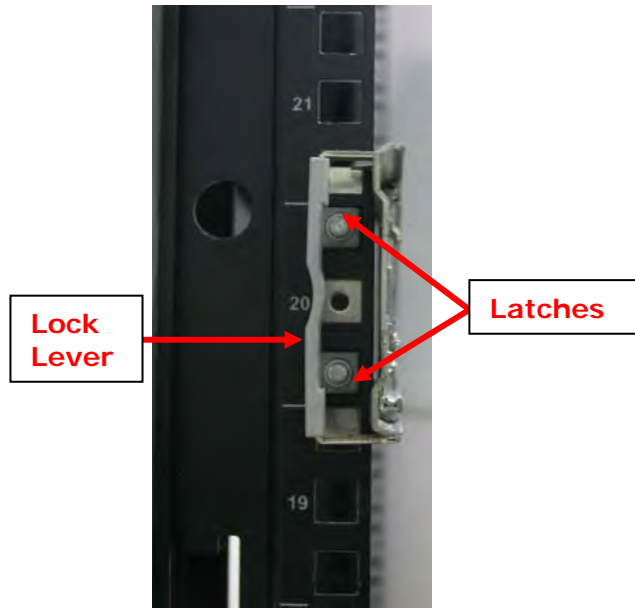


View from Front Side of Front Left Rack Post
Lock Lever is Locked



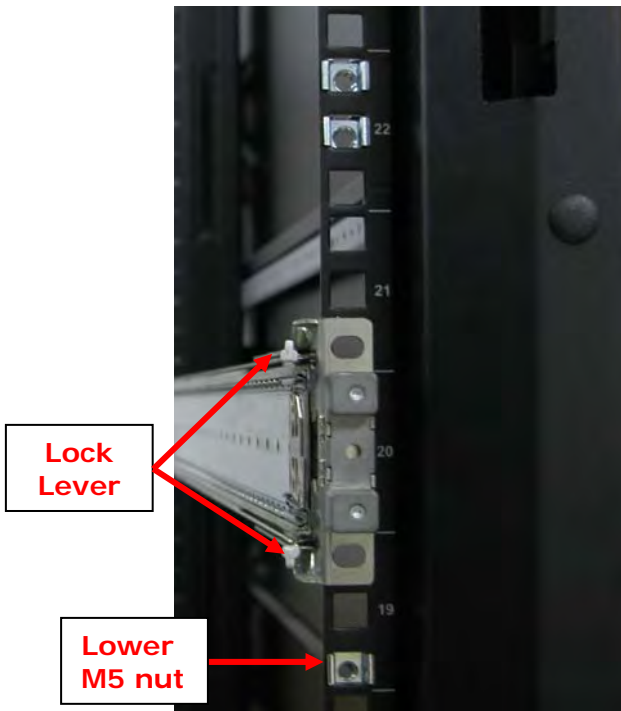
View from Rear Side of Front Left Rack Post
2 Latches are inserted in the 4th and 6th holes from bottom (M5 nut)

- Repeat step 6 to install the other rail assembly to the rack post of rear right side.

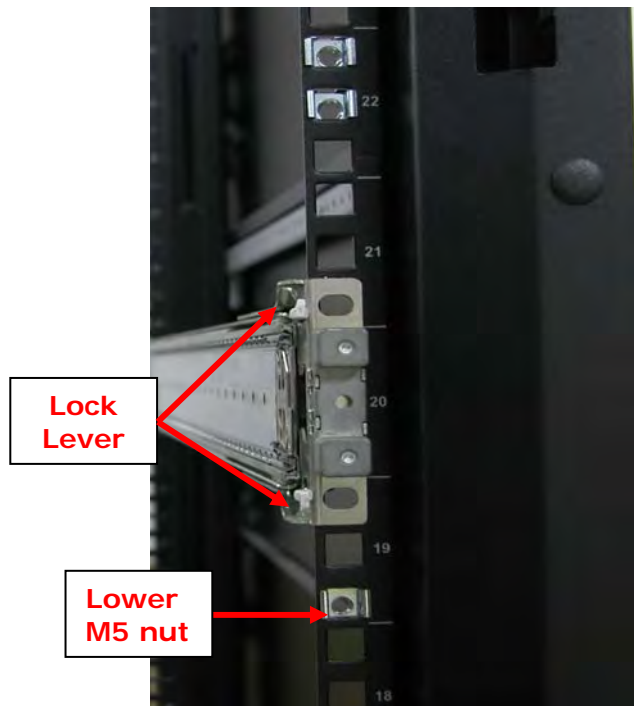


View from Rear Side of Rear Right Rack Post

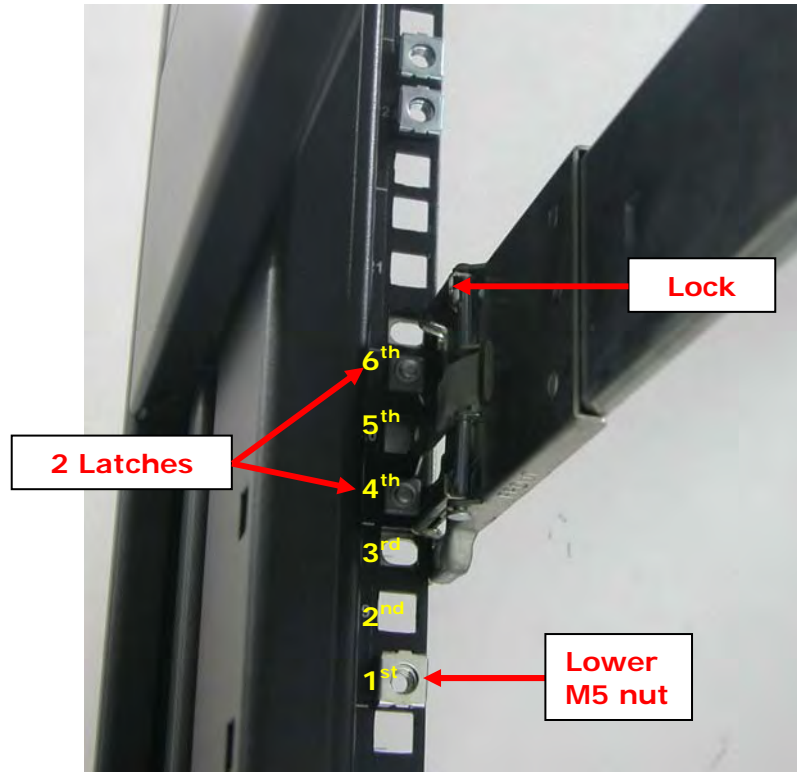
- Repeat step 7 to install the other rail assembly into the right front side.



**View from Front Side of Front Right Rack Post
Lock Lever is Not Locked**

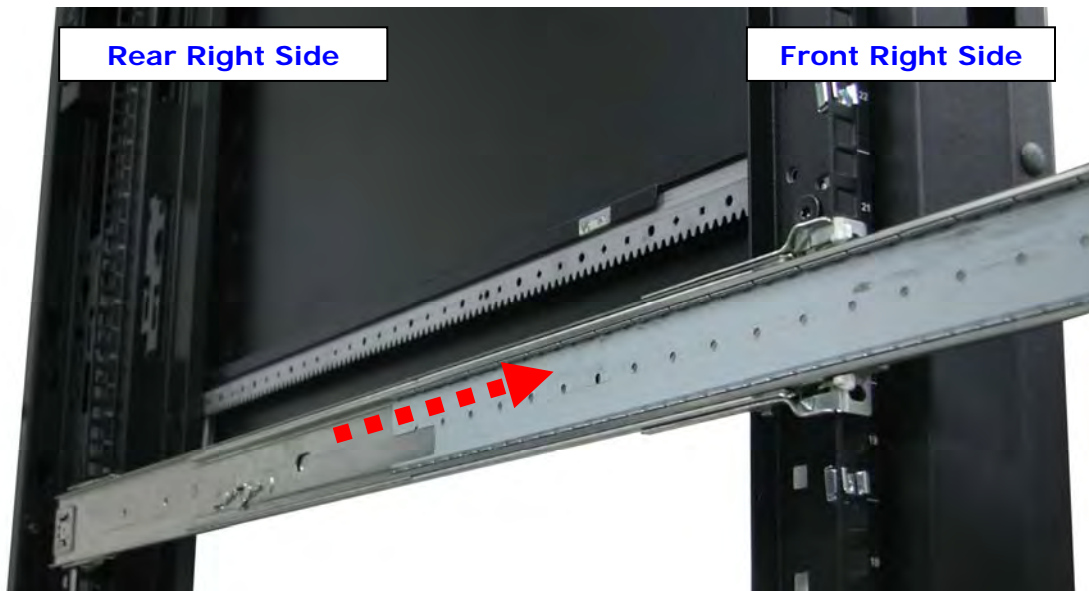


**View from Front Side of Front Right Rack Post
Lock Lever is Locked**

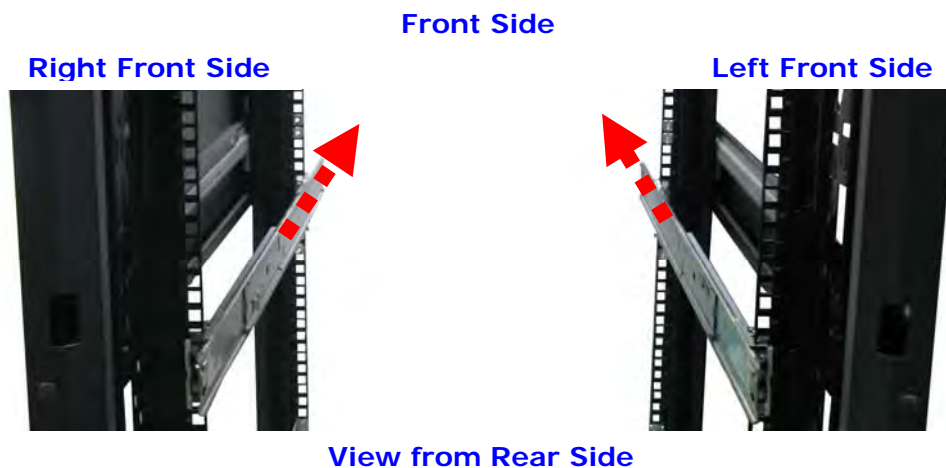


**View from Rear Side of Front Right Rack Post
2 Latches are inserted in the 4th and 6th holes from bottom (M5 nut)**

10. Pull the 2 middle rail members out from the rail assembly.



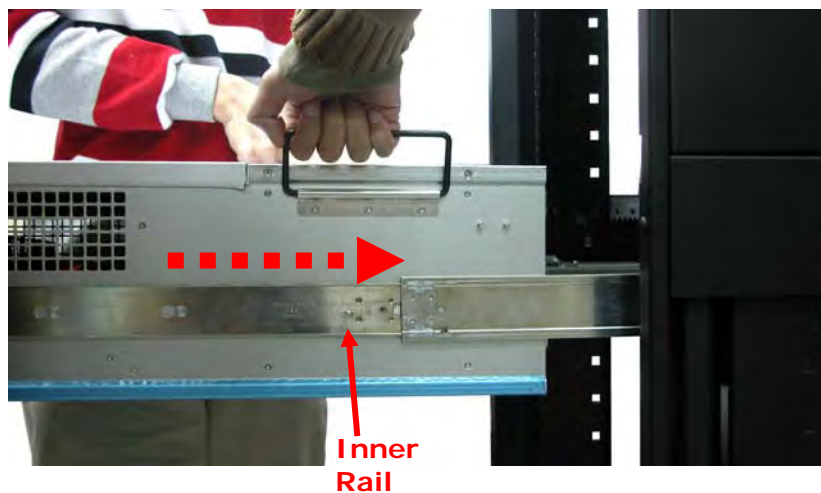
Middle Rail Member of Rail Assembly on Right Side of Rack



11. With at least 4 persons carrying the enclosure, insert the 2 inner rails (attached to the sides of the enclosure) into the middle rails. Slide the enclosure until it stops or about half way through.



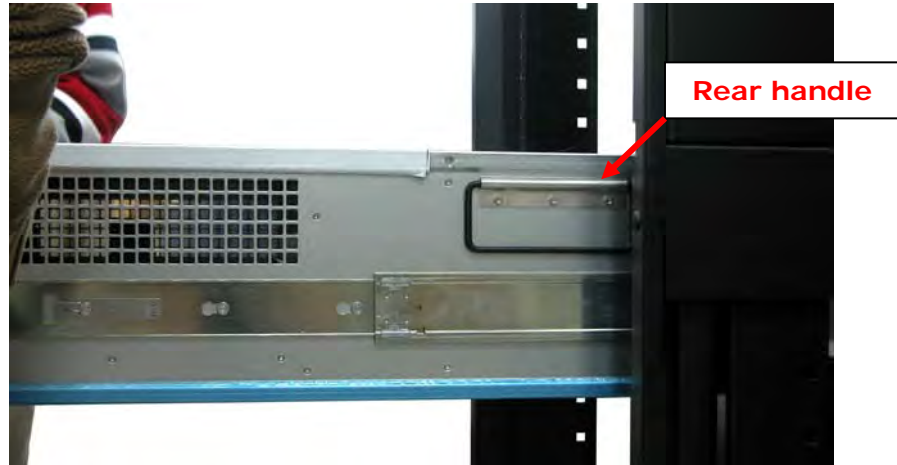
NOTE: Be careful when inserting the 2 inner rails into the middle rails. The 2 inner rails must be parallel with the 2 middle rails so that 2 inner rails will insert and slide easily. Use hands to guide the inner rails when inserted into the middle rails.



Inner Rail Aligned with and Inserted into the Middle Rail



Important: Make sure to hold the enclosure firmly in level position while inserting the enclosure in the rail. Keep holding the enclosure moved inside the rack. When the half rear side is inside the rack, you can put down the two rear handles but support in the bottom part of the enclosure is still needed so that the enclosure will not drop down.



Support in the bottom part of the enclosure

12. Press outwards the blue locks on both sides of the inner rail members at the same time. Then push the enclosure inwards (or backwards) until it goes inside the rack.

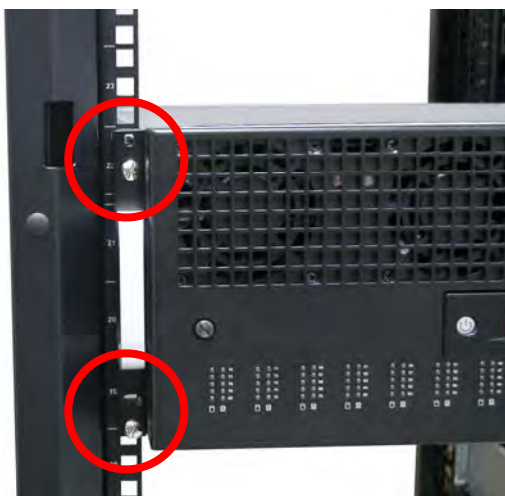
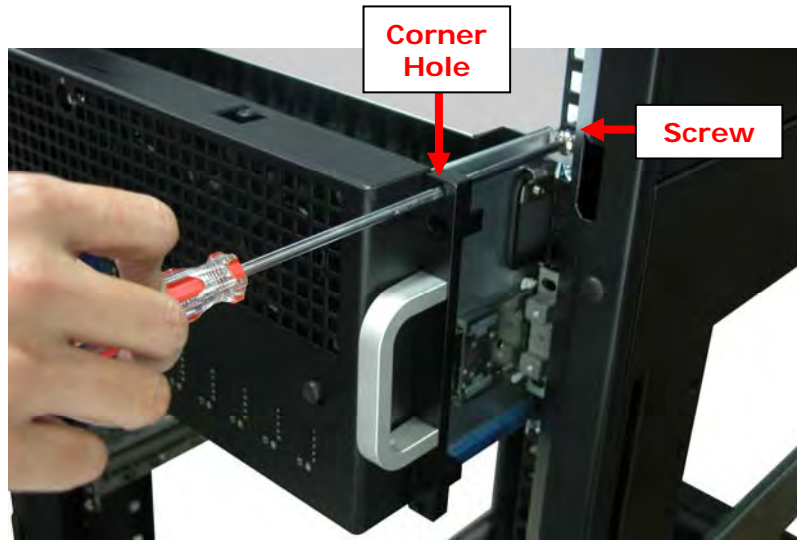


**View from Right Side of Enclosure
Blue Lock of Inner Rail is Pushed a Little Outwards and
Enclosure is Pushed Inwards**

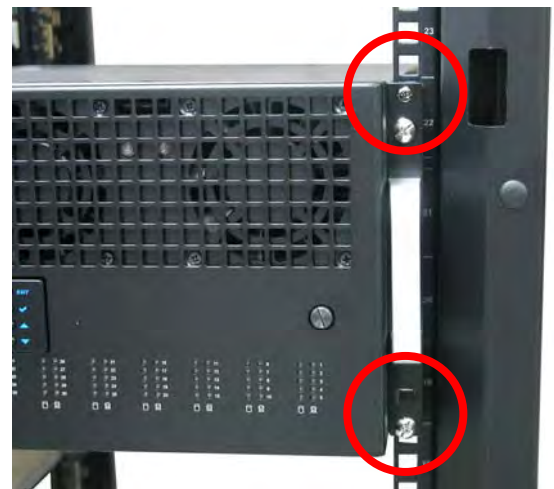


**View from Rear Side of Rack Cabinet
Enclosure is Pushed Inwards**

13. Use six (6) M5 screws to lock the enclosure into the rack post, one screw in each corner. Note that the screw driver will need to pass through the corner hole of front panel for the two upper corner holes on both sides.



Front Left Side



Front Right Side

14. Insert the power supply modules.



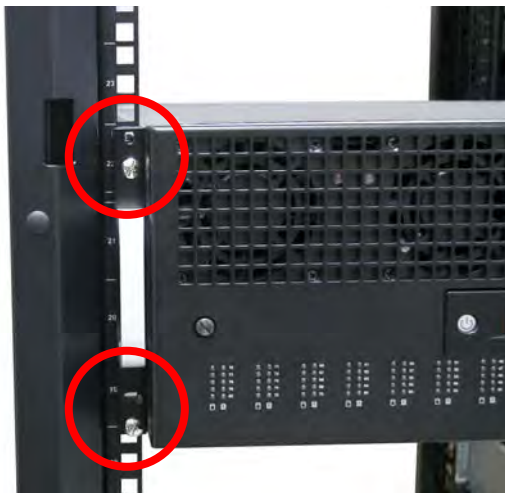
15. Open the top cover and re-insert the disk drives / disk trays, if disk drives/disk trays were previously removed. Please refer to Section 2.6 Disk Drive Installation into the Disk Slot.

3.2 Removing the Disk Array from the Rack

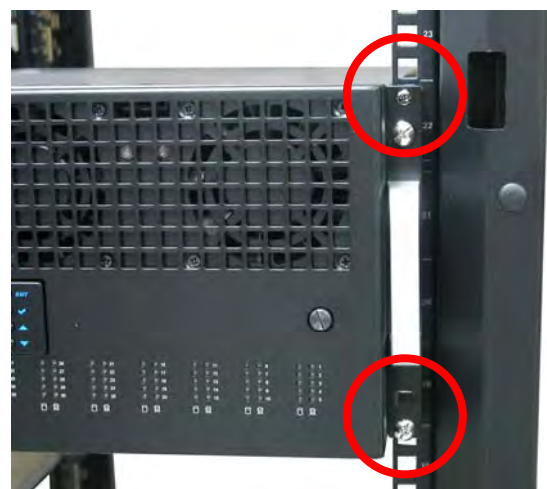
1. Remove the power supplies in the rear.



2. Remove the four screws in the front corner.



Front Left Side



Front Right Side

3. Carefully pull the subsystem.



4. Remove the disk drives from the disk slots.

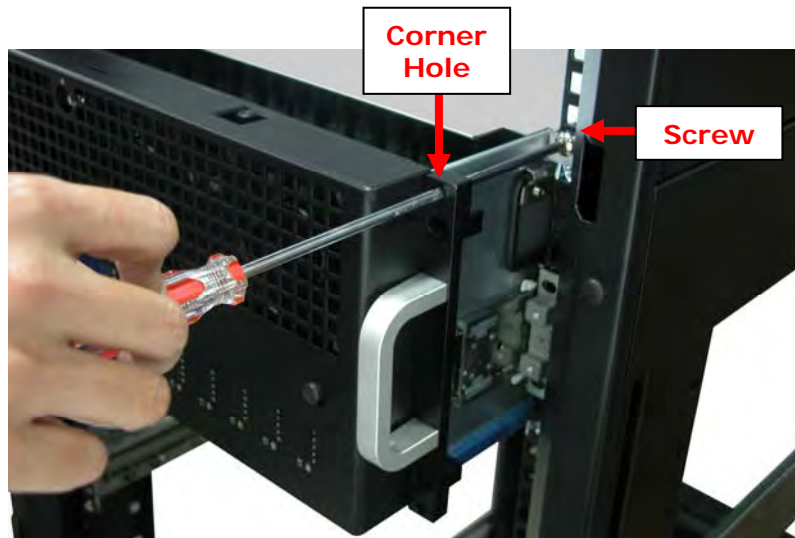


Note:
When removing the first column disks (Slot #1, #6, #11, #16, #21, #26, #31, #36, #41, #46, #51, #56, #61, #66, #71, #76), you need to release the subsystem from the rail by pushing white locks on both sides of the inner rail members at the same time.



**View from Right Side of Enclosure
White Lock of Inner Rail is Pushed a Little Outwards and
Enclosure is Pushed Outwards**

5. Remove the two screws in the front corner. Note that the screw driver will need to pass through the corner hole of front panel for the two upper corner holes on both sides.



6. Release the subsystem from the rail.

3.3 Preparing the JBOD and Connecting to RAID Subsystem

1. Install the disk drives, if not yet installed. Refer to Section 2.6 Disk Drive Installation for detailed information.
2. Connect one end of SAS cable to the **SAS In Port** of the JBOD subsystem enclosure and the other end to the **SAS Expansion Port** of the RAID subsystem enclosure.

3.4 Preparing the JBOD and Connecting to SAS HBA in Host System

1. Install the disk drives, if not yet installed. Refer to Section 2.6 Disk Drive Installation for detailed information.
2. Connect one end of SAS cable to the **SAS In Port** of the JBOD subsystem enclosure and the other end to the SAS HBA on the Host system.

3.5 Powering On

1. Plug in all the power cords into the AC Power Input Socket located at the PSFM.

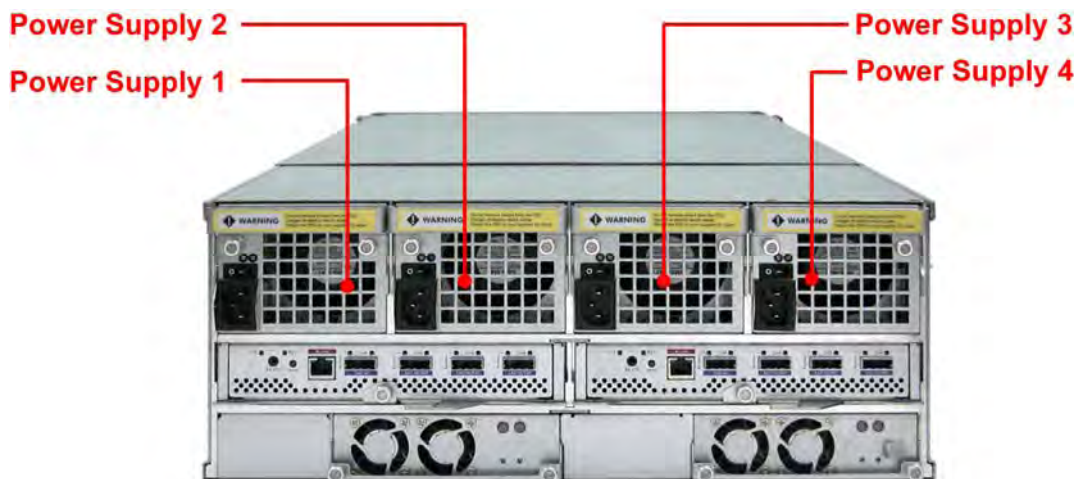


NOTE: The subsystem is equipped with redundant, full range power supplies with PFC (power factor correction). The system will automatically select voltage.

2. Turn on each Power On/Off Switch of the PSFM. The main switch button in the front panel will still flashing blue.



NOTE: When the power cord connected from main power source is inserted to the AC Power Input Socket, the Power Status LED becomes **RED**. When the switch of the PSFM is turned on, the LED still shows **RED**. After the main switch in front panel is turned on, the LED turns **GREEN**, which means it is functioning normally.



3. Push the main switch button in the front panel to power on.



3.6 Powering Off



IMPORTANT: When powering off the JBOD subsystem, turn off first the Main Switch last for more than 4 seconds and allow at least 4 minutes for the subsystem to shutdown properly.

When JBOD subsystem has totally powered down, turn off the switches of the 4 Power Supply Fan Modules at the rear.

Chapter 4 Maintenance

4.1 Upgrading the JBOD Controller Firmware



IMPORTANT: Before upgrade the JBOD firmware, please shut down server first or make sure no array setting on the JBOD disks. The new Firmware will effective after JBOD power cycle.



NOTE: Upgrading the firmware must be done from Master JBOD Controller (JBOD Controller 1) if the JBOD Subsystem has redundant JBOD Controllers.

The JBOD subsystem's factory default password is set to 00000000.

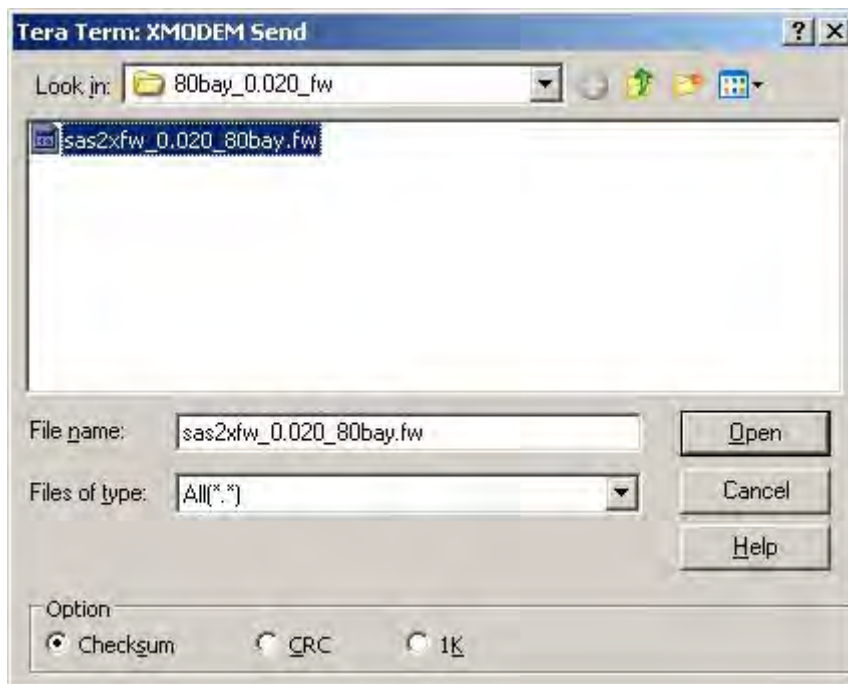
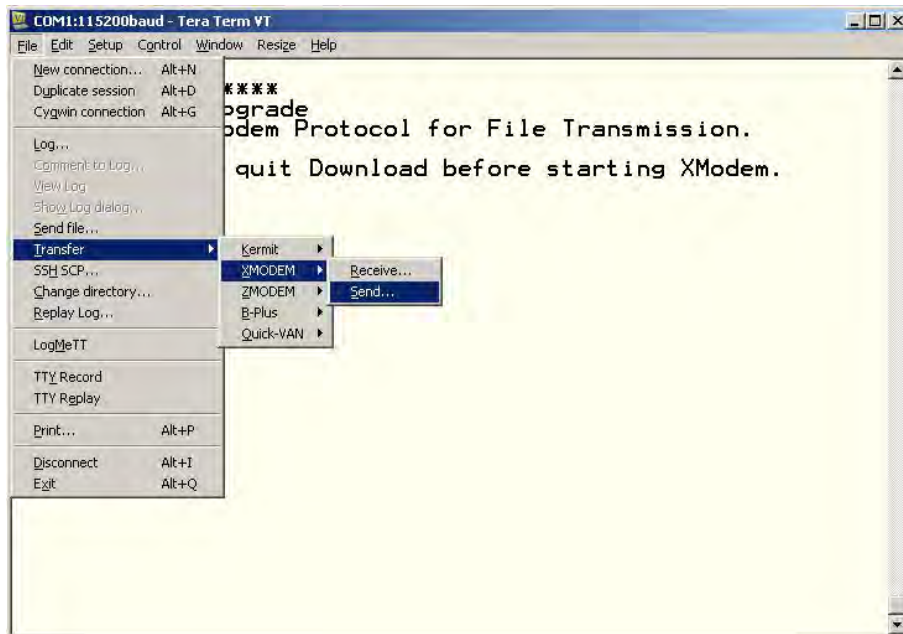
Steps:

1. Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please type "system upgrade", than press "Enter".

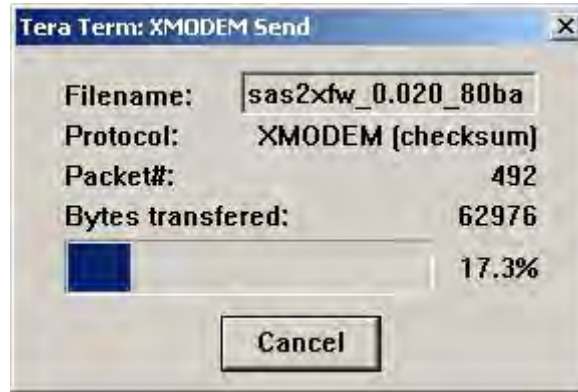
```
COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help
Password:*****
cmd >system upgrade
Please Use XModem Protocol for File Transmission.
Use Q Or q to quit Download before starting XModem.
```


2. Select Transfer & Send File. Select your firmware file path, and select Xmodem in the communication protocol, and click transfer button.

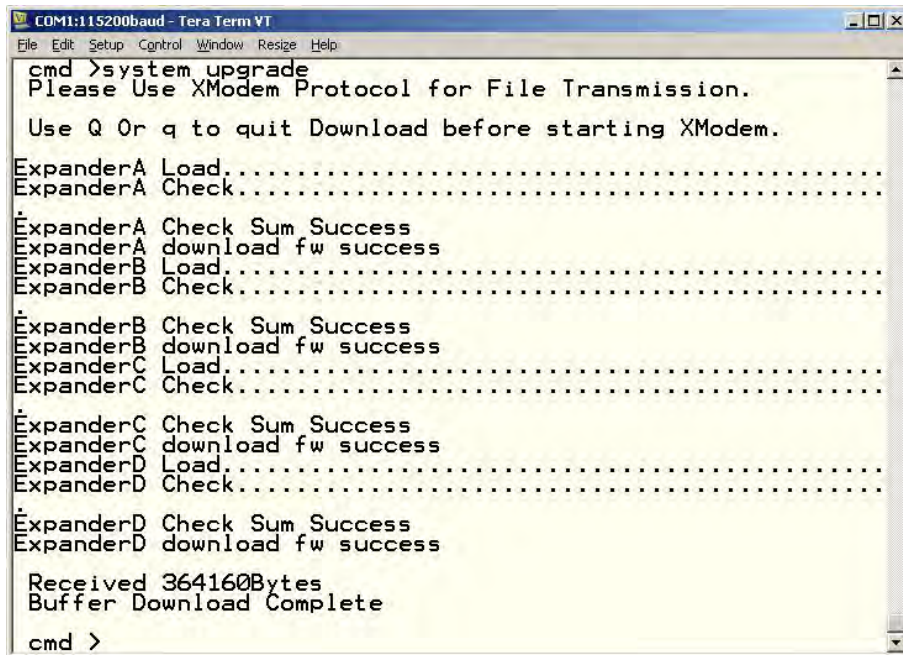
You must finish within 25 seconds



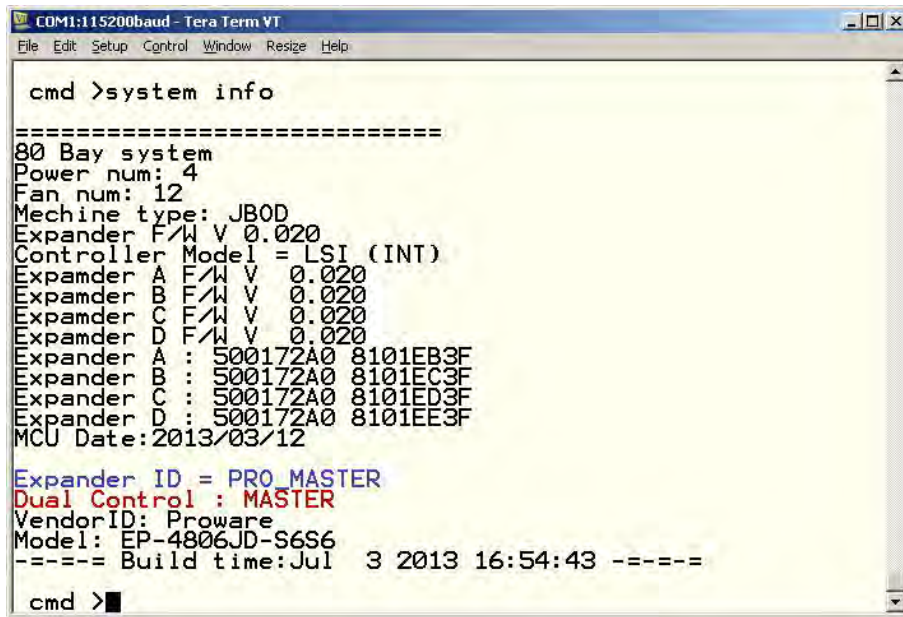
3. Wait for the transfer of file to complete.



4. When the transfer and firmware update is complete, please power cycle the JBOD.



5. In command line, type "system info", you can see the Expander firmware version.



```
COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help

cmd >system info

=====
80 Bay system
Power num: 4
Fan num: 12
Mechine type: JBOD
Expander F/W V 0.020
Controller Model = LSI (INT)
Expamder A F/W V 0.020
Expamder B F/W V 0.020
Expamder C F/W V 0.020
Expamder D F/W V 0.020
Expander A : 500172A0 8101EB3F
Expander B : 500172A0 8101EC3F
Expander C : 500172A0 8101ED3F
Expander D : 500172A0 8101EE3F
MCU Date:2013/03/12

Expander ID = PRO_MASTER
Dual Control : MASTER
VendorID: Proware
Model: EP-4806JD-S6S6
----- Build time:Jul  3 2013 16:54:43 -----

cmd >
```

4.2 Replacing JBOD Subsystem Components

4.2.1 Replacing JBOD Controller Module

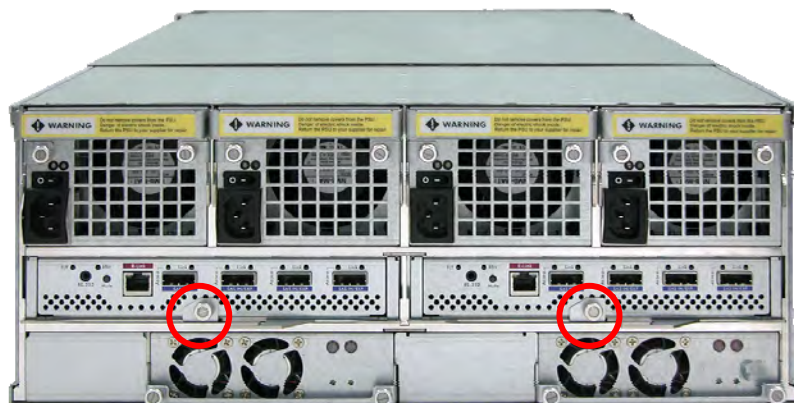
When replacing a failed JBOD Controller Module, please follow these steps:

1. Loosen the thumbscrews on the sides of the JBOD Controller Module drawer.
2. Use the Controller handle to pull out the defective JBOD Controller Module drawer.
3. Insert and slide the new JBOD Controller Module in. Note that it may be necessary to remove the old/defective JBOD Controller Module from the drawer case and install the new one.



IMPORTANT: When replacing a failed component online, it is not recommended to remove the failed component for a long period of time; proper air flow within the enclosure might fail causing high controller/disk drive temperature.

4. Tighten the thumbscrews on the sides of the JBOD Controller Module case.



4.2.2 Replacing Power Supply Fan Module

When replacing a failed power supply fan module (PSFM), please follow these steps:

1. Turn off the Power On/Off Switch of the failed PSFM.
2. Disconnect the power cord from the AC Inlet Plug of PSFM.
3. Loosen thumbscrews of the PSFM.
4. Use the handle to pull out the defective PSFM.
5. Before inserting the new PSFM, make sure the Power On/Off Switch is on "Off" state.
6. Insert and slide the new PSFM in until it clicks into place.



When replacing a failed component online, it is not recommended to remove the failed component for a long period of time; proper air flow within the enclosure might fail causing high controller/disk drive temperature.

7. Connect the power cord to the AC Inlet Plug of PSFM.
8. Tighten the thumbscrews of the PSFM.
9. Turn on the Power On/Off Switch of the PSFM.



NOTE: After replacing the Power Supply Fan Module and turning on the Power On/Off Switch of the PSFM, the Power Supply will not power on immediately. The Fans in the PSFM will spin-up until the RPM becomes stable. When Fan RPM is already stable, the JBOD controller will then power on the Power Supply. This process takes more or less 30 seconds. This safety measure helps prevent possible Power Supply overheating when the Fans cannot work.