

EP-3166J-S3S3

Epica Expansion Chassis

User Manual

Revision 1.1

P/N: PW0020000000367

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Chapter 1 Introduction



The EP-3166J-S3S3

The Epica **EP-3166J-S3S3** is Proware's most versatile SAS/SATA II Disk Expansion system, ideal for midrange and high capacity storage demand. Based on 3Gb SAS Channel host interfaces, the EP-3166J-S3S3 supports the choice of SAS (Serial Attached SCSI), and SATA II (Serial ATA) drive configurations to deliver a system bandwidth of up to 1,200 MB/sec.

The ability to mix SAS and SATA drives allows the EP-3166J-S3S3 to be used for a range of applications that require different price/performance characteristics. Cost-effective SATA drives can be selected for capacity orientated storage such as disk-to-disk backup and storage of reference data. Higher specification SAS drives can be employed for I/O intensive applications including transactional databases. Hosting multiple tiers of data in an EP-3166J-S3S3 configuration gives organizations the flexibility to meet both their technical requirements and budgetary constraints with a single unified solution.

1.1 Features

- **Modular Design With Common Parts**

Inventory control efficiency

Cost-saving benefits to the end-user

- **Power Supply**

Power Supply and cooling system contained in 1 module for efficient cooling

500W power supplies to meet the future HDD power consumption

- **Enclosure**

Modules are interchangeable with other Epica products

Hardware expansion slots keep you up-to-date on the latest technologies

Incorporates a cableless design for maximum signal integrity

- **SES**

Utilizes industry-standard SCSI Enclosure Services to monitor enclosure and disk environmental conditions

1.2 Technical Specifications

Model	EP-3166J-S3S3
Form Factor	3U 19" rackmount chassis
Host Bus Interface	One 4 Lane SAS
	Up to 300 MB/s per Lane
Expansion Bus Interface	One 4 Lane SAS
	Up to 300 MB/s per Lane
Disk Bus Interface	3Gb SAS
	SAS / SATA II
Backplane	3Gb SAS
# of Hot Swap Trays	16
Tray Lock	Yes, with Lock Indicator
Disk Status Indicator	Access LED and Fail LED with 170° view
Capacity	32TB (at 2TB drive)
Enclosure Monitoring (SES)	In Band SES via SAS
# of PS / Fan Modules	2 x 500W Redundant Power Supply
# of Fans per Module	2 (Multi-speed)
Power Status Indicator	Yes
Fan Status Indicator	Yes
Power Requirements	AC 90V ~ 264V Full Range 9A ~ 4.5A, 47Hz ~ 63Hz
Relative Humidity	10% ~ 85% Non-condensing
Operating Temperature	10°C ~ 40°C (50°F ~ 104°F)
Physical Dimension	590(L) x 482(W) x 131(H) mm
Weight (Without Disk)	24 Kg (without drives)

1.3 Unpacking the JBOD Expansion Chassis

The package contains the following items:

- JBOD Expansion Chassis
- Two power cords
- One serial cable (phone-jack to DB9)
- One external Mini SAS cable SFF-8088 to SFF-8088
- Installation Reference Guide
- Spare screws, etc.

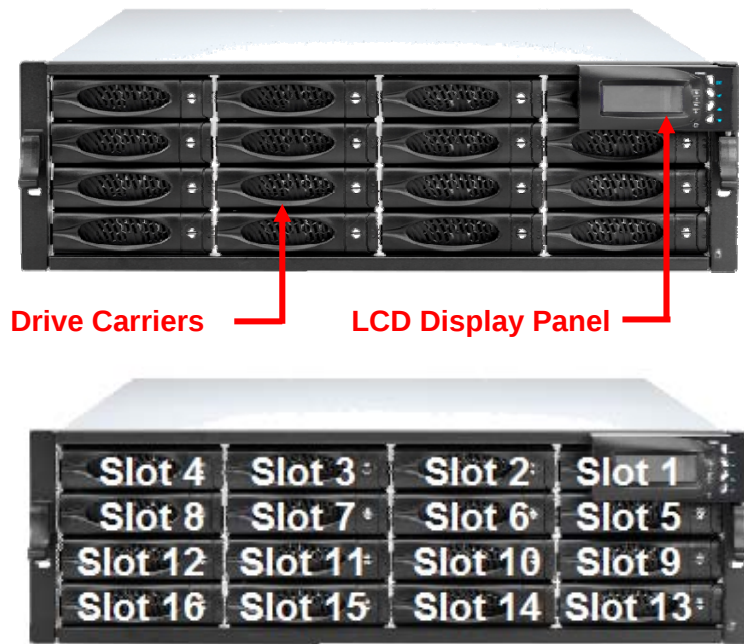


If any of these items are missing or damaged, please contact your dealer or vendor for assistance.

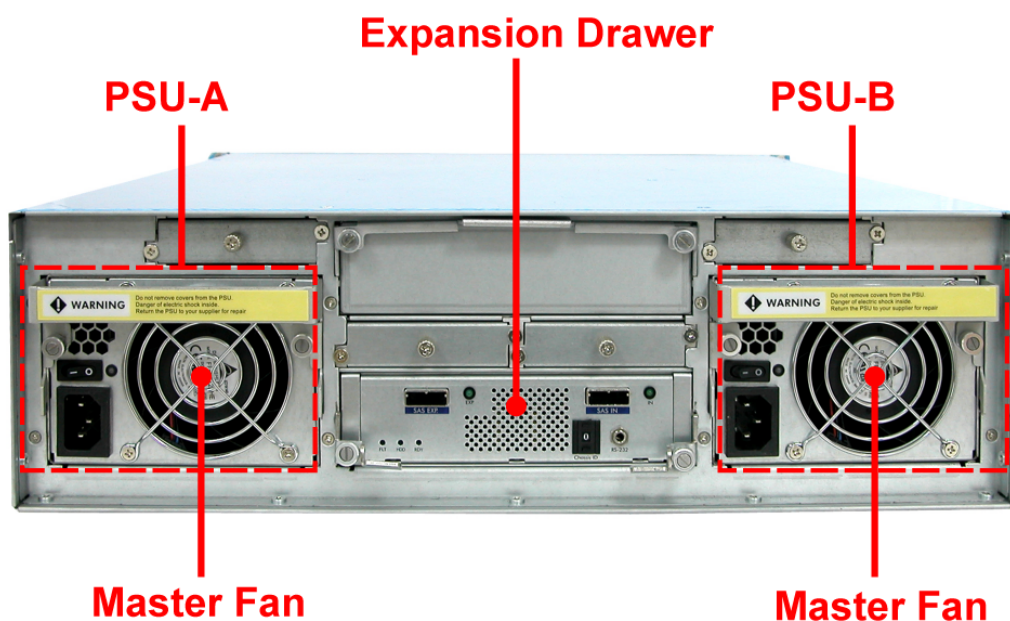
1.4 Identifying Parts of the EP-3166J-S3S3

The illustrations below identify the various parts of the expansion chassis.

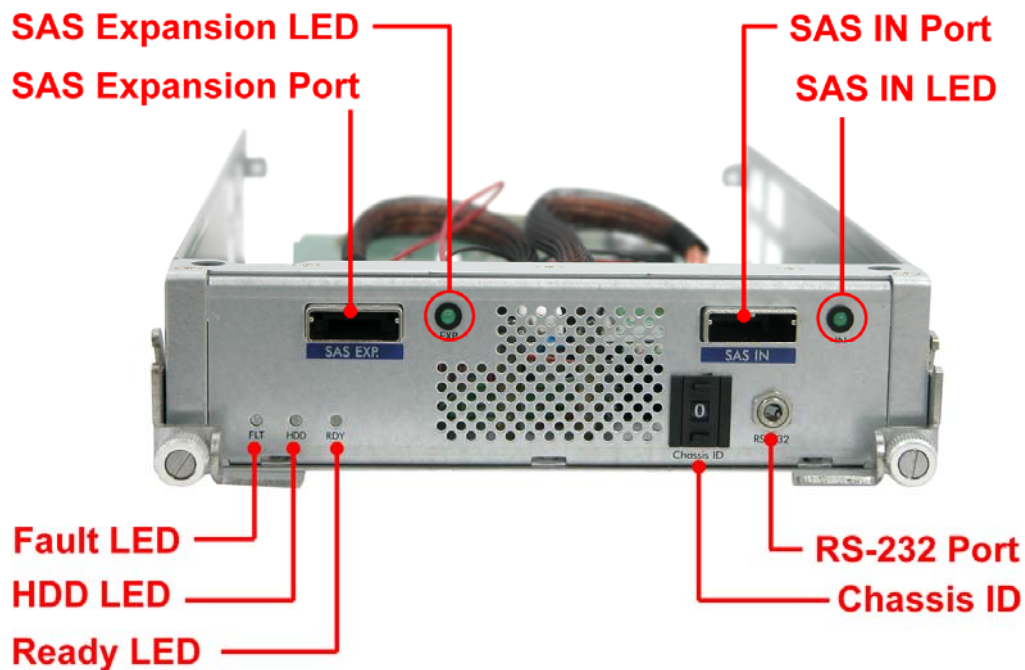
1.4.1 Front View



1.4.2 Rear View



1.4.3 Expansion Drawer



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.

SAS IN LED: Green indicates SAS IN Port has connected or linked.

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

SAS Expansion LED: Green indicates SAS Expansion Port has connected or linked.

Chassis ID Dial: Used for assigning the Expansion Chassis ID Number. Press the upper or lower button to select (increase or decrease) the Chassis ID Number.

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

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

HDD LED: Green indicates activity on the JBOD controller or disk drives.

Ready LED: Blinking green indicates Expansion Chassis is Powered On and Ready.

1.5 Power Supply / Fan Module (PSFM)

Every EP-3166J-S3S3 contains **two 500W Power Supply / Fan Modules**. All PSFMs are inserted into the rear of the chassis.



1.5.1 PSFM Panel



The Power Supply/Fan Module panel has: Power On/Off Switch, the AC Inlet Plug, and a Power On/Fail Indicator showing the Power Status LED, indicating ready or fail.

Each fan within a PSFM is powered independently of the power supply within the same PSFM. So if the power supply of a PSFM fails, the fan associated with that PSFM will continue to operate and cool the enclosure.

1.5.2 Power Supply Module LED



When the power cord connected from main power source is inserted to the AC Power Inlet, the power status LED becomes **RED**. When the switch of the PSFM is turned on, the LED will turn **GREEN**. When the Power On/Fail LED is **GREEN**, the PSFM is functioning normally.

1.5.3 Fans of PSFM

Each PSFM has 2 fans: Master Fan and Slave Fan.
The Master Fan is located beside the PSFM panel.
The Slave Fan is located in the rear side.



NOTE: In the LCD display, Master Fan of Power Supply Unit A is shown as “MF/PSU-A”, and Slave Fan of Power Supply Unit A is shown as “SF/PSU-A”. Master Fan of Power Supply Unit B is “MF/PSU-B” and Slave Fan of Power Supply Unit B is “SF/PSU-B”.

1.6 LCD Display Panel



1.6.1 LCD Panel LED



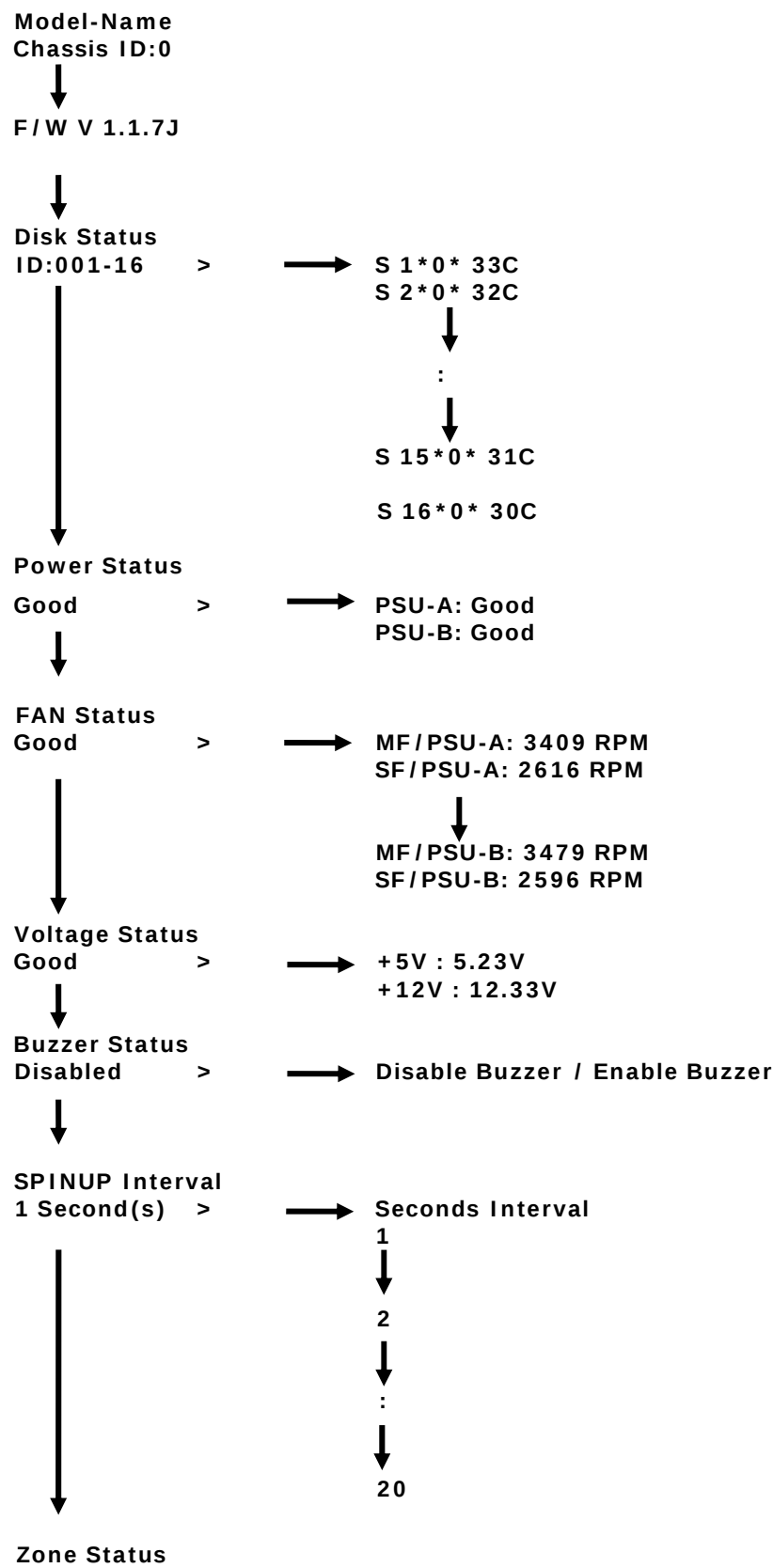
Parts	Function
Power LED	Green indicates power is ON.
Power Fail LED 	If one of the redundant power supply unit fails, this LED will turn to RED and alarm will sound.
Fan Fail LED 	Turn RED when fan 1 or 2 fails, or speed is lower than 2000 RPM.
Over Temperature LED 	If system temperature is over 70°C or 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.

1.6.2 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.

1.6.3 Menu Diagram



1.7 Drive Carrier Module

The Drive Carrier Module houses a 3.5 inch hard disk drive. It is designed for maximum airflow and incorporates a carrier locking mechanism to prevent unauthorized access to the HDD.

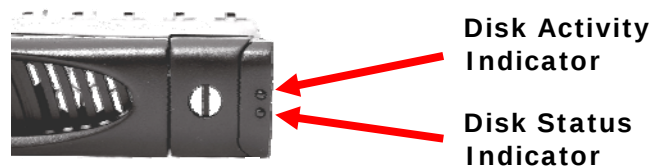


1.7.1 Disk Drive Status Indicators

Every Drive Carrier has 2 status indicator lights. One indicator light is used for Power On/Error. When this light is **GREEN** the power is on and everything is functioning normally. When the Power On/Error light is **RED**, then an error has happened that requires the user's attention.

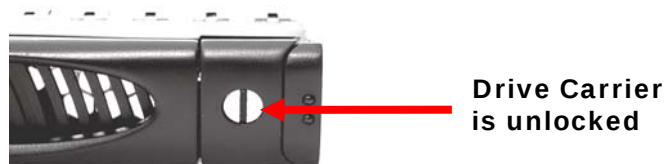
The other status indicator light is the hard disk drive access light. When the hard disk drive is being accessed, this light will flash **BLUE**.

In addition, both indicator lights are viewable within a 170° arc.



1.7.2 Drive Carrier Lock Indicator

Every Drive Carrier is lockable and is fitted with a lock indicator to indicate whether or not the carrier is locked into the chassis or not. Each carrier is also fitted with an ergonomic handle for easy carrier removal.



When the Lock Groove is vertical, then the Drive Carrier is unlocked.



When the Lock Groove is horizontal, this indicates that the Drive Carrier is locked.

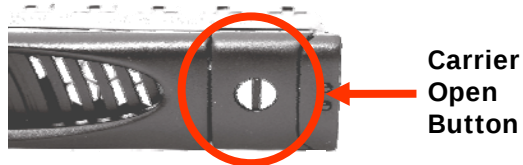
Lock and unlock the Drive Carriers by using a flat-head screw driver.

Chapter 2 Installation of Expansion Chassis

2.1 Installing hard Drives

The expansion chassis supports hot-swapping allowing you to install or replace a hard drive while the expansion chassis is running.

- a. Make sure the Lock Groove is in unlocked position. Press the Carrier Open button and the Drive Carrier handle will flip open.



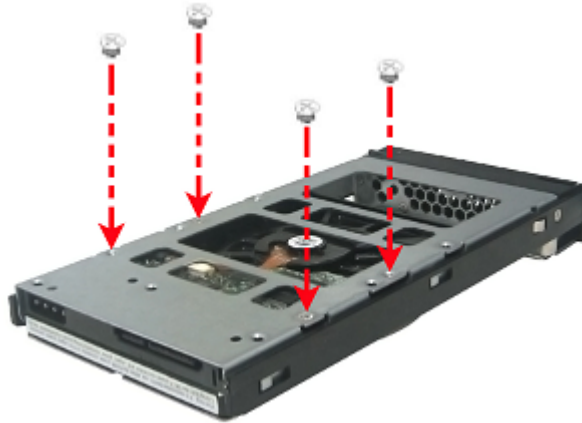
- b. Pull out an empty disk tray. Pull the handle outwards to remove the carrier from the enclosure.



- c. Place the hard drive in the disk tray. Make sure the holes of the disk tray align with the holes of the hard drive.



- d. Install the mounting screws on the bottom part to secure the drive in the disk tray.



- e. Slide the tray into a slot.



- f. Close the handle until you hear the latch click into place.



2.2 Setting the DIP Switch of JBOD Controller

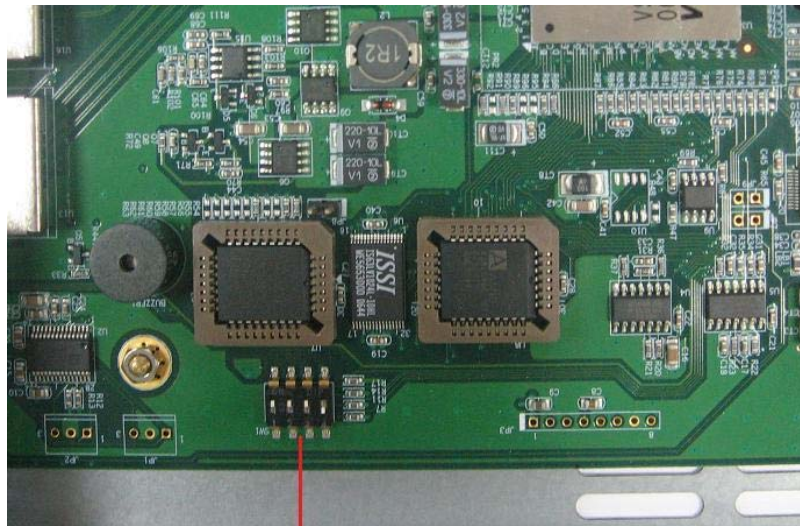


NOTE: Depending on the SAS RAID card used in the Host Server, the DIP switch must be set according to the tables below.

DIP Switch Setting	SAS RAID Card	Note
0 0 0 0	Dell / HighPoint	
0 0 0 1	AMCC	
0 0 1 0	Intel	Reserved for future use.
0 0 1 1	Areca	
0 1 0 0	Adaptec	
0 1 0 1	ATTO	
0 1 1 0	LSI (External ports)	
0 1 1 1	LSI (Internal ports)	

Steps:

1. Remove the Expansion Drawer from the enclosure.
2. Configure the DIP Switch in the JBOD controller to the appropriate setting.
Note that 0 is “ON” and 1 is “OFF”.

**DIP Switch**

3. Reinsert the Expansion Drawer into the enclosure.

2.3 Connecting the EP-3166J-S3S3 to Host Server or other Expansion Chassis

Steps:

1. Prepare the Expansion Chassis.
2. Install the Expansion Chassis near the Host Server where it will be connected.
3. Connect one end of external SAS cable to the SAS RAID card on the Host Server and the other end of the SAS cable to SAS IN Port of the Expansion Chassis.



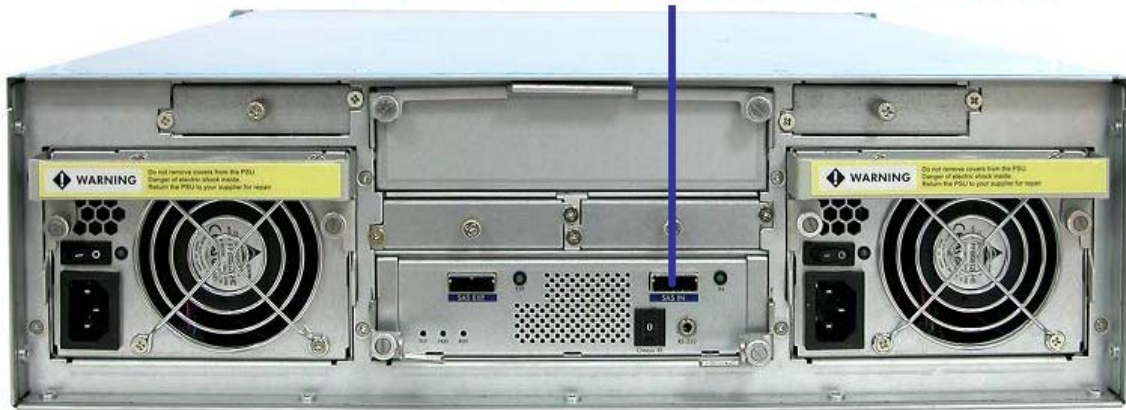
NOTE: When connecting additional Expansion Chassis in daisy-chain, connect the external SAS cable from SAS Expansion Port of the last Expansion Chassis to the SAS IN Port of the additional Expansion Chassis. Then set the Chassis ID Dial on the additional Expansion Chassis.

Chassis ID	Disk ID Range	Used for
0	1 ~ 16	First JBOD Expansion Chassis
1	1 ~ 16	Second JBOD Expansion Chassis
2	1 ~ 16	Third JBOD Expansion Chassis
3	1 ~ 16	Fourth JBOD Expansion Chassis
4	1 ~ 16	Fifth JBOD Expansion Chassis
5	1 ~ 16	Sixth JBOD Expansion Chassis
6	1 ~ 16	Seventh JBOD Expansion Chassis
7	1 ~ 16	Eighth JBOD Expansion Chassis

4. Connect two power cords to the AC Power Inlet of the two Power Supply Fan Modules. Note that the Power-On LED indicator will turn red.
5. Turn on the Power Switch of the two Power Supplies. The Power-On LED will become green.
6. In the RAID Management software of the Host Server, verify that the Expansion Chassis and its disk drives has been detected.

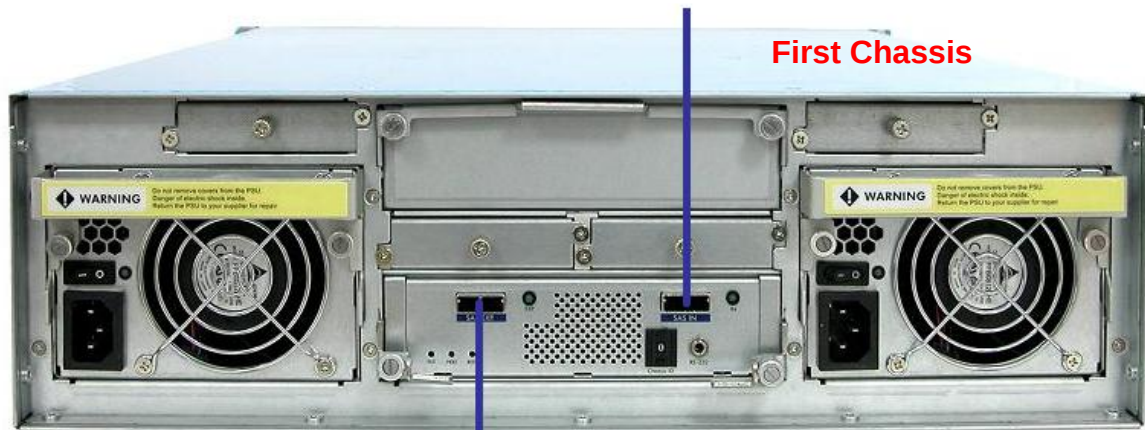
2.3.1 Single Expansion Chassis Configuration

**SAS cable connected from SAS IN Port of
Expansion Chassis to SAS RAID card on the Host Server**

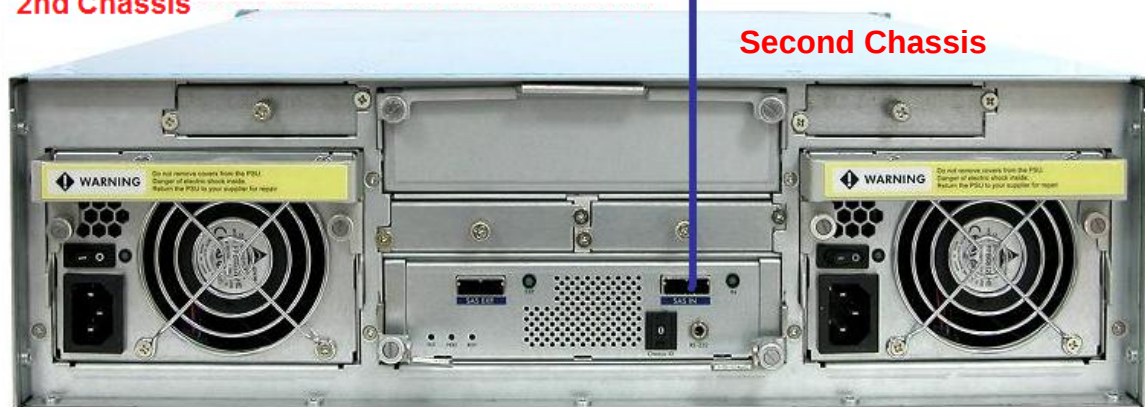


2.3.2 Two Expansion Chassis in Daisy-Chain Configuration

SAS cable connected from SAS IN Port of Expansion Chassis to SAS RAID card on the Host Server



SAS cable connected from SAS Expansion Port of 1st Chassis to SAS IN Port of 2nd Chassis



Chapter 3 SAS JBOD Activate Zone Function



If Zone Function is activated, you cannot connect other JBOD Expansion Chassis.

In Zoning, the Disk will be divided into two separate groups. In 16-bay, the first group will be slot 1-8 can only be seen on Input 1. The 2nd group will be slot 9-16 can only be seen on Input 2.

FUNCTION	COMMAND
Get Zoning Status	phyzone get all
Activate Zoning	phyzone set activate all
Clear Zoning	phyzone clr all

Get Zoning Status:

1. phyzone get all:

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please input **“phyzone get all”**, than press **“enter”**.

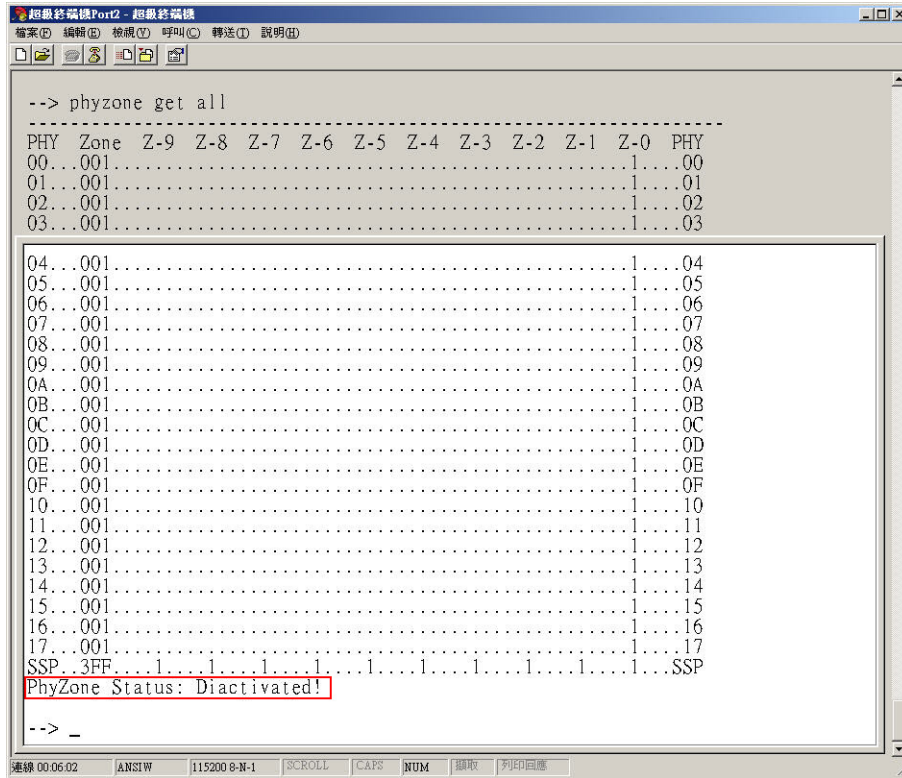
```

Phy Zone Value: 3FF
PhyZone Status: Deactivated!

--> Handle INQUIRY OK
Handle INQUIRY OK

--> system info
Big endian
12cSepCmd size=0110,UartInfo size=013C
SysInfo size=00000B2C
12Bay system
Power num:02,fan num:02
Fan num/per power:01
Buzzer E:00,S:00
=====
ChassisId:00
DIP_SW:0C
RaidCardId:03
Expander F/W V 1.1.7J
VendorID:PROWARE
Model:SAS JBOD
-==-- Build time:Jul 26 2009 21:05:17 -==--

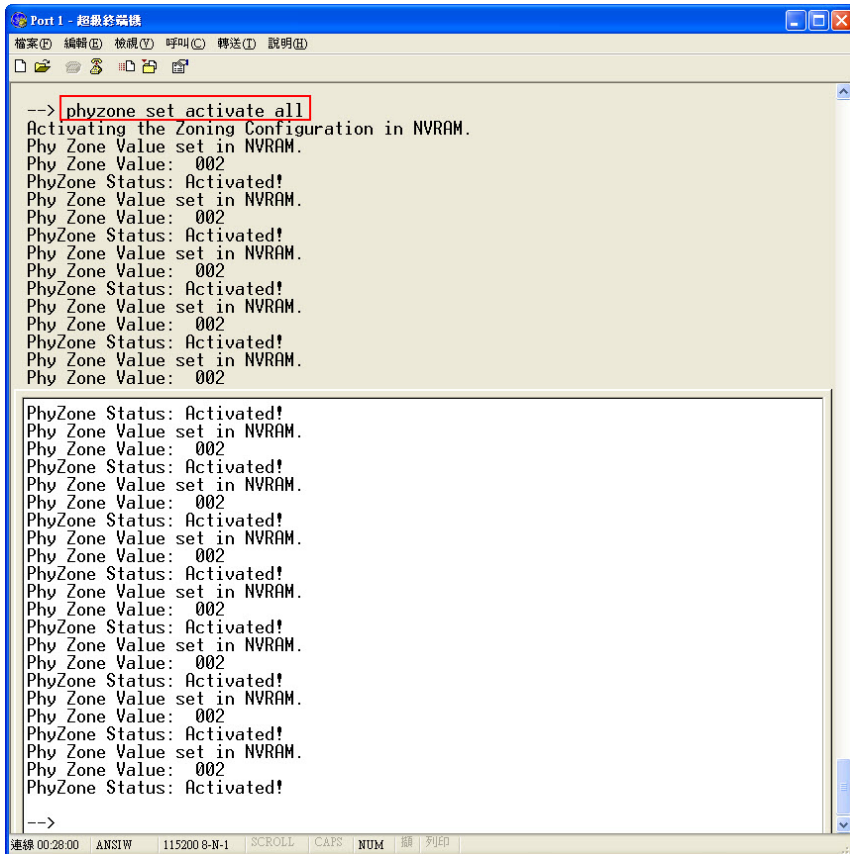
--> phyzone get all
  
```



Activate Zoning:

1. phyzone set activate all:

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line input **“phyzone set activate all”**, than press **“enter”**.



2. phyzone get all:

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please input **“phyzone get all”**, than press **“enter”**.

```

--> phyzone get all
-----
PHY Zone Z-9 Z-8 Z-7 Z-6 Z-5 Z-4 Z-3 Z-2 Z-1 Z-0 PHY
00..001.....1...00
01..001.....1...01
02..001.....1...02
03..001.....1...03

04..001.....1...04
05..001.....1...05
06..001.....1...06
07..001.....1...07
08..002.....1...08
09..002.....1...09
0A..002.....1...0A
0B..002.....1...0B
0C..002.....1...0C
0D..002.....1...0D
0E..002.....1...0E
0F..002.....1...0F
10..001.....1...10
11..001.....1...11
12..001.....1...12
13..001.....1...13
14..002.....1...14
15..002.....1...15
16..002.....1...16
17..002.....1...17
SSP..3FF..1...1...1...1...1...1...1...1...1...1...SSP
PhyZone Status: Activated!
--> _

```

連線 00:16:38 ANSIW 115200 8-N-1 SCROLL CAPS NUM 插 列印



Note: LCD Panel will showing “Zone Status: On”.



Clear Zoning:

1. phyzone clr all

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line input **“phyzone clr all”**, than press **“enter”**.

```
--> phyzone clr all  
Clearing all Phy Zone Configuration in NVRAM.  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
Phy Zone Value cleared in NVRAM, using default value.  
Phy Zone Value: 001  
SSP Phy Zone Value cleared in NVRAM, using default value.  
Must Re-boot to make changes take effect.  
Phy Zone Value: 3FF  
PhyZone Status: Diactivated!  
  
-->
```

2. **phyzone get all:**

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please input **“phyzone get all”**, than press **“enter”**.

```
--> phyzone get all
```

PHY	Zone	Z-9	Z-8	Z-7	Z-6	Z-5	Z-4	Z-3	Z-2	Z-1	Z-0	PHY
00	001	1	1	1	1	1	1	1	1	1	1	00
01	001	1	1	1	1	1	1	1	1	1	1	01
02	001	1	1	1	1	1	1	1	1	1	1	02
03	001	1	1	1	1	1	1	1	1	1	1	03
04	001	1	1	1	1	1	1	1	1	1	1	04
05	001	1	1	1	1	1	1	1	1	1	1	05
06	001	1	1	1	1	1	1	1	1	1	1	06
07	001	1	1	1	1	1	1	1	1	1	1	07
08	001	1	1	1	1	1	1	1	1	1	1	08
09	001	1	1	1	1	1	1	1	1	1	1	09
0A	001	1	1	1	1	1	1	1	1	1	1	0A
0B	001	1	1	1	1	1	1	1	1	1	1	0B
0C	001	1	1	1	1	1	1	1	1	1	1	0C
0D	001	1	1	1	1	1	1	1	1	1	1	0D
0E	001	1	1	1	1	1	1	1	1	1	1	0E
0F	001	1	1	1	1	1	1	1	1	1	1	0F
10	001	1	1	1	1	1	1	1	1	1	1	10
11	001	1	1	1	1	1	1	1	1	1	1	11
12	001	1	1	1	1	1	1	1	1	1	1	12
13	001	1	1	1	1	1	1	1	1	1	1	13
14	001	1	1	1	1	1	1	1	1	1	1	14
15	001	1	1	1	1	1	1	1	1	1	1	15
16	001	1	1	1	1	1	1	1	1	1	1	16
17	001	1	1	1	1	1	1	1	1	1	1	17
SSP	3FF	1	1	1	1	1	1	1	1	1	1	SSP

```
PhyZone Status: Diactivated!
```

```
--> _
```



Note: LCD Panel will showing **“Zone Status: Off”**.

