# Alnico Gen2 Series, 12Gbps SAS to 12Gbps SAS JBOD Subsystems
# Installation Guide

**Version 1.1**

**Nov./03/2015**

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# Notice

# Trademarks

# Regulatory information

## $C \in$     For Europe

This drive is in conformity with the EMC directive.

## FC     Federal Communications Commission (FCC)

## Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

Those limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antennas.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circlet different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

## Warning:

A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.

Use only shielded cables to connect I/O devices to this equipment.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

## About This Installation Guide

Welcome to Hardware Installation Guide. This guide is designed to be used as step-by-step instructions for installation of your subsystem, and covers everything you need to know in learning how to operation, troubleshooting and future upgrades. For the detail about how to configure your subsystem, please refer to the Software Operation manual.

## Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

### Caution

*This icons indicates that failure to follow directions could result in personal injury, damage to your equipment or loss of information.*

### Note

*This icon presents commentary, sidelights, or interesting points of information.*

Important terms, commands and programs are put in **Boldface** font.

Screen text is given in `screen` font.

# *Contents*

# *Chapter 1.* INTRODUCTION

This chapter introduces the features and capabilities of Alnico 12Gb SAS to 12Gb SAS JBOD subsystems.

You will find:

⇨ A full introduction to your JBOD SYSTEM
⇨ Details of key features and supplied accessories
⇨ A checklist of package contents
⇨ A checklist of what else you need to start installation

## Model Variations

There are Four available models in Alnico 12Gb JBOD subsystem series; which utilize Single 12Gbps miniSAS HD connector as Host interface and dual 12Gbps miniSAS HD connectors for expansion, each with 12, 16, or 24 device bays.          .

| Model Name | Host Interface | Device bays | Controller Numbers |
|---|---|---|---|
| AN-824JT | SAS ( miniSAS HD) | 24 bays | 1  or 2 |
| AN-816JT | SAS ( miniSAS HD) | 16 bays | 1  or 2 |
| AN-812JT | SAS ( miniSAS HD) | 12 bays | 1  or 2 |
| AH-825JT | SAS ( miniSAS HD) | 24 bays | 1  or 2 |

## Features

The 12Gb JBOD system is designed to meet today's large volume and excellent performance storage requirements in rapidly changing business environment. It provides a maximum data protection and exceptional performance in a storage subsystem. Target usage ranges are set from small business to departmental and corporate server needs. The 12Gb JBOD system is designed for easy integration, smooth data expansion and server migration.

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The firmware of 12Gb JBOD system has been included the failover to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance. User can configure redundant mode with two expander module using either RAID controllers or HBAs to achieve failover protection. Each expander board features three 12Gb/s Mini SAS HD (SFF-8644) connectors; default setting one for host and two for expansion to additional JBOD enclosures.

For host and easy expansion. High Performance Architecture sets new boundaries of industry performance expectations! 12Gb/s SAS (1200MB/s bandwidth per physical link) 12Gb/s SAS/SATA (1200MB/s bandwidth per physical link). The DataBolt™ Bandwidth Optimizer is designed to help facilitate the industry transition to 12Gb/s SAS-enabled systems by allowing users to take advantage of 12Gb/s speeds while utilizing existing 12Gb/s drives and backplanes. The expander buffers 12Gb/s data and then transfers it out to the host at 12Gb/s speeds in order to match the bandwidth between faster hosts and slower SAS or SATA devices.

The 12Gb JBOD systems contains an embedded expander manager that can access via in-band SES-2 over SMP protocol and out-of band RS-232 port. An out-of-band serial port is available for managing the configuration and monitoring the expander.

The 12 Gb JBOD system supports the following features:

- Supports 12Gb/s SAS and 6Gb/s SATA disk drives.

- Single (4x wide-port) minSAS HD connector for host connection.

- Dual (4x wide-port) minSAS HD connectors for expander module daisy chain.

- Redundant and Hot Swappable JBOD expander I/O board, Fan, Power and Drives.

- Completely monitored by In-band SES (SAS Port), out-of-band RS232 serial port.

- CLI through RS232 serial port

- Supports "DataBolt™ Bandwidth Optimizer" to take the advantage of 12Gb/s speed with slower SAS and SATA devices.

- Configuration and environmental information is accessible either via the Serial Port or RAID System.

- Load sharing, hot swappable redundant power system with PFC function.

# Understanding the Alnico RAID subsystem

## Front Panel Overview

### LED Indicators (for AN-812 / 816 / 824)

#### LED Indicators
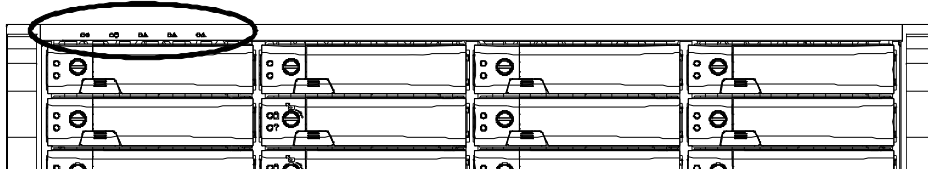


1. ⏻     Power On Indicator (Blue).

2. 🛢     Host System Access Indicator (Blue + blink).

3. ⚡     Power Fail Indicator (Red)

4. ⚠     Fan Fail Indicator (Yellow)

5. ⚠     Over Temperature Indicator (Yellow)

## LCD Module (for AH-825)

☑ **Up Arrow Button**

☑ **Down Arrow Button**

☑ **ESC Button**

☑ **Enter Button**

**LCD Display**

⏻ **Power Indicator (Blue)**

⚠ **Attention Indicator (Red)**

🗋 **Access Indicator (Blue)**
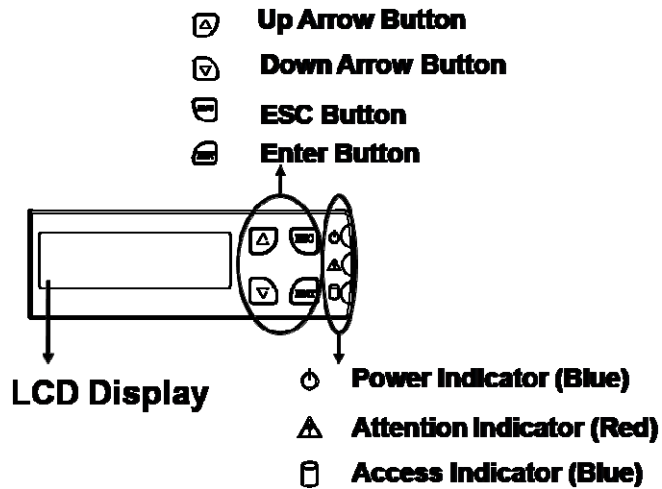
Function keys. ( ENT, ESC, Scroll up, Scroll Down )

| Keys | Descriptions |
|------|-------------|
| Up Arrow | To scroll upward through the menu items |
| Down Arrow | To scroll downward through the menu items |
| (ENT ) Enter | To confirm a selected item |
| (ESC) ESC | To exit a sub-menu and return to previous menu. |

There are three LED indicators on the front panel. Following table provides a summary of the meanings of these LED indicators:

| LED Indicator | Normal Status | Problem Indication |
|---------------|---------------|--------------------|
| Power On indicator | Bright Blue | This LED does not light up after power switched on |
| Fail Indicator | LED never light up | LED light up as Red. |
| Data Access Indicator | Blink blue during host computer accessing the RAID subsystem. | LED never flickers |

## Driver Bay numbering convention

The enclosure bay numbering convention is shown in following figure. A bay is designed to house a single 3.5-inch hard disk drive or a 2.5" hard disk in his carrier module.

**AN-824JT**

| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 |

**AN-816JT**

| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |

**AN-812JT**

| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |

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**AH-825JT**



**1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24**

**Drive Bay for AN Series**



Lock

Unlock

**LED Indicator**
**Blue : HDD Power on**
**Flash : Accessing**

**Key Lock**

**LED Indicator**
**Red : HDD Error**

**Release**
**Button**

**Handle**

**Drive Bay for AH Series**

Lock　　　　Unlock

**LED Indicator**
**Blue: HDD Power on**
**Flash: Accessing**

**LED Indicator**
**Red: HDD Error**

**Handle**

**Latch**

**Key Lock**
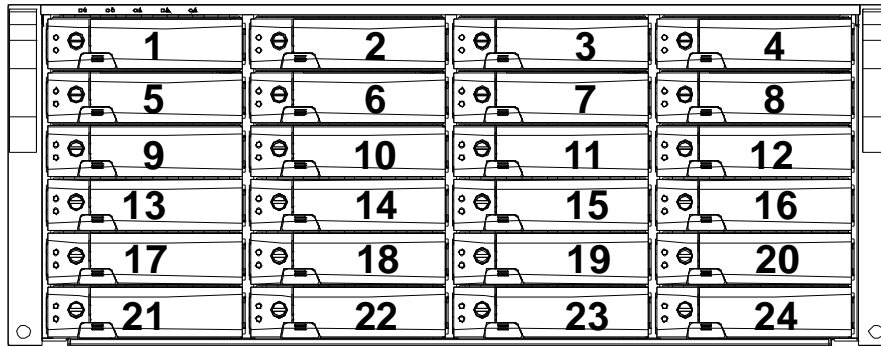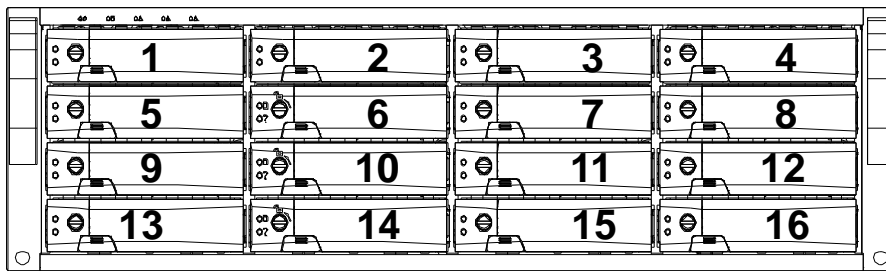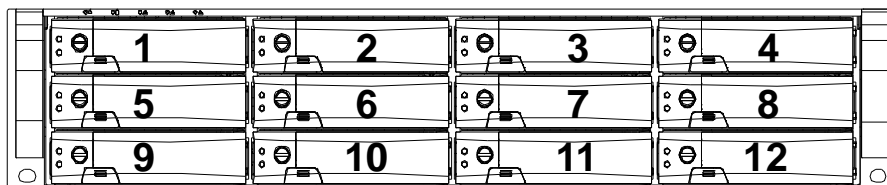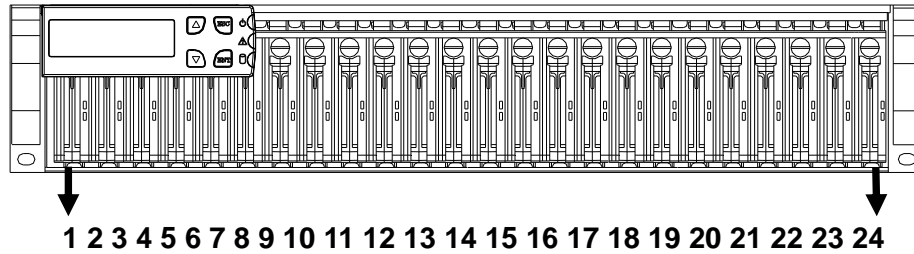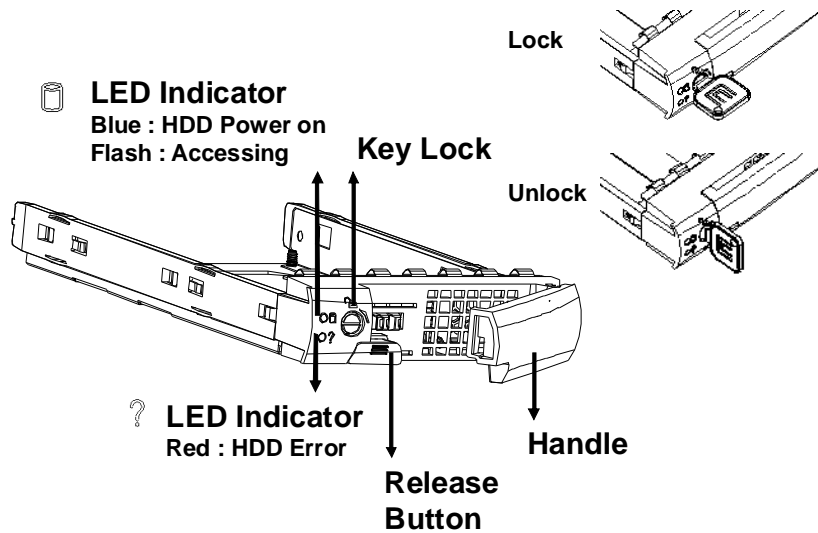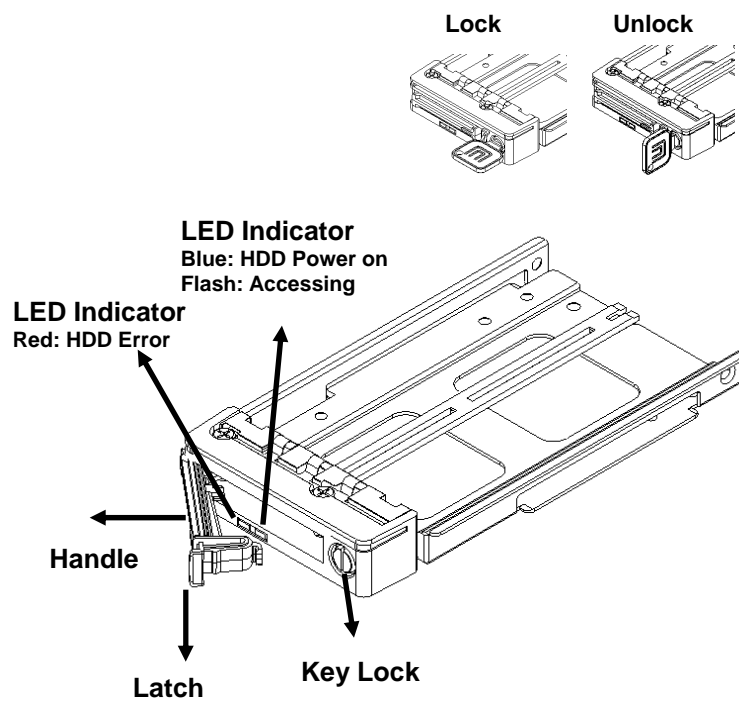
## Rear Panel Overview

**AN-824JT**



1. Expander Box 1.

2. Expander Box 2

3. SAS CH 0 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

4. SAS Expand Port 1 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

5. SAS Expand Port 0 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

6. Console  (Terminal Port)

7. Reserved

8. Power Switch

9.  FAN failure indicator (Rear / Front)

10. FAN Module 1

11. FAN Module 1 latch

12. FAN failure indicator (Rear / Front)

13. FAN Module 2

14. FAN Module 2 latch

15. AC inlet 1 & Latch

16. Power Module 1

17. AC inlet 2 & Latch

18. Power Module 2

19. AC inlet 3 & Latch

20. Power Module 3

**AN-816JT**



1.  Expander Box 1.

2.  Expander Box 2

3.  SAS CH 0 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

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4. SAS Expand Port 1 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

5. SAS Expand Port 0 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

6. Console  (Terminal Port)

7. Reserved

8. Power Switch

9. FAN failure indicator (Rear / Front)

10. FAN Module 1

11. FAN Module 1 latch

12. FAN failure indicator (Rear / Front)

13. FAN Module 2

14. FAN Module 2 latch

15. AC inlet 1 & Latch

16. Power Module 1

17. AC inlet 2 & Latch

18. Power Module 2

**AN-812JT**

**AH-825JT**
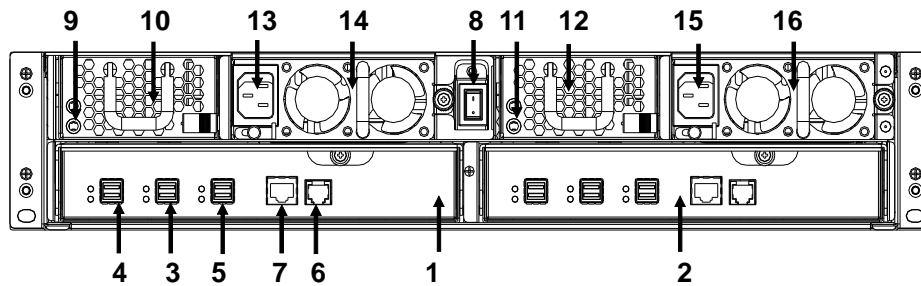


1. Expander Box 1.

2. Expander Box 2

3. SAS CH 0 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

4. SAS Expand Port 1 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

5. SAS Expand Port 0 & LED Indicator

| LED | Colors | Indicate |
|-----|--------|----------|
| SAS | Green | Link |
| | Blue + Blink | Access |

6. Console (Terminal Port)

7. Reserved

8. Power Switch

9. FAN failure indicator 1.(Rear / Front)

10. FAN Module 1

11. FAN failure indicator 2 (Rear / Front)

12. FAN Module 2

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13. AC inlet 1 & Latch

14. Power Module 1

15. AC inlet 2 & Latch

16. Power Module 2

# *Chapter 2.* INSTALLATION

**This chapter presents:**

⇨ **Instructions on unpacking & checking the equipment**
⇨ **Instructions on how to install Hard disk drive**
⇨ **Instructions on how to install Alnico JBOD in a Rack.**
⇨ **Instructions on how to connect Alnico JBOD.**

## Unpacking & checking the Equipment

Before unpacking the Alnico JBOD subsystem, prepare a clean, stable surface to put on the contents of Alnico JBOD shipping container. Altogether, you should find following items in the package:

AN Series 12Gb SAS to SAS/SATA JBOD Subsystem:

- JBOD subsystem x1
- CD-ROM x 1 (Includes Hardware Installation Guide).
- Serial cable x1
- Power Cord x 2 (AN-816JT and AN-812JT),
  Power Cord x 3 (AN-824JT)
- miniSAS HD cable ( SFF-8644 ) x 1
- Drive Bay, ( AN-812 x 13, AN-816 x 17, AN-824 x 25)
- Key for Drive Bay x 4
- Slide Kit ( Rails ) for Rack
- Mounting screws : for 3.5" disks (bag) $\times$ 1 /  for 2.5" disks (bag) $\times$ 1

AH Series 12Gb SAS to SAS/SATA JBOD Subsystem:

- JBOD subsystem x1
- CD-ROM x 1 (Includes Hardware Installation Guide).
- Serial cable x1
- Power Cord x 2 (AH-825JT)

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- miniSAS HD cable ( SFF-8644 ) x 1
- Drive Bay (AH-825 x 25)
- Key for Drive Bay x 4
- Slide Kit ( Rails ) for Rack
- Mounting screws : for 2.5" disks (bag) $\times$ 1

# What else you need

- Hard disk drives (different RAID levels requires different numbers of HDDs. Refer to Software Operation manual for more detail information.
- Host computer with SAS interface or Alnico RAID subsystem.
- Dedicated terminal or PC with third party communication software that supports ANSI terminal emulation (required for viewing Monitor Utility)

# ESD Precaution

Use a suitable anti-static wrist or ankle strap and observe all conventional ESD precaution when handle Alnico JBOD's modules and components. Avoid contact with backplane components and module connectors.

# Installing hard disks

The Alnico JBOD series includes 12, 16, 24 hot swappable drive bays. The following sections describe how to install disks into Alnico JBOD subsystems.

### Loading 2.5" Hard Disk to the drive bay. (for AN Series)

1. Put 2.5 HDD into the bay.

2. Fasten all 4 screws to mount HDD in the bay and make sure the HDD is properly tightened.
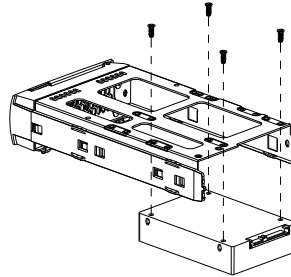
### Loading 3.5" Hard Disk to the drive bay. (for AN Series)

1. Put 3.5 HDD into the bay.

2. Fasten all 4 screws to mount HDD in the bay and make sure the HDD is properly tightened.

15
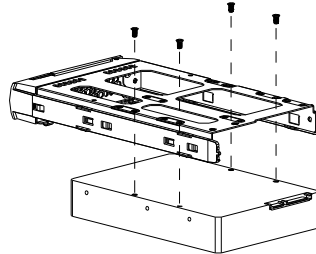
## Loading 2.5" Hard Disk to the drive bay. (for AH Series)

1. Put 2.5 HDD into the bay.

2. Fasten all 4 screws to mount HDD in the bay and make sure the HDD is properly tightened.
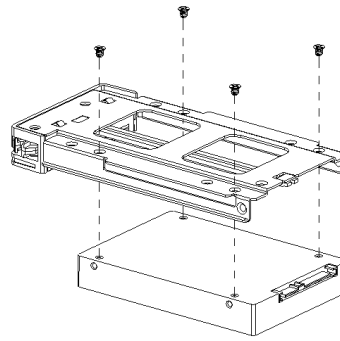
## Place drive bays back into the system

1. Slide in drive bay; make sure the handle is open fully.

2. Close the handle to engage the drive bay into the slot.

### *Note*

*The hard drives in a JBOD should match in size and speed. All drives in any array should be identical models with the same firmware versions.*

### *Caution*

*Only use the screws offered with Alnico RAID subsystem. Longer screws might cause the drive damage.*

*All the drive bays (with or without hard drive) must be placed in the Alnico subsystem. Alnico's cooling system is designed with full of drive bays. Missing drive bays might cause the subsystem damage.*

# Install The Alnico JBOD subsystem in a Rack

You are shipped one rackmounting kit for each Alnico subsystem that you intend to rackmount. Alnico subsystem is designed for installation into a industry-standard 19-inch rackmount cabinet. Following the use of this section for installing the Alnico subsystem into a Rack

### Install the Slide Rails

1. Combine Left slide rail and rear slide rail.

2. Measure the depth of the rack enclosure, then fasten 4 of P4*8M screws into M4 Locking nuts to fix the length.

3. Use T5*8M screws and PW14 washer to install the left slide on Front and rear Posts of Rack as Figure 1.

4. Repeat procedure 1 ~ 3 to install the right Slide into the Rack.
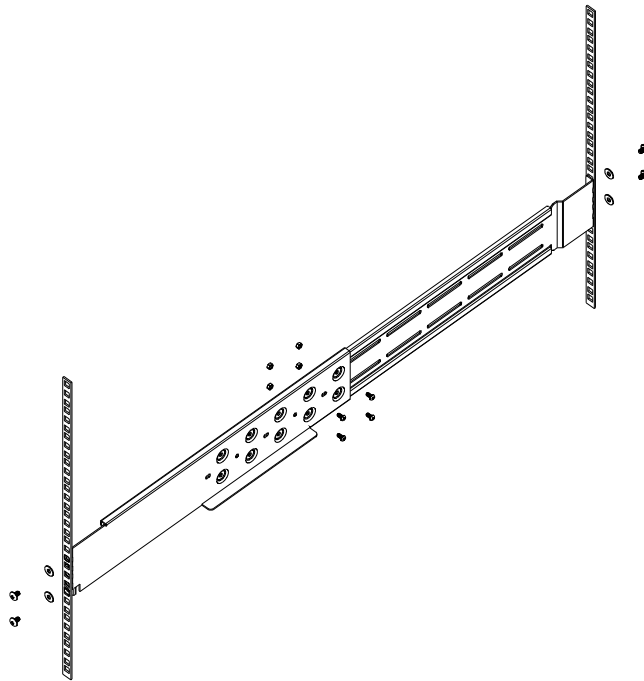


Figure 1.

## Place the Alnico Subsystem into the rack

1. Lift the subsystem enclosure and slide it slowly and gently along the slide rail into the rack as Figure 2.
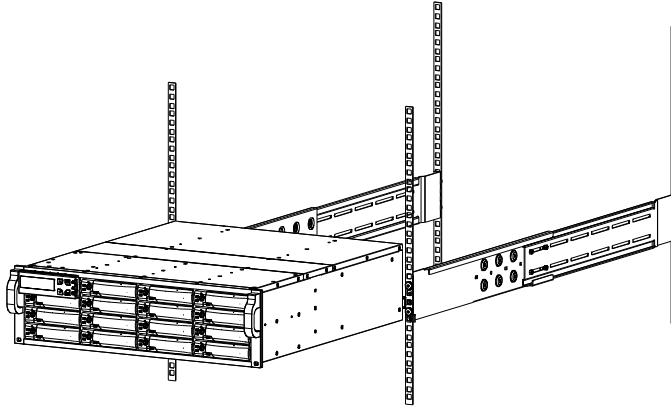


Figure 2.

2. Fasten two M5 screws through the chassis ears in the front side of the chassis to secure the Alnico subsystem in the rack as Figure 3.



Figure 3.

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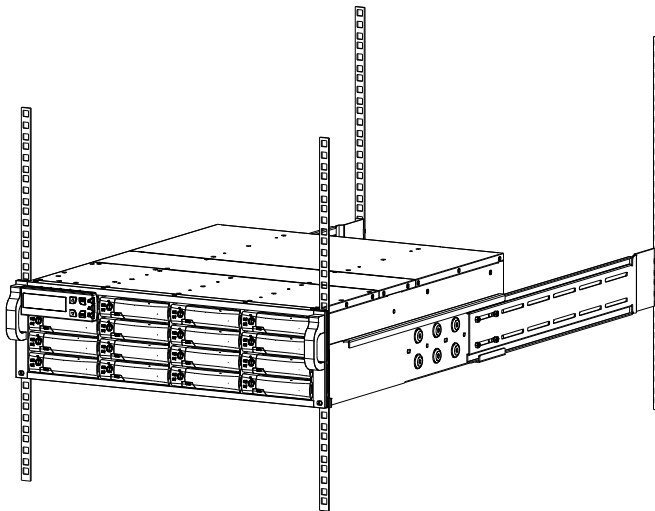
**Caution**

*The Alnico subsystem is heavy, two person are required to move the system in the procedure.*

# System Connection

Connect all cables and power cord as shown below:

| Cable | Alnico JBOD | Device | Purpose |
|---|---|---|---|
| Serial Cable | Console | ANSI Terminal or PC with Terminal emulator. | Configuration Utility |
| MiniSAS HD Cable | SAS CH0 | SAS HBA of Host computer Alnico SAS RAID subsystem | Host interface between JBOD and Host computer |
| Power Cord | Power inlet | A/C power outlet | A/C power input |
| MiniSAS HD Cable | SAS Exp. | Alnico JBOD | Connect to SAS Expander |

**Note**

*Make sure that all the devices are powered off before connecting or removing cables to prevent power spikes which can damage technical components.*

# Connection to the RAID System  (Basic)

**16Gb Fibre RAID**



**12Gb SAS JBOD**

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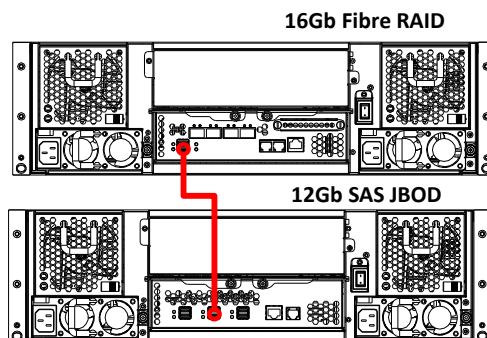
# Connection to the RAID System with more
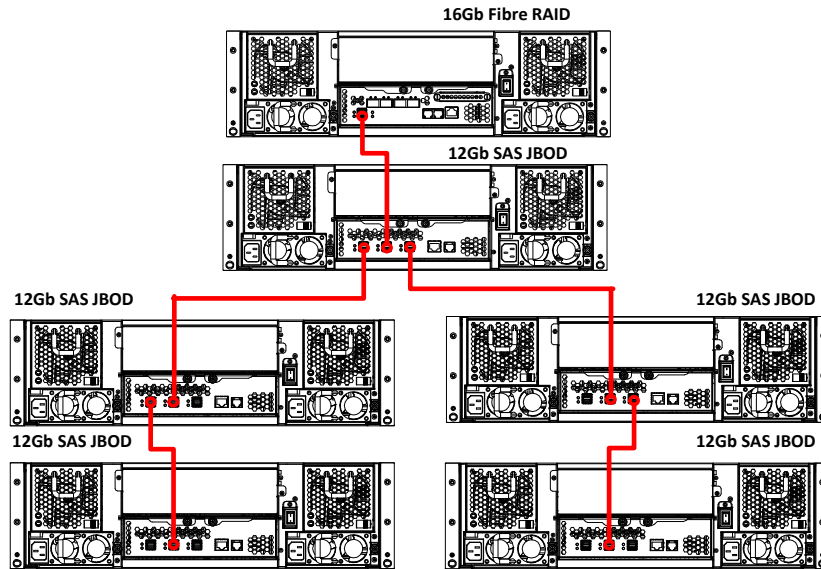


## SAS JBODs

It supports up to four tiers and 256 drives.

- One RAID Set supports up to 32 HDDs
- One SAS RAID subsystem supports up to 128 Volumes
- One SAS RAID subsystem supports up to 256 SAS devices

There are four tiers within JBOD topology as above:

- First tier is a RAID System.
- Second tier is a SAS JBOD with a SAS CH0 on it. Connecting SAS CH0 to SAS exp. Port on RAID System via a MiniSAS HD Cable.
- Third tier could be two SAS JBODs with a SAS CH0 port individually. One is connected to the SAS EXP. Port on the second tier SAS JBOD via a MiniSAS HD Cable. Another is connected to the SAS CH1/E Port on the second tier SAS JBOD
- Fourth tier is a SAS JBOD with a SAS CH0 on it. Connecting SAS CH0 to SAS exp. Port on third tier SAS JBOD via a MiniSAS HD Cable.

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NOTE

1.  *Alnico Gen2 subsystem do not require the installation of different drivers for use with different operating systems. Alnico Gen2 system is independent and transparent to the host operating system.*

2.  *It is often recommended to install the hard drive with same brand, model no., interface and capacity in this RAID subsystem.*

3.  *Please do not install SAS and SATA hard drives at the same time, as these hard drives spin at different speed and may lead to compatible issues or performance decline.*

4.  *RAID members need to be included at the same enclosure that means you need to create array in the same enclosure. RAID members across two or more enclosures would get some risks (for example: if mini-SAS cable get problem, more RAID members will be lost, volume sets belong to this Array may be failed. Shutdown RAID and JBOD to fix problem, after that, turn on JBOD and RAID system again and controller will get array back, but in some special case maybe it can't get array back)*

## Turning on for the first time

When cabling is completed, RAID system + 12Gb/s SAS JBOD system can be turned on. This should be done in the following order:

1. First turn on the power switch of 12Gb/s JBOD system.

2. Then turn on the power switch of RAID system

3. Power on and boot the host computer(s)

## Turning off

When turning off RAID system + 12Gb/s JBOD system, users are advised to first shut down the server, then power off RAID SYSTEM ,finally power off 12Gb/s JBOD SYSTEM.

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# *Chapter 3.* TROUBLE SHOOTING

**This chapter contains trouble shooting procedures and suggestions to minimize their impact on the Alnico JBOD operation :**

⇨ **Instructions on how to replace the components of Alnico JBOD subsystem.**

If the fault LED on the front panel of Alnico JBOD lights, or if Alnico RAID's Internet manager indicates a fault of JBOD, determine the reason for this alert immediately. Examine the component LEDs to see if any indicates a fault, then replace it as soon as possible.

## Replace the Expander box



*Read the replacing notices earlier in this chapter before proceeding with replacement.*

**Caution**

This section provides instructions for the removal and installation of the Expander box components indicated in the figure below. This section is for the reference of engineers. End users should not need to replace or remove components.

### Removing the JBOD Expender box from AN-816 and AN-824 JBOD :

In order to access expander box, turn

anti-clock wise to release two thumb

screws, then use the eject bar to remove
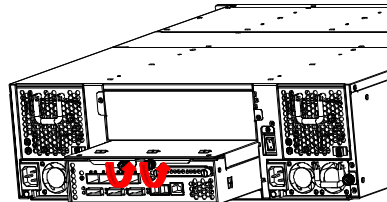
Controller box.

**Removing the JBOD Expender box from AN-812 & AH-825 JBOD :**

In order to access controller box,

1. Turn anti-clock wise to release the thumb

Screws.

2. Push down the use eject bar to remove
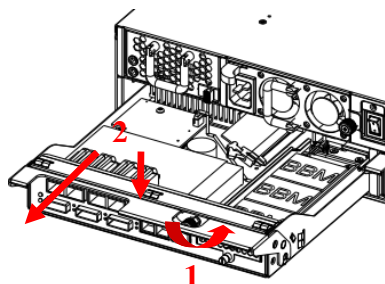
Controller box.

**Installing the Expander box into JBOD subsystem:**

Reverse the procedure of **"removing the controller"** to install the controller into Alnico JBOD Subsystem.

# Hot Swapping to replace the Fan Module

This section provides instructions for the removal and installation of the Fan Module indicated in the figure below.

**Removing the Fan Module from**

**AN-816 and AN-824 :**

Remove the Fan modules by slide the release button left and pull the module out of system.

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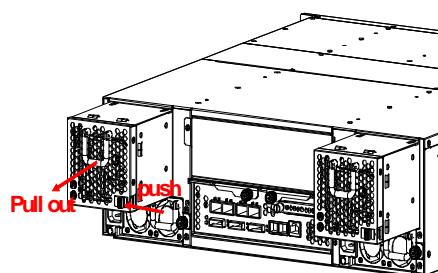
## Replace the Fan in Fan module

1. There are two failure LEDs on the rear of Fan module. Check which LED lights to yellow.

2. Remove the Fan modules by anti-clock wise to release the thumb screw then slide it back and lifting off.

3. Release the screw to remove the defect fan.

4. Insert the spare Fan and fasten the screw.
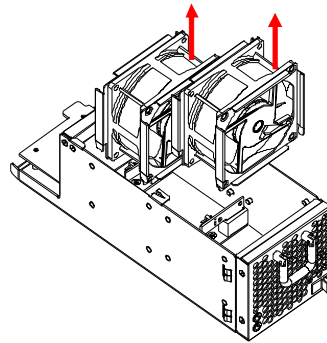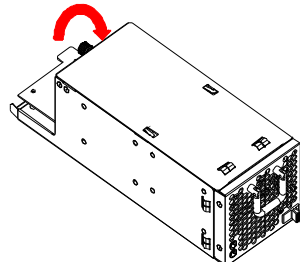
## Removing the Fan Module from

## AN-812 & AH-825 JBOD :

Remove the Fan modules by slide the release button left and pull the module out of system,

**push**

**Pull out**
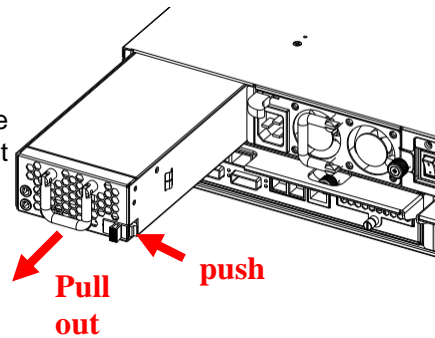
# Hot Swapping to replace the Power Module

This section provides instructions for the removal and installation of the Power Module indicated in the figure below.

### Removing the Power Module

Unscrew the thumb fastener, then push right the release button, slide it back and lifting off.
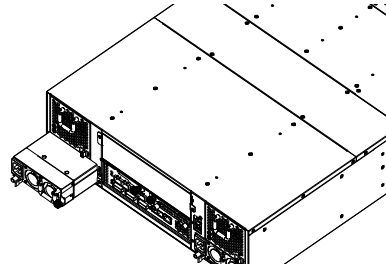
### Installing the Power module into Alnico:

Insert a Power module then fasten the screw.

| | *The Power indicator will turn bright "Green" to indicate it has powered on* |
|---|---|
| NOTE | |

# Appendix A. Connectors

## RJ-11
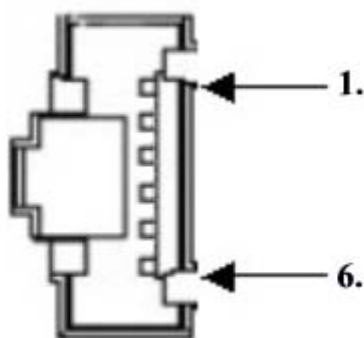


| Pin# | Signal | Pin# | Signal |
|------|--------|------|--------|
| 1 | NC | 6 | NC |
| 2 | GND | | |
| 3 | RX | | |
| 4 | TX | | |
| 5 | CTS | | |

## miniSAS HD (SFF-8644)
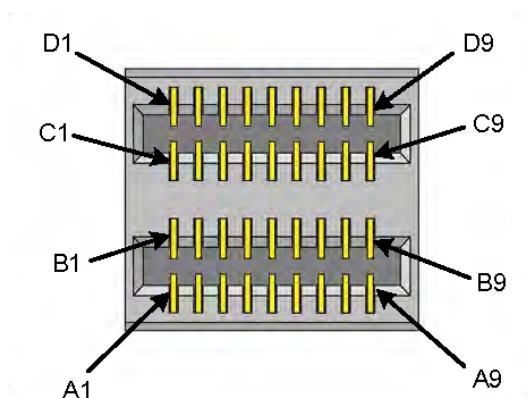
| Signal | Pin Number# |
|---|---|
| Rx 0+ | B4 |
| Rx 0 | B5 |
| Rx 1+ | A4 |
| Rx 1 | A5 |
| Sideband 7 | A1 |
| Sideband 3 | B1 |
| Sideband 4 | C1 |
| Sideband 5 | D1 |
| Rx 2+ | B7 |
| Rx 2 | B8 |
| Rx 3+ | A7 |
| Rx 3 | A8 |
| Tx 0+ | D4 |
| Tx 0 | D5 |
| Tx 1+ | C4 |
| Tx 1 | C5 |
| Sideband 0 | A2 |
| Sideband 1 | B2 |
| Sideband 2 | C2 |
| Sideband 6 | D2 |
| Tx 2+ | D7 |
| Tx 2 | D8 |
| Tx 3+ | C7 |
| Tx 3 | C8 |
| SIGNAL GROUND | A3, A6, A9, B3, B6, B9, C3, C6, C9, D3, D6, D9 |

# Appendix B. Firmware Updating

The procedure to update firmware of JBOD shall thru the UART, please refer to "**Appendix C. Command Line Interface**" to create a CLI connection, then follow the steps as bellowing to update the firmware of JBOD.

1. First type "fdl code" under "CLI>" prompt,

```
File  Edit  Setup  Control  Window  Help

Password:
Password:****

CLI>fdl code
Please Use XModem Protocol for File Transmission.

Use Q Or q to quit Download before starting XModem.
```
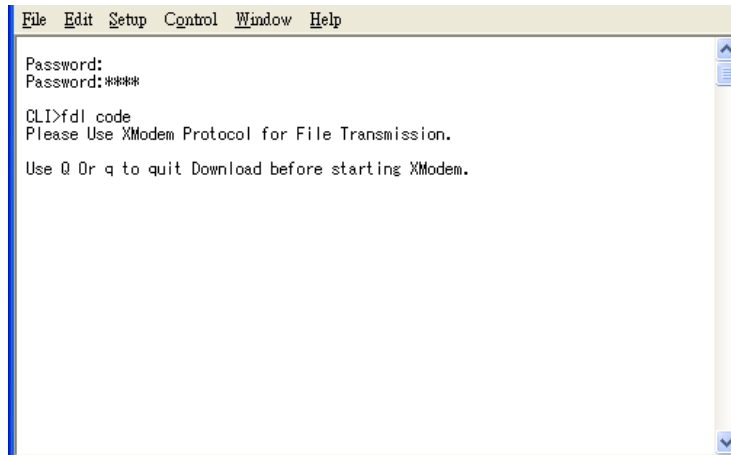
2. Then under hyper terminal click "file" at top to pull down the menu. Choose "Xmodem" and select the firmware file in the directory then press send to attach file. If file is receiving within the timeout limit (60sec), then firmware update will proceed. If a timeout message appear, please retry the step 2 again.
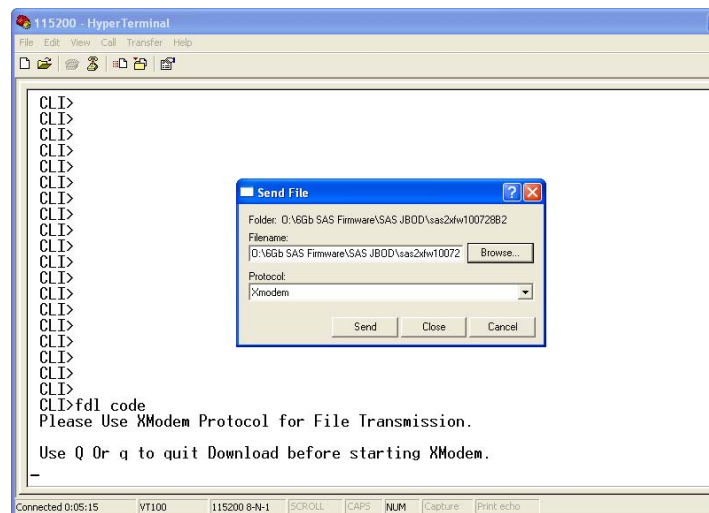
The firmware date are presented in the following filename format,

   a. FW file(code):sas2xfwXXXX.fw

   b. Data file(mfgb): mfgdat6gYYYY.rom


3. Firmware update procedure can be stopped by pressing Q or q.

6. Perform a cold-start after the firmware updating is completed.

7. After the firmware updating is completed, repeat steps 1-6 to update the Data file, but change the CLI command as following.

   CLI> fdl mfgb

   Then use file "mfgdata.rom" to update the Datafile.

8. After both files are updated, restart the expander.

9. After restart the expander, repeat steps 1-6 to update the Code file again.

10. After both files are updated, restart the expander.

# Appendix C.
# Command Line Interface (CLI)

This Command Line Interface (CLI) is provided for you to manage the 12Gb JBOD system series 12/16/24 system functions. The CLI is useful in environments where a graphical user interface (GUI) is not available.

## Create a CLI connection

### Locations of RS-232C Port

The 12Gb JBOD system uses the RJ11 port as the serial port interface. Please use the cable included in the shipping box to configure the expander controller.
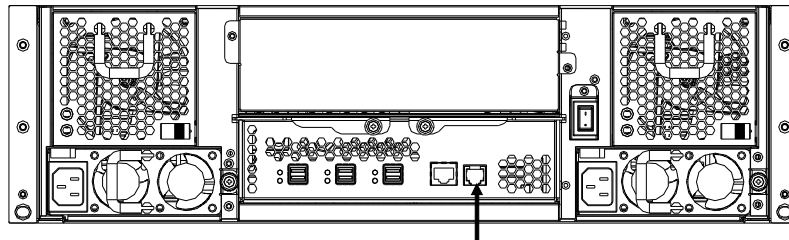
**Console ( Terminal Port)**

### Establishing the Connection for the Console(Terminal/RS-232) Port

The CLI function can be done by using an ANSI/VT-100 compatible terminal emulation program. You must complete the appropriate installation procedure before proceeding with the CLI function. Whichever terminal emulation program is used must support the 1K XMODEM file transfer protocol.

The Console (Terminal/RS-232) port on the JBOD system I/O shield can be used in    VT100 mode. The provided interface cable converts the RS232   signal of the RJ11 connector on the JBOD system into a 9-pin D-Sub male connector. The firmware-based terminal SAS expander management interface can access the expander through this Terminal/RS-232 port. You can attach a VT-100 compatible terminal or a PC running a VT-100 terminal emulation program to the serial port for accessing the text-based setup menu.

To ensure proper communications between them JBOD subsystem and the VT-100 Terminal Emulation, please configure the VT100 terminal emulation settings to the values shown below:

30

| Terminal requirement | |
|---|---|
| Connection | Null-modem cable |
| Baud Rate | 115,200 |
| Data bits | 8 |
| Stop | 1 |
| Flow Control | None |

The JBOD Subsystem's RJ-11 connector's pin assignments are defined as below:

| RS-232C Pin Assignments | | | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | N/C | 6 | NC |
| 2 | GND | | |
| 3 | RX | | |
| 4 | TX | | |
| 5 | CTS | | |

By connecting a VT100 compatible terminal, or a PC operating in an equivalent terminal emulation mode, all RAID subsystem monitoring, configuration and administration functions can be exercised from the VT100 terminal.

There are a wide variety of Terminal Emulation packages, but for the most part they should be very similar. The following setup procedure is an example Setup of VT100 Terminal in Windows XP system using Hyper Terminal Version 5.1.

Step 1. From the Desktop open the Start menu. Pick All Programs, Accessories, Communications and Hyper Terminal. Open Hyper Terminal (requires version 3.0 or higher)

31
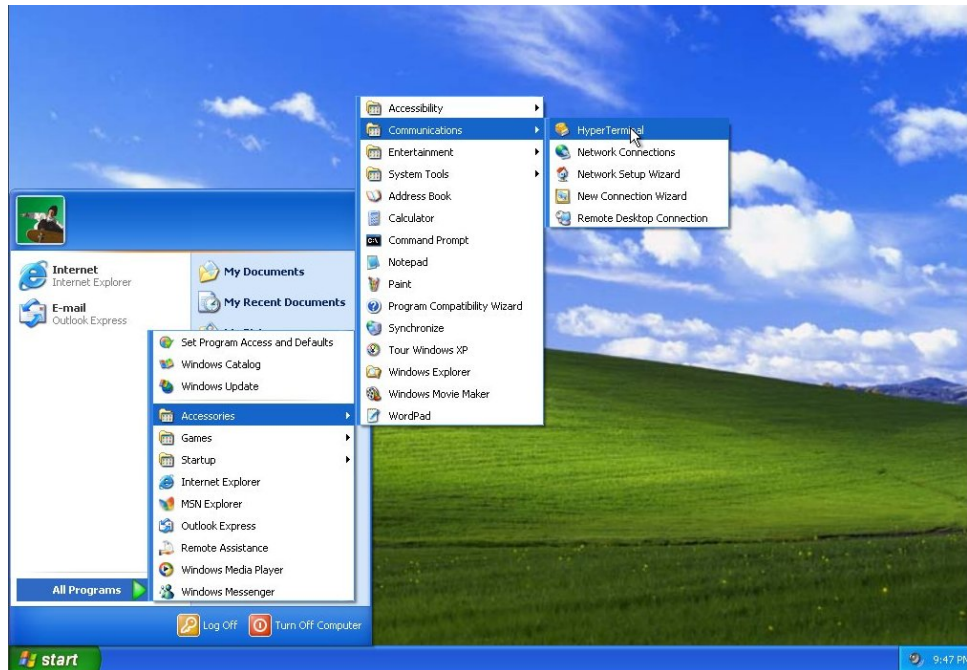
Step 2. Open HYPERTRM.EXE.
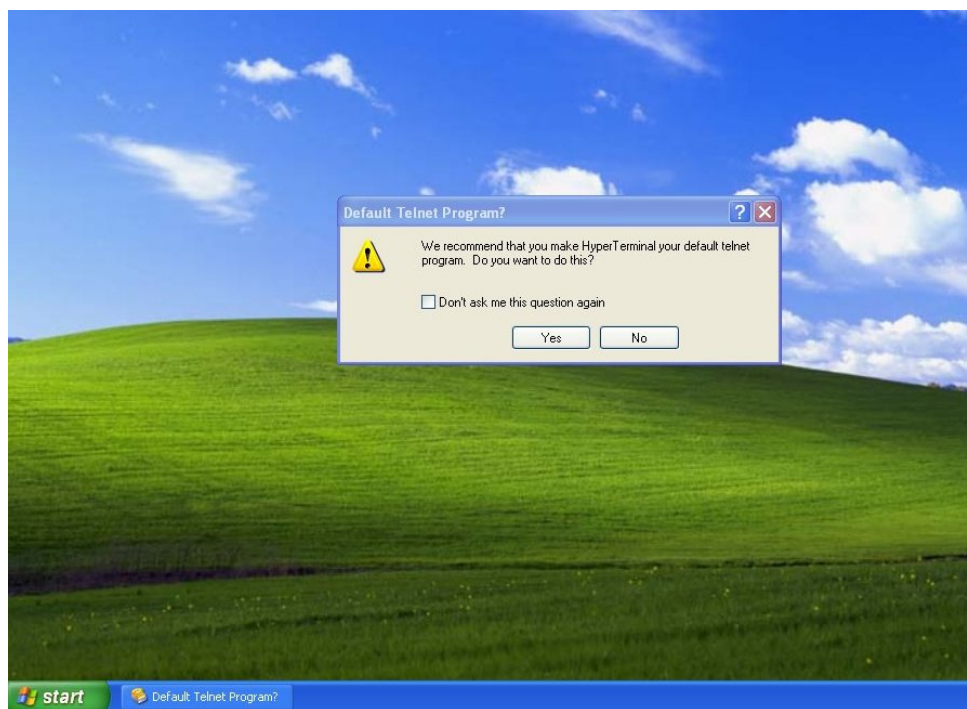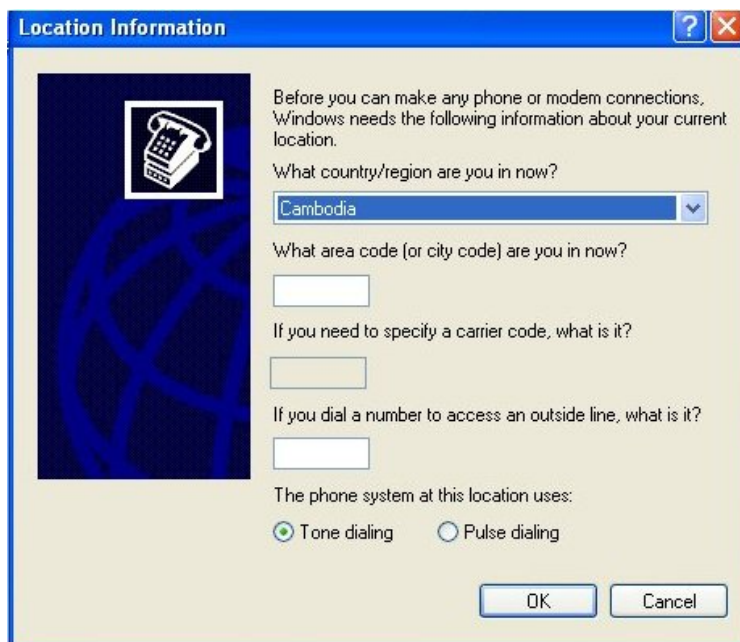
Step 3. Enter a name for your Terminal. Click OK.
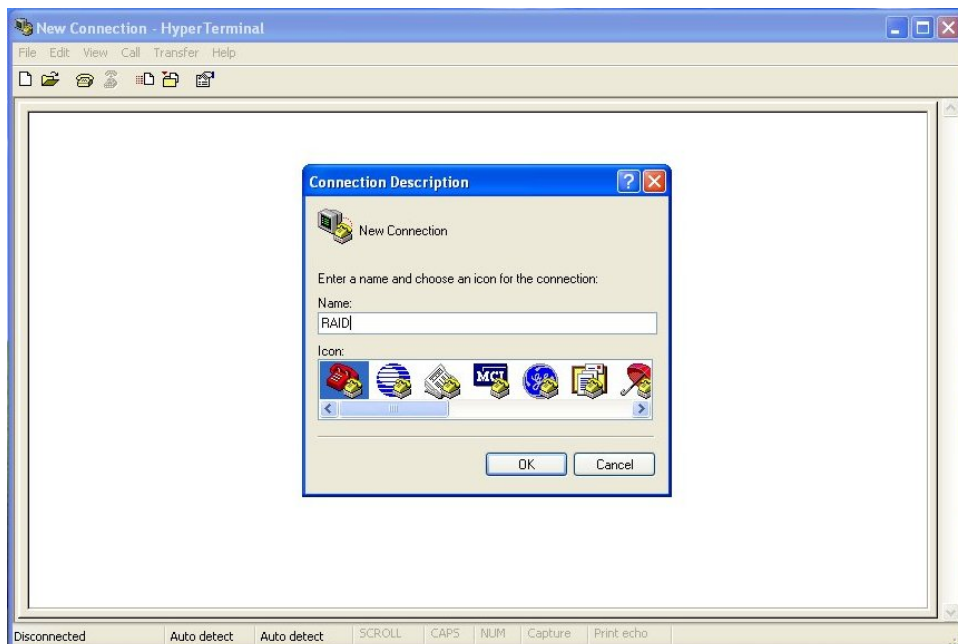
Step 4. Select an appropriate connecting port in your Terminal. Click OK
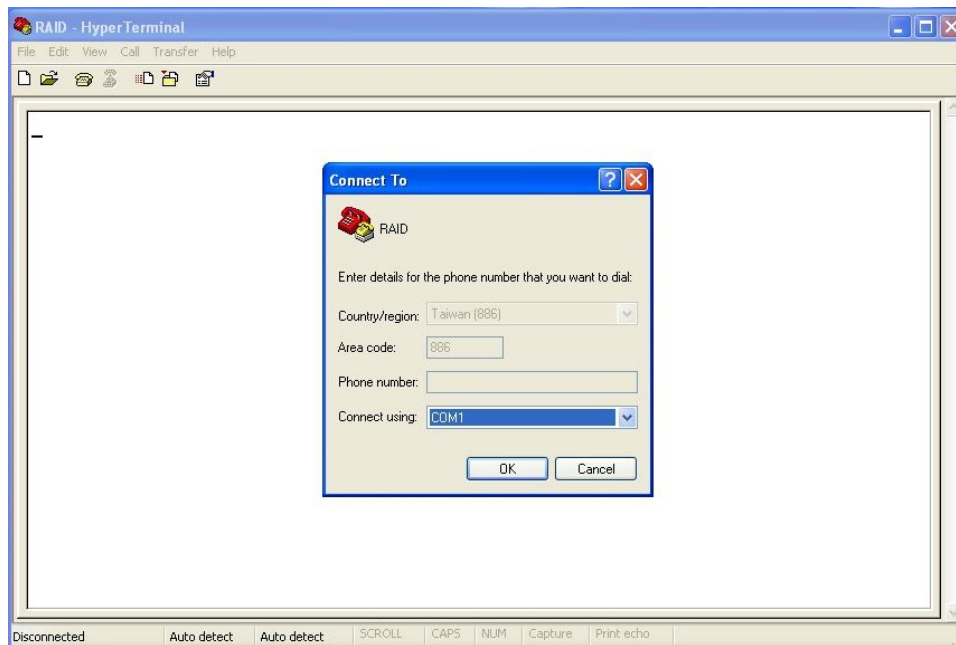


Step 5. Configure the port parameter settings. Bits per second: "115200", Data bits: "8", Parity: "None", Stop bits: "1", Flow control: "None". Click OK
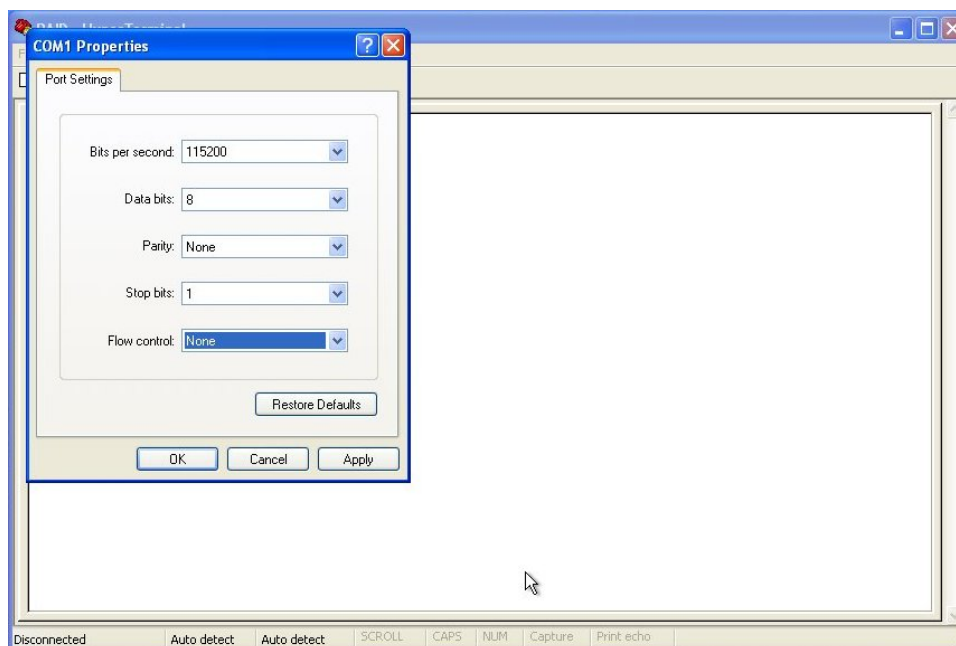


Step 6. Open the File menu, and then open Properties.

34
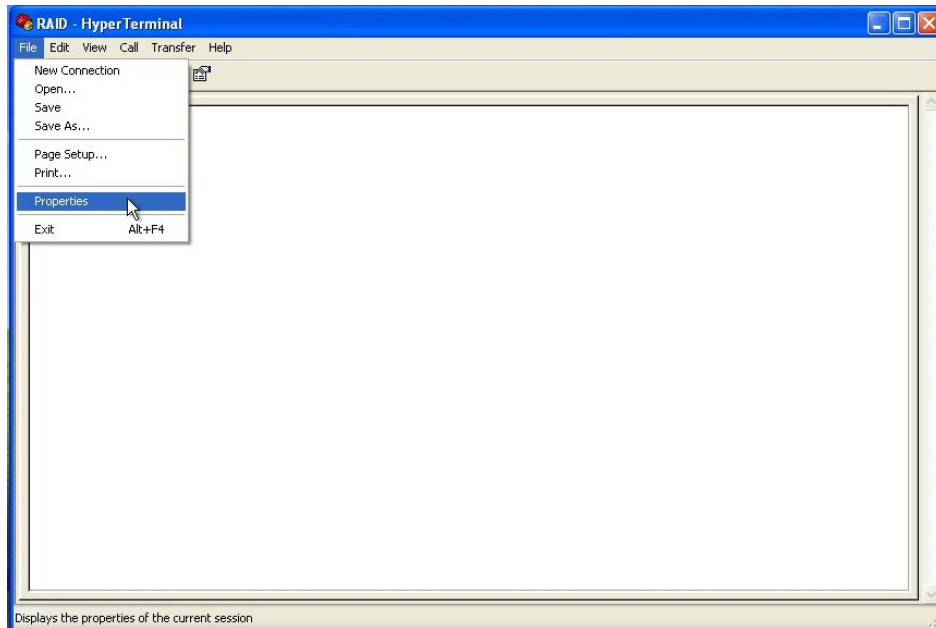
Step 7. Open the Settings Tab.
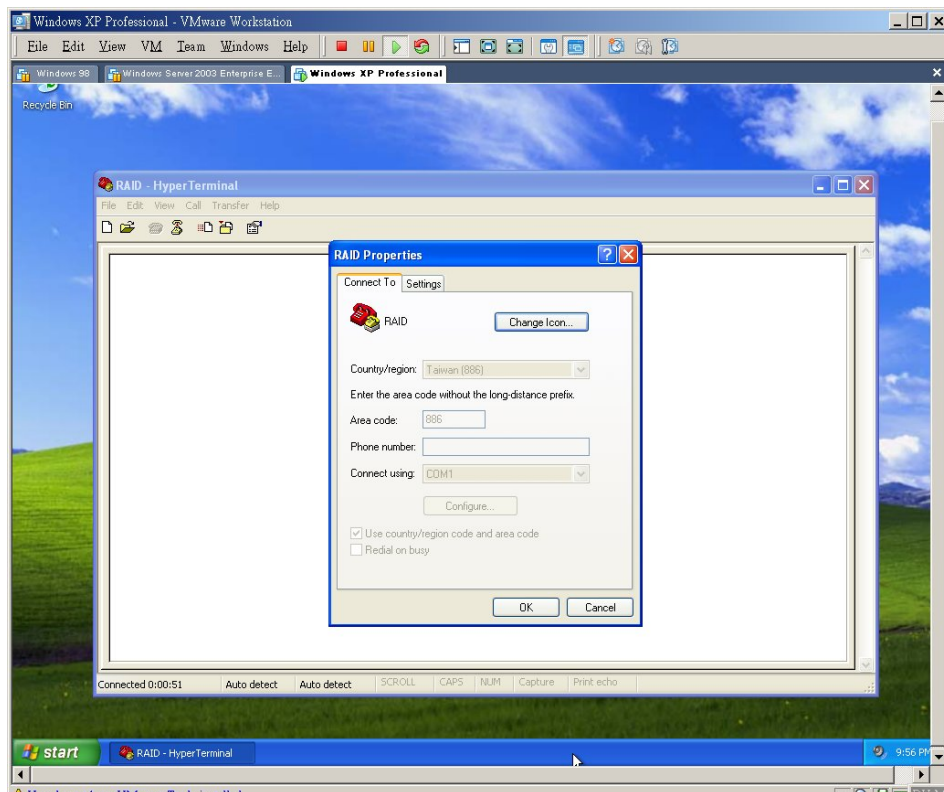


Step 8. Open the Settings Tab. Function, arrow and ctrl keys act as: Terminal Keys,

Backspace key sends: Crtl+H, Emulation: VT100, Telnet terminal: VT100, Back scroll buffer lines: 500. Click OK.
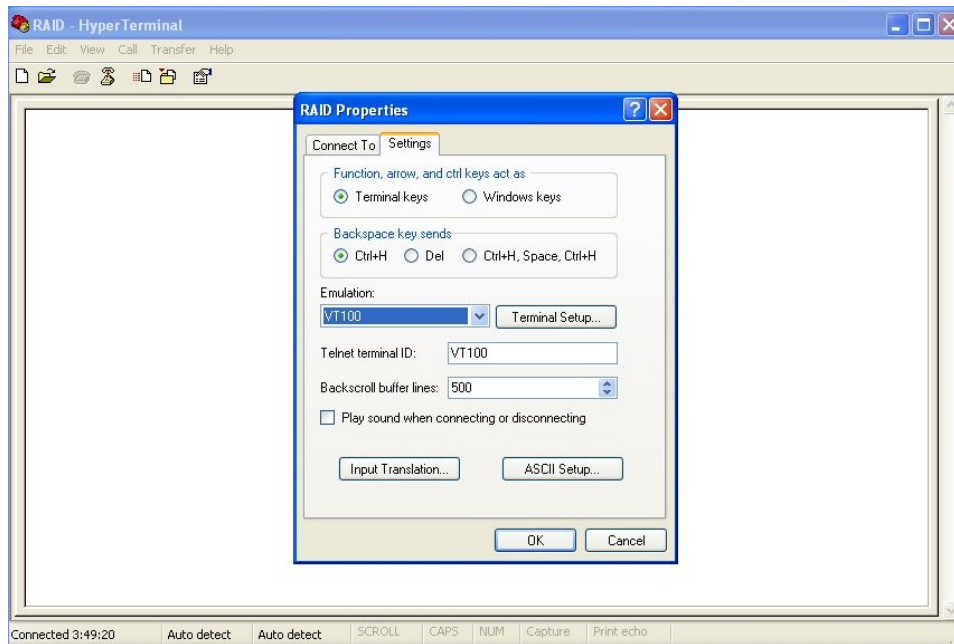


Now, the VT100 is ready to use.

# CLI Command Set

This section provides detail information about the 12Gb JBOD Subsystem's CLI function. All the commands please type in lower case.

The CLI has the following commands:

## HELP Command

This command provides an on-line table of contents, providing brief descriptions of the help sub-commands. You can use the <CLI> help to get detail information about the CLI commands summary.

**Syntax**

CLI>help[Enter]

Example:
CLI>help

| | |
|---|---|
| Pass | - Set Password |
| Lo | - Logout CLI Shell |
| Link | - Link Rate Control |
| dhpm(edfb) | - Bandwidth Optimizer |
| th | - Temperature Control |
| group | - Set the PHY Group |
| sys | - System Information |
| bu | - Alarm Control |
| fan | - Fan Speed Control |
| spin | - Drive SpinUp Control |
| st | - Store System Setting |
| lsd | - List Devices Status |
| showlogs | - Show the Current Logs |
| fld | - File Download |
| counters reset (optional) | - Display/Reset all phy counters |
| sasaddr | - Display expander SAS address |

## PASS Command

The pass command allows user to set or clear the SAS JBOD password protection feature. Once the password has been set, the user can only monitor and access the SAS JBOD setting by providing the correct password. The password can accept max 8 chars and min. 4 chars. The manufacture default password is **"0000"**.

**Syntax**

CLI>pass [Enter]

Example:

CLI>pass

Old Password:****

New Password:****

Verify New Password:****

Password Changed But Not Save Permanently!
Note, use CLI command "st" to keep permanently.

## LO Command

To exit the selected SAS JBOD CLI shell, use the lo command.

**Syntax**

CLI> lo [Enter]

Example:

CLI>lo

Password:

## LINK Command

The link command allows you to set the operate device link rate that has been connected on expander controllers. Typical parameters include: Max and Min disk speed connected the SAS JBOD and High and Low external cable link speed connected the SAS JBOD.

1. Set external cable link speed rate

**Syntax**

CLI>link c[0|1|2|3] High Low]

Index: c[0|1|2|3] External Cable Index

The cable c0, c1, or c2 is view from right to left or start from top to bottom.

High-Rate, Low-Rate: [11(12G)|10(6G)|9(3G)]

PS. Pls. Save Config. & Reboot To Take Effect

CLI>st

Example:

CLI>link c0,c1 10 9  ;; set cable0 and cable1 link speed range [max=10(6G),

min=9(3G)]

CLI>st

CLI>

Reboot to take effect**.**

2. Set all slots with same link speed rate

**Syntax**

CLI>link [Index(D)| 255] High-Rate(D) Low-Rate(D)

Index: Slot Index

High-Rate, Low-Rate: [11(12G)|10(6G)|9(3G)]

6.0G, and 11 means 12.0G

PS. Pls. Save Config. & Reboot To Take Effect

CLI>st

Example:

CLI>link 255 10 9 ;; set all slots with same link speed rate, max=10(6G),

min=9(3G)

CLI>st

CLI>

Reboot to take effect.

3. Set internal slot link speed rate

**Syntax**

CLI>link [Index Max Min] [Enter]

Index: Slot Index

High-Rate, Low-Rate: [11(12G)|10(6G)|9(3G)]

PS. Pls. Save Config. & Reboot To Take Effect

CLI>st

Example:

CLI>link

ArrayDevice Element (0x17):

========================================

| NAME | PHY | ORG | NLR | MAX | MIN | TYPE | ADDRESS |
|------|-----|-----|-----|-----|-----|------|---------|
| SLOT 01 | 13 | 6G | 6G | 11 | 9 | SATA | 5001B469-189AE00D |
| SLOT 02 | 12 | 6G | 6G | 11 | 9 | SAS | 5011B469-189AE00C |
| SLOT 03 | 14 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE00E |
| SLOT 04 | 15 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE00F |
| SLOT 05 | 9 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE009 |
| SLOT 06 | 8 | **6G** | **6G** | **11** | **9** | SATA | 5011B469-189AE008 |
| SLOT 07 | 10 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE00A |
| SLOT 08 | 11 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE00B |
| SLOT 09 | 5 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE005 |
| SLOT 10 | 4 | 6G | 6G | 11 | 9 | SATA | 5011B469-189AE004 |
| SLOT 11 | 6 | 3G | 3G | 11 | 9 | SAS | 500000E0-168F8E92 |
| SLOT 12 | 7 | 3G | 3G | 11 | 9 | SAS | 500000E0-168F8E99 |

//Set the slot 0x6 max. speed to 3.0G

CLI >link 6 9 9

CLI>st

CLI>

Reboot to take effect.

CLI >link

ArrayDevice Element (0x17):

40

```
=======================================
NAME      PHY ORG NLR MAX MIN TYPE    ADDRESS
SLOT 01   13  6G  6G  11  9   SATA    5001B469-189AE00D
SLOT 02   12  6G  6G  11  9   SAS     5011B469-189AE00C
SLOT 03   14  6G  6G  11  9   SATA    5011B469-189AE00E
SLOT 04   15  6G  6G  11  9   SATA    5011B469-189AE00F
SLOT 05   9   6G  6G  11  9   SATA    5011B469-189AE009
SLOT 06   8   6G  3G  9   9   SATA    5011B469-189AE008
SLOT 07   10  6G  6G  11  9   SATA    5011B469-189AE00A
SLOT 08   11  6G  6G  11  9   SATA    5011B469-189AE00B
SLOT 09   5   6G  6G  11  9   SATA    5011B469-189AE005
SLOT 10   4   6G  6G  11  9   SATA    5011B469-189AE004
SLOT 11   6   3G  3G  11  9   SAS     500000E0-168F8E92
SLOT 12   7   3G  3G  11  9   SAS     500000E0-168F8E99
```

## DHPM Command (Same as "EDFB")

Use for 3G/6G SAS/SATA drive speed up as 12G drive performance. DataBolt™ Bandwidth Optimizer is designed to help facilitate the industry transition to 12Gb/s SAS-enabled systems by allowing users to take advantage of 12Gb/s speeds while utilizing existing 6Gb/s drives or backplanes.

**Syntax**

CLI> dhpm [on | off] [i,j,..] [Enter]

on - turn on all drive slot as 12G performance mode.

off - turn off all drive slot 12G performance mode.

i,j,.. - turn on/off drive slot i,j, …12G performance mode.

Example:

CLI>help dhpm

Drive High Performance          dhpm { [on | off] [i,j,..] }

CLI>link

ArrayDevice Element (0x17):

41

```
======================================
```

| NAME    | PHY | ORG | NLR | MAX | MIN | TYPE | ADDRESS           |
|---------|-----|-----|-----|-----|-----|------|-------------------|
| SLOT 01 | 13  | 6G  | 6G  | 11  | 9   | SATA | 5001B469-189AE00D |
| SLOT 02 | 12  | 6G  | **6G**  | 11  | 9   | SAS  | 5011B469-189AE00C |
| SLOT 03 | 14  | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE00E |
| SLOT 04 | 15  | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE00F |
| SLOT 05 | 9   | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE009 |
| SLOT 06 | 8   | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE008 |
| SLOT 07 | 10  | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE00A |
| SLOT 08 | 11  | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE00B |
| SLOT 09 | 5   | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE005 |
| SLOT 10 | 4   | 6G  | 6G  | 11  | 9   | SATA | 5011B469-189AE004 |
| SLOT 11 | 6   | 3G  | 3G  | 11  | 9   | SAS  | 500000E0-168F8E92 |
| SLOT 12 | 7   | 3G  | **3G**  | 11  | 9   | SAS  | 500000E0-168F8E99 |

CLI>dhpm on 2,12    ;;;;;; set drive slot 2,12 on

CLI>st

Reset or PowerCycle

CLI>link

ArrayDevice Element (0x17):

```
======================================
```

| NAME    | PHY | ORG | NLR | MAX | MIN | TYPE | ADDRESS           |
|---------|-----|-----|-----|-----|-----|------|-------------------|
| SLOT 01 | 13  | 6G  | 6G   | 11  | 9   | SATA | 5001B469-189AE00D |
| SLOT 02 | 12  | 6G  | **12G** | 11  | 9   | SAS  | 5011B469-189AE00C |
| SLOT 03 | 14  | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE00E |
| SLOT 04 | 15  | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE00F |
| SLOT 05 | 9   | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE009 |
| SLOT 06 | 8   | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE008 |
| SLOT 07 | 10  | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE00A |
| SLOT 08 | 11  | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE00B |
| SLOT 09 | 5   | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE005 |
| SLOT 10 | 4   | 6G  | 6G   | 11  | 9   | SATA | 5011B469-189AE004 |
| SLOT 11 | 6   | 3G  | 3G   | 11  | 9   | SAS  | 500000E0-168F8E92 |

SLOT 12     7      3G     **12G**   11     9      SAS          500000E0-168F8E99

CLI>dhpm on ;;;;; set all drives on

CLI>st

Reset or PowerCycle

## TH Command

The th command allows you to set the operate device temperature warning limit.
Typical parameters include: High-Warn and Low-Warn are warning temperature in
Celsius.

### Syntax

CLI> th Index High-Warn Low-Warn

Example:

CLI>th

Temperature Element (0x04):

========================================

| NAME | ID | CT('C) | HTW | LTW | OTWarn |
|------|-----|--------|-----|-----|--------|
| ENC.Temp | 01 | 30 | 60 | 5 | No |
| Chip Temp | 02 | 64 | 90 | 5 | No |
| Slot01 Temp | 03 | 31 | 60 | 5 | No |
| Slot02 Temp | 04 | 32 | 60 | 5 | No |
| Slot03 Temp | 05 | 30 | 60 | 5 | No |
| Slot04 Temp | 06 | 31 | 60 | 5 | No |
| Slot05 Temp | 07 | 36 | 60 | 5 | No |
| Slot06 Temp | 08 | 32 | 60 | 5 | No |
| Slot07 Temp | 09 | 32 | 60 | 5 | No |
| Slot08 Temp | 10 | 35 | 60 | 5 | No |
| Slot09 Temp | 11 | 34 | 60 | 5 | No |
| Slot10 Temp | 12 | 32 | 60 | 5 | No |
| Slot11 Temp | 13 | 32 | 60 | 5 | No |
| Slot12 Temp | 14 | 32 | 60 | 5 | No |

CLI>th 2 79 0

Temperature Element (0x04):

========================================

| NAME | ID | CT('C) | HTW | LTW | OTWarn |
|------|-----|--------|-----|-----|--------|
| ENC. Temp | 01 | 30 | 60 | 5 | No |
| Chip Temp | 02 | 64 | **79** | **0** | No |
| Slot01 Temp | 03 | 31 | 60 | 5 | No |
| Slot02 Temp | 04 | 32 | 60 | 5 | No |
| Slot03 Temp | 05 | 30 | 60 | 5 | No |
| Slot04 Temp | 06 | 31 | 60 | 5 | No |
| Slot05 Temp | 07 | 36 | 60 | 5 | No |
| Slot06 Temp | 08 | 32 | 60 | 5 | No |
| Slot07 Temp | 09 | 32 | 60 | 5 | No |
| Slot08 Temp | 10 | 35 | 60 | 5 | No |
| Slot09 Temp | 11 | 34 | 60 | 5 | No |
| Slot10 Temp | 12 | 32 | 60 | 5 | No |
| Slot11 Temp | 13 | 32 | 60 | 5 | No |
| Slot12 Temp | 14 | 33 | 60 | 5 | No |

CLI>st

CLI>

Reboot to take effect.


CLI>th

Temperature Element (0x04):

========================================

| NAME | ID | CT('C) | HTW | LTW | OTWarn |
|------|-----|--------|-----|-----|--------|
| ENC. Temp | 01 | 30 | 60 | 5 | No |
| Chip Temp | 02 | 64 | 79 | 0 | No |
| Slot01 Temp | 03 | 31 | 60 | 5 | No |
| Slot02 Temp | 04 | 32 | 60 | 5 | No |
| Slot03 Temp | 05 | 30 | 60 | 5 | No |
| Slot04 Temp | 06 | 31 | 60 | 5 | No |

| | | | | | |
|---|---|---|---|---|---|
| Slot05 Temp | 07 | 36 | 60 | 5 | No |
| Slot06 Temp | 08 | 32 | 60 | 5 | No |
| Slot07 Temp | 09 | 32 | 60 | 5 | No |
| Slot08 Temp | 10 | 35 | 60 | 5 | No |
| Slot09 Temp | 11 | 34 | 60 | 5 | No |
| Slot10 Temp | 12 | 32 | 60 | 5 | No |
| Slot11 Temp | 13 | 32 | 60 | 5 | No |
| Slot12 Temp | 14 | 33 | 60 | 5 | No |

## GROUP Command

The group command is used to associate the external port with the devices/phys as one zone group. The three external cable ports and all devices/phys slots will default associate with one zone group.

**Syntax**

gr {dev GroupNo[1..] {ci, cj, ck,..} Start-Index(D) End-Index(D)}

gr {off | [t10 off] }

dev : use drive slot index

GroupNo : groupno start from 1, max 8 groups ci, cj, ck,..:

external cable connector. i, j, k,.. is the index which range from 0 to 3. According to

view from connector side, index start from right to left or top to bottom. The cable

c0, c1, or c2 is view from right to left or start from top to bottom.

Start-Index : Start slot index of zone range, [1.. max drive]

End-Index : End slot index of zone range, [1.. max drive]

off : clear the zone group setting.

t10 off : turn T10 mode off.

Example:

CLI>gr

Current PHY Group Mode: T10

Group-1: C0, C1, C2, Slot: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Value: 0x0000000FFFFFFFFF

//Set the cable0 and slot 1 to slot 6 as group 1
CLI>gr dev 1 c0 1 6

New PHY Group Mode: T10

Group-1: C0, Slot: 1, 2, 3, 4, 5, 6

Value: 0x00000000000FFC00

Current PHY Group Mode: T10

Group-1: C0, C1, C2 Slot: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Value: 0x0000000FFFFFFFFF

//Set the cable1 and cable2 and slot 7 to slot 16 as group 2

CLI>gr dev 2 c1, c2 7 16

New PHY Group Mode: T10

Group-1: C0, Slot: 1, 2, 3, 4, 5, 6

Value: 0x00000000000FFC00

Group-2: C1, C2, Slot: 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Value: 0x000000000FF003FF

Current PHY Group Mode: T10

Group-1: C0, C1, C2 Slot: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Value: 0x0000000FFFFFFFFF

CLI>st

Power Cycle to reboot

CLI>gr

Current PHY Group Mode: T10

Group-1: C0, Slot: 1, 2, 3, 4, 5, 6

Value: 0x00000000000FFC00

Group-2: C1, C2, Slot: 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Value: 0x000000000FF003FF

//Clear the Zone group Setting

CLI>gr off

New PHY Group Mode: T10

Group-1: C0, C1, C2 Slot: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
Value: 0x0000000FFFFFFFFF

Current PHY Group Mode: T10

Group-1: C0, Slot: 1, 2, 3, 4, 5, 6

Value: 0x00000000000FFC00

Group-2: C1, C2, Slot: 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Value: 0x000000000FF003FF

## SYS Command

The sys command is used to view the expander's information. Typical information includes: vendor, model name, serial/unit number, expander port number, product revision, chip name/chip revision, customer code, manufacture data revision and work time.

**Syntax**

CLI>sys [Enter]

Example:

CLI>sys

=======================================

Hardware Revision Information:-

=======================================

Vendor ID : Alnico

Taiwan, R.O.C

Model ID : AN612

Serial No. : 0000000000000000

Unit Serial No. :

Expander SAS Address : 0x5001B469189AE03F

Product Revision : 0

Expander Chip ID : 0x0233 (Ports : 36)

Expander Chip Revision : C0

Customer Code : 0x35 (R01)

Manufacturer Data Revision : 0x01 12/12/13

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Working Time : Day00000-00:00:06

Dual Mode : Single

====================================

Firmware Revision Information:-

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Boot Image:

Revision: 100.BD.00.0A 12/05/13

Firmware Family: 0 OemFamily: 0

Fast Boot: Yes Image Address: 0x10000000

Firmware Copy 1:

Revision: 100.BD.01.0A 01/06/14

Firmware Family: 0 OemFamily: 0

Fast Boot: Yes Image Address: 0x10100000

Firmware Copy 2: [Active]

Revision: 100.BD.01.0A 01/06/14

Firmware Family: 0 OemFamily: 0

Fast Boot: Yes Image Address: 0x10200000

HAL Revision: 0.1.0.0 SES Revision: 0.1.0.0 SCE Revision:

0.1.0.0

## BU Command

The BU command allows you to control the buzzer attributes that have been controlled by SAS expander H/W. There are four sound levels defined by the expander H/W. The default warning is sound level 2 and critical: sound level 3.

**Syntax**

CLI>BU [Warning Critical] [MUTE] [Enter]

Example:

CLI>BU

Buzzer Attribute:

Warning Beep: Sound 2

Critical Beep: Sound 3

CLI>BU 0x1 0x3

CLI>BUBuzzer Attribute:

Warning Beep: Sound 1

Critical Beep: Sound 3

CLI>

When expander alarm with buzzer, you can temporarily mute it

with the following command. The buzzer still can be activated by

the next different event.

CLI>BU MUTE

When expander alarm with buzzer, you can disable it completely

by command "bu 0 0". If you would like to enable beeper, the

command for default settings will be "bu 2 3".

## FAN Command

The fan command allows you to set the operate fan speed. Typical parameters include: LowestSpeed and WarningSpeed are fan speed in speed code from level 1 to 7. The LowestSpeed is the speed code that fan operate in normal state, and the WarningSpeed is the speed code that fan operate in warning state; like as detect a device in over-temperature.

**Syntax**

CLI> fan LowestSpeed WarningSpeed


Example:

CLI>fan

Cooling Element (0x03):

=======================================

SPEED

| NAME | CODE | RPM | STATUS |
|---|---|---|---|
| Fan 01 | 2 | 3690 | OK |
| Fan 02 | 2 | 4090 | OK |
| Fan 03 | 2 | 3650 | OK |

Fan 04    2        4050    OK

Current FAN Speed Attribute:

Lowest SpeedCode: 2

Warning SpeedCode: 5

CLI>fan 3 7

New FAN Speed Attribute:

Lowest SpeedCode: 3

Warning SpeedCode: 7

Current FAN Speed Attribute:

Lowest SpeedCode: 2

Warning SpeedCode: 5

CLI>st

CLI>

Reboot to take effect.

CLI>fan

Cooling Element (0x03):

=====================================

SPEED

| NAME | CODE | RPM | STATUS |
|---|---|---|---|
| Fan 01 | 3 | 4140 | OK |
| Fan 02 | 3 | 4630 | OK |
| Fan 03 | 3 | 4140 | OK |
| Fan 04 | 3 | 4490 | OK |

Current FAN Speed Attribute:

Lowest SpeedCode: 3

Warning SpeedCode: 7


Fan internal command for different fan speed type:

fan -t [high | normal | low | vlow]

high : 6000 - 10000 rpm

normal : 1800 - 7000 rpm

low : 1000 - 2000 rpm

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vlow : below 1000 rpm

The above is a rough value, user can set different to fit the fan speed type.

Default is normal.

## SPIN Command

The spin command defines the mode of staggering SATA drive spin-up function connected on the expander box. This command gives expander box the ability to spin up the disk drives sequentially or in groups, allowing the drives to come ready at the optimum time without straining the system power supply. Staggering drive spin-up in a multiple drive environment also avoids the extra cost of a power supply designed to meet short-term startup power demand as well as:

**Syntax**

CLI> spin [ Delay(D)[ms] Num(D) ]

Expander issues the spin up the drives by [ Num] drives with [Delay] ms.


Example1:

CLI>spin

Current SpinUp Attribute:

Drive Number: 1

Delay: 1024 ms


CLI>spin 512 3

New SpinUp Attribute:

Drive Number: 3

Delay: 512 ms


Current SpinUp Attribute:

Drive Number: 1

Delay: 1024 ms


## ST Command

The st command stores system configurations in flash. Since all the revised parameter setting is temporarily stored in the working RAM, the ST command

saves those parameters permanently in flash ROM.

1. Store temporarily configurations in flash
**Syntax**
CLI> st


Example:

CLI> st

CLI>


2. Store factory default configurations in flash

**Syntax**

CLI>st [default]


Example:

CLI>st default            ;; restore the setting to default

CLI>

## LSD Command
The lsd command is use for show the element devices status in the expander
controller. With parameter, this command only show the select device status.

**Syntax**

CLI> lsd [ hdd | temp | volt | pwr | con | ..]

Show SES elements information:


ArrayDevice Element (0x17):

=====================================

| NAME | PHY | NLR | MAX | MIN | TYPE | ADDRESS |
|------|-----|------|-----|-----|------|---------|
| SLOT 01 | 0 | 3.0G | 10 | 9 | SAS | 5000C500-0D2002D1 |
| SLOT 02 | 1 | | 10 | 9 | | |
| SLOT 03 | 2 | | 10 | 9 | | |
| SLOT 04 | 3 | 1.5G | 10 | 9 | SATA | 5001B469-84965C03 |
| SLOT 05 | 4 | | 10 | 9 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| SLOT 06 | 5 | | 10 | 9 | | |
| SLOT 07 | 6 | 6.0G | 10 | 9 | SAS | 5000C500-17C8FD25 |
| SLOT 08 | 7 | | 10 | 9 | | |
| SLOT 09 | 8 | | 10 | 9 | | |
| SLOT 10 | 9 | | 10 | 9 | | |
| SLOT 11 | 10 | | 10 | 9 | | |
| SLOT 12 | 11 | | 10 | 9 | | |

Connector Element (0x19):

==========================================

| NAME | PHY | NLR | TYPE | STATUS |
|---|---|---|---|---|
| Connector00 | 16 | | 02 | |
| Connector00 | 17 | | 02 | |
| Connector00 | 18 | | 02 | |
| Connector00 | 19 | | 02 | |
| Connector01 | 20 | 6.0G | 02 | Connected |
| Connector01 | 21 | 6.0G | 02 | Connected |
| Connector01 | 22 | 6.0G | 02 | Connected |
| Connector01 | 23 | 6.0G | 02 | Connected |
| Connector02 | 24 | | 02 | |
| Connector02 | 25 | | 02 | |
| Connector02 | 26 | | 02 | |
| Connector02 | 27 | | 02 | |

Cooling Element (0x03):

==========================================

SPEED

| NAME | CODE | RPM | STATUS |
|---|---|---|---|
| Fan 01 | 5 | 2100 | OK |
| Fan 02 | 5 | 2200 | OK |
| Fan 03 | | | Not-Installed |
| Fan 04 | | | Not-Installed |

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Temperature Element (0x04):

======================================

| NAME | ID | CT('C) | HTW | LTW | OTWarn |
|------|----|--------|-----|-----|--------|
| ENC. Temp | 01 | 32 | 60 | 5 | No |
| Chip Temp | 02 | 42 | 85 | 0 | No |

Voltage Element (0x12):

======================================

| NAME | VOLT(V) | OVLMT | UVLMT | STATUS |
|------|---------|-------|-------|--------|
| 1V | 0.99 | 1.07 | 0.94 | None |
| 5V | 4.96 | 5.32 | 4.63 | None |

PowerSupply Element (0x02):

======================================

| NAME | STATUS |
|------|--------|
| PowerSupply01 | OK |
| PowerSupply02 | OK |

AudibleAlarm Element (0x06):

======================================

| NAME | STATUS | ALMSTATE |
|------|--------|----------|
| Audible-Alarm | Normal | 0 |

CLI>


## SHOWLOGS Command

The showlogs command allows you to display system event notifications that have been generated event by the SAS expander box.

**Syntax**

CLI>showlogs [DisplayMode(hex, detail, default)]

Example:

CLI>showlogs

00000000-00000000:PLATFORM:Firmware initialization started

Day00000-00:00:00 ENCLOSURE-Fan 01 Failed

## FDL Command
The SAS JBOD has added the expander firmware update through the CLI on the external RS-232 port. Before you process the firmware update, there are two block regions that you can update expander microcode on SAS JBOD.

1. CODE region - for FW file : sas3xfwYYMMDD.fw

2. MFGB region - for Data file : mfg12gYYMMDD.rom

To update the expander controller firmware, follow the procedure below:

**Syntax:** all the commands please type in lower case

CLI>fdl { code | mfgb }

Then use XModem/(Checksum) protocol transmit file to update ROM Region. The following procedures is used to update firmware through the RS-232:

1. Open any UART communication tools like HypeTerminal (115200,n,8,1).

2. Press any key on HyperTerminal window, the window will show "CLI>" prompt.

3. Type help will show help screen.

4. One command to update firmware. Step as follow.

5. Issue download & update command under "CLI>".

CLI>fdl code

Please Use XModem Protocol for File Transmission.

Use Q or q to quit Download before starting XModem.

<-----expander prompt for ready to receive file to update.

6. Then under HyperTerminal program, use the pull down menu item transfer

"Send" -> send files when dialog box prompt, choose "Xmodem" and the file in the

directory then press"send".

(a). If the expander receive the file under the timeout limit (60s), the process starts.

(b). If time out, please retry the step E again.

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7. You can also cancel the program step by type 'q'.

8. If transfer OK, the transfered data is updated. Cold-start expander (Power cycle again) to take effect.

Example:

Update procedure, use Xmodem to transfer, refer to "fdl" command

for detail operation.

CLI> fdl { code | mfgb }

Use HyperTerminal or TeraTerm utility with Xmodem mode to transfer and update files.

If transfer OK, the transfered data is updated. Cold-start expander (Power cycle again) to take effect.

The following firmware and data are available in the following filename format.

1. FW file (CODE) : sas3xfwYYMMDD.fw

2. Data file (MFGB) : mfg12gYYMMDD.rom

Update SAS expander firmware:

CLI> fdl code

Use HyperTerminal or TeraTerm utility with Xmodem mode to transfer sas3xfwYYMMDD.fw.

If transfer OK, the transfer data is updated. Cold-start expander (Power cycle again) to take effect.

Update SAS expander data file:

CLI>fdl mfgb

Use HyperTerminal or TeraTerm utility with Xmodem mode to transfer mfg12gYYMMDD.rom.

If transfer OK, the transfer data is updated. Cold-start expander (Power cycle again) to take effect.

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## Counters Reset Command

Display/Reset all phy counters counters reset (optional).

CLI>counters reset

Phy counters successfully reset.


CLI>counters

Phy Layer Error Counters=================

== InvWrdCnt ==DispErrCnt ==LossSyncCnt ==RstSeqFailCnt=

Phy 00 0x00000000 0x00000000 0x00000000 0x00000000

Phy 01 0x00000000 0x00000000 0x00000000 0x00000000

Phy 02 0x00000000 0x00000000 0x00000000 0x00000000

Phy 03 0x00000000 0x00000000 0x00000000 0x00000000

Phy 04 0x00000000 0x00000000 0x00000000 0x00000000

Phy 05 0x00000000 0x00000000 0x00000000 0x00000000

Phy 06 0x00000000 0x00000000 0x00000000 0x00000000

Phy 07 0x00000000 0x00000000 0x00000000 0x00000000

Phy 08 0x00000000 0x00000000 0x00000000 0x00000000

Phy 09 0x00000000 0x00000000 0x00000000 0x00000000

Phy 10 0x00000000 0x00000000 0x00000000 0x00000000

Phy 11 0x00000000 0x00000000 0x00000000 0x00000000

Phy 12 0x00000000 0x00000000 0x00000000 0x00000000

Phy 13 0x00000000 0x00000000 0x00000000 0x00000000

Phy 14 0x00000000 0x00000000 0x00000000 0x00000000

Phy 15 0x00000000 0x00000000 0x00000000 0x00000000

Phy 16 0x00000000 0x00000000 0x00000000 0x00000000

Phy 17 0x00000000 0x00000000 0x00000000 0x00000000

Phy 18 0x00000000 0x00000000 0x00000000 0x00000000

Phy 19 0x00000000 0x00000000 0x00000000 0x00000000

Phy 20 0x00000000 0x00000000 0x00000000 0x00000000

Phy 21 0x00000000 0x00000000 0x00000000 0x00000000

Phy 22 0x00000000 0x00000000 0x00000000 0x00000000

Phy 23 0x00000000 0x00000000 0x00000000 0x00000000

Phy 24 0x00000000 0x00000000 0x00000000 0x00000000

Phy 25 0x00000000 0x00000000 0x00000000 0x00000000

Phy 26 0x00000000 0x00000000 0x00000000 0x00000000

Phy 27 0x00000000 0x00000000 0x00000000 0x00000000

Link Layer Event Counters

Phy Event Counter Not Configured.

Generic Broadcast Counter

Broadcast Counter Not Configured.

Generic Broadcast Counter

Broadcast Counter Not Configured.


## Sasaddr Command

CLI>sasaddr

Expander New SAS Address: 0x5001B4690400083F

Expander Current SAS Address:

EXP Port SAS Address: 0x5001B4690400083F

SXP Port SAS Address: 0x5001B4690400083D

STP Port SAS Address: Disabled

# Appendix D.
# LCD Configuration Manager

The Alnico AH-825JT LCD configuration utility is a character-based utility that you can run after powering the unit. Use LCD configuration utility to see and configure:

- Alerts Menu,
- Voltage,
- Set Link,
- Set Alarm,
- Set Password,
- Save Config, and
- System Reset

The LCD display front panel function keys are the primary user interface for the AH-825JT. Except for the "Firmware update", all configurations can also be performed through this interface.

**Navigation Map of the LCD**

The password option allows user to set or clear the AH-825JT password protection feature. Once the password has been set, the user can only monitor and configure the AH-825JT by providing the correct password. The password is used to protect the AH-825JT from unauthorized entry.

The AH-825JT will check the password only when entering the main menu from the initial screen. The AH-825JT will automatically go back to the initial screen when it does not receive any command in 5 minutes. The AH-825JT's password is default setting at 0000 by the manufacture.

The following flow is an expansion of LCM setup option items hierarchical menu.

LCM setup option items hierarchical menu:

Alerts Menu ——— Power Supply
              FAN
              Temp. Sensor
              Voltage Sensor

Voltage ——— _1.2V-
            5V-

Set Link ——— Enter
            Password:
            [······]          ——— HDD01          ——— _Set Max. Rate 12G
                                                       _Set Max. Rate 3G

                                  <HDD02,
                                  HDD03······>
                                  WrapsAround

LCM
Functions ——— Set Alarm ——— Enter
                           Password:
                           [······]          ——— _Set Alarm Beep
                                                  Mute Beep

                                                 _Set Alarm Beep
                                                  Sound 2

                                                 _Set Alarm Beep
                                                  Sound 3

Set Password ——— Set New PWD

Save Config ——— Save Config?
               Exit:No
               Sel:Yes

System Reset ——— Reset System?
                Exit:No
                Sel:Yes
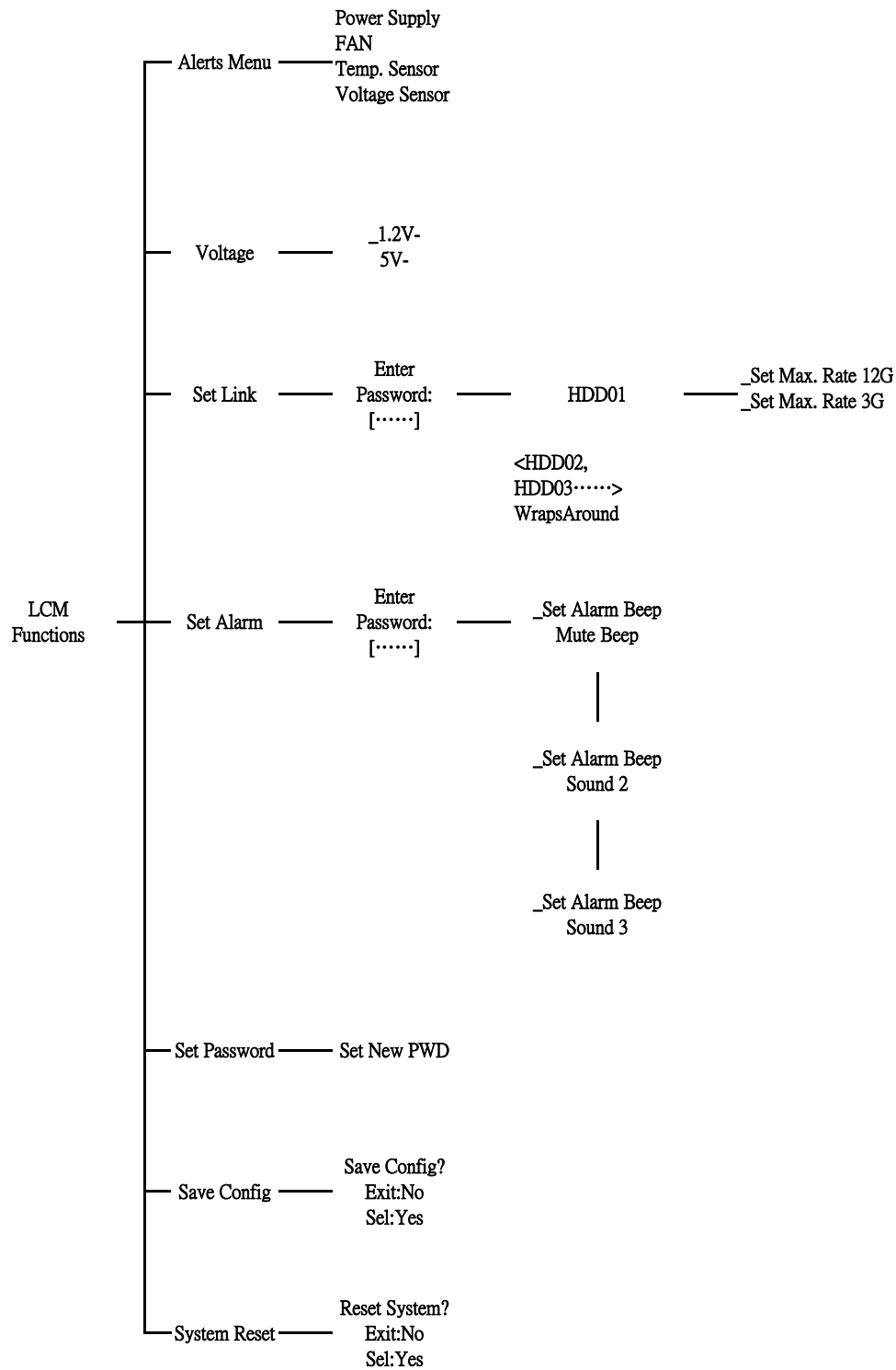
• **Alerts Menu**

Show which device that fail to work, its sub-items could be "Power Supply", "Fan", "Temp. Sensor" and "Voltage Sensor".

• **Voltage**

Show enclosure chip voltage in status data, represent in V.
The sub-items are shown as below:
1.2V- , the expander box voltage is 1.2V
5V- , the expander box voltage is 5V

For the setup item, the LCM key represent:
Up key to enter the 0 - 9 data.
Down key to enter "a" - "z" and "A" - "Z" data.
Enter key to confirm the input or ready to update a sub-item data.
Esc/Exit key to go back to the main selection.

• **Set Link**

Set HDD devices maximun /minimun link speed rate. The value    could be 12G, 6G or 3G each of HDD devices link speed will have the sub-items are shown as below:

_Set Max. Rate
  12G

_Set Min. Rate
  3G

• **Set Alarm**

Set enclosure buzzer warning/critical error beep style or mute the current beep. The value could be "Sound 1", "Sound 2", "Sound 3", "Sound 4" and "Sound Disabled". Sound 1 to 4 means different frequency sound. Sound disabled means disable the sound beep. The sub-items are shown below:

_Set Alarm Beep
Mute beep

_Warning Alarm
Sound 2

_Critical Alarm
Sound 3

• **Set Password**

Change the enclosure LCM/UART CLI password. The sub-item is "Set New PWD".

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• **Save Config**

Save all the updated option value into non-volatile memory area.

• **System Reset**

Reboot the system.

# Appendix E. Specifications

## Specifications

| Model | AN-824JT | AN-816JT | AN-812JT |
|---|---|---|---|
| System Type | 4U Rackmount | 3U Rackmount | 2U Rackmount |
| Expander numbers | 1 or 2 | 1 or 2 | 1 or 2 |
| Host Interface | Single minSAS HD (SFF-8644) connectors ( 4 x 12Gb Links) / Expander | | |
| Host Transfer Rate | 12Gb/ Sec | | |
| Disk Interface | SAS 3.0,  12Gbps/ Port<br>2 x minSAS HD ( SFF-8644) for Expansion | | |
| Disk Channel | 24 x SAS 3.0, 12Gb | 16x SAS 3.0, 12Gb | 12 x SAS 3.0, 12Gb |
| Hot Swap and redundant | Yes (Expander box, Power Supply, Drive and Fan). | | |
| Hot Spare | Yes (Drive). | | |
| Monitoring / Indicators | Through In-band SES ( SCSI Enclosure Service)<br>LED Indicators on Front Panel | | |
| Remote Terminal Configuration | Yes. | | |
| Operating Systems | O/S Independent and Transparent | | |
| Power Supply | 500+500+500 watts Redundancy 80 Plus energy-Efficient power system, Three 500 watts module with PFC function. Load sharing type and cable-less design with **Redundancy Three Power inlet** | 500+500 watts Redundancy 80 Plus energy-Efficient power system, two 500 watts module with PFC function. Load sharing type and cable-less design with **Redundancy Dual Power inlet** | |
| Electrical | AC Voltage 100-240 VAC<br>Ac Frequency 47-63Hz | | |
| Temperature | Operating Temperature : 5 to 35 degree C.<br>Non Operating Temperature : -40 to 60 degree C. | | |
| Relative Humidity | 20% to 80% non-condensing | | |
| Dimensions | 446.5mm(W)*517mm(D)*4U | 446.5mm(W)*517mm(D)*3U | 446.5mm(W)*527mm(D)*2U |

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| Model | AH-825JT |
|---|---|
| System Type | 2U Rackmount |
| Expander numbers | 1 or 2 |
| Host Interface | Single minSAS HD (SFF-8644) connectors ( 4 x 12Gb Links) / Expander |
| Host Transfer Rate | 12Gb/ Sec |
| Disk Interface | SAS 3.0,  12Gbps/ Port<br>2 x minSAS HD ( SFF-8644) for Expansion |
| Disk Channel | 24 x SAS 3.0, 12Gb |
| Hot Swap and redundant | Yes (Expander box, Power Supply, Drive and Fan). |
| Hot Spare | Yes (Drive). |
| Monitoring / Indicators | Through In-band SES ( SCSI Enclosure Service)<br>LED Indicators on Front Panel |
| Remote Terminal Configuration | Yes. |
| Operating Systems | O/S Independent and Transparent |
| Power Supply | 500+500 watts Redundancy 80 Plus energy-Efficient power system, two 500 watts module with PFC function. Load sharing type and cable-less design with **Redundancy Dual Power inlet** |
| Electrical | AC Voltage 100-240 VAC<br>Ac Frequency 47-63Hz |
| Temperature | Operating Temperature : 5 to 35 degree C.<br>Non Operating Temperature : -40 to 60 degree C. |
| Relative Humidity | 20% to 80% non-condensing |
| Dimensions | 449mm(W)*468mm(D)*2U |

*Specifications subject to change without notice.*